How Should Capital Be Taxed?

The Swedish Experience*

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Abstract:
This paper presents a comprehensive analysis of the role of capital taxation in advanced economies with a focus on the Swedish experience. We synthesize the existing theoretical literature, present facts about the capital stock and its distribution, review current capital tax practices and empirical findings regarding their effects on economic activity. The paper also examines the political feasibility of capital taxation by presenting results from a unique attitude survey targeted to a large representative sample of the Swedish population. Finally, we tie together our findings and discuss their implications for tax policy.

Keywords: Optimal taxation, Capital taxation, Wealth tax, Inheritance tax, Corporate tax, Income inequality, Wealth inequality, Political economy, Preferences for redistribution.

JEL: D31, F38, H21, H24.

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1. Introduction

There is substantial academic and political dispute regarding the appropriate role of taxes on capital in the tax system. Perhaps this is not that surprising given the complex nature of capital. Capital is needed to fund investments in the economy, it serves as a vehicle for individuals to transfer resources across time, and it can provide consumption benefits, as in the case of housing wealth. Furthermore, capital can be transmitted across generations and it can be moved across jurisdictions. An emerging empirical literature describes the amount and distribution of private capital and its evolution over time, but it is fair to say that a substantial uncertainty remains regarding the economic effects of taxing it, and the appropriate role of capital taxes in the tax system as a whole.

The purpose of this study is to shed light on the role of capital taxation in advanced economies, focusing on Sweden. Sweden is an interesting case study because it combines egalitarian welfare-state policies concerning redistribution and social insurance with high ambitions to foster a growth-promoting entrepreneurial business environment. Sweden has currently one of the highest tax-to-GDP ratios and highest marginal income tax rates on labor income in the world. However, in terms of the taxation of capital, Sweden emerges in a different light, having low levels of capital tax revenue in comparison to countries such as the US, France and the UK.

The Swedish tax system was comprehensively reformed nearly 30 years ago, in 1991, in what came to be called the "Tax Reform of the Century". The main elements of the reform were broadened tax bases, lowered marginal tax rates and the implementation of a system of dual taxation of labor and capital income. Since the reform, many things have changed. The Swedish economy suffered a severe crisis in the early 1990s that transformed the economy and the entire basis for economic policymaking. Technological change, economic globalization and policy shifts towards market liberalization have reshaped the institutional basis of economic exchange. The role of capital in the economy has increased. In Sweden, the ratio of national wealth to national income more than doubled in only twenty years since the 1990s. The political landscape has also changed. In Sweden, one of the most notable changes was the cessation of the long-standing Social Democratic dominance in the mid-2000s.[1]

[1] Overviews of the Swedish economic, political and institutional changes that have taken place since the early 1990s can be found in, for example, Lindbeck (1997), Sørensen (2010) and Bergh (2014). The evolution of Swedish national wealth is studied by Waldenström (2016, 2017).

The Swedish tax system has also undergone changes. A series of labor tax reductions in the form of earned income tax credits have received the most public attention, but capital taxation has also changed substantially, receiving much less notice. The property tax was sharply cut in the late 2000s, which resulted in falling revenues despite rising house values and increasing tax revenues in most other OECD countries. Taxes on household net wealth and inheritance and gifts were abolished altogether within three years in the mid-2000s. Capital income from stocks and mutual funds are now much less taxed after the recent introduction of a special savings account, spurring a rapid adoption in the population. The corporate tax has been lowered in several steps, paving the way for other Scandinavian countries to do the same. It is noteworthy that these capital tax reductions have occurred while asset prices have soared throughout the industrialized world, including Sweden. The ratio of capital tax revenues to national income has remained stable, but the ratio of capital taxes to the private wealth stock has dropped by half since the 1990s.

This paper offers a comprehensive analysis of capital taxation in advanced economies. We synthesize the existing theoretical literature, present facts about the capital stock and its distribution, review current capital taxation practices and empirical findings of its effects on economic activity, examine the political feasibility of capital taxation and, finally, offer practical recommendations for policy. Focus is placed on the Swedish experience, a deliberate choice since it allows us to take a broad analytical approach.[2] However, we present cross-country comparisons and international references in order to highlight general patterns and results.

We make several specific contributions to the literature. First, we provide a comprehensive examination of the current theoretical literature on capital taxation. Starting in the modern optimal tax literature, we ask what role taxes on capital and capital income should play in an economy where labor income is subject to progressive income taxation. At the core of the analysis lies an equity-efficiency trade-off. Taxes help finance the public sector and redistribution but have harmful effects on economic activity. In our view, the Nordic dual income tax, which taxes labor income according to a nonlinear progressive tax schedule and capital income according to a proportional rate, is a constructive way to strike a balance between an optimal and administratively feasible tax system. With the "Nordic" model of tax systems in mind, we discuss the desirability of complementing the tax system with wealth taxation,

[2] Our study builds in part on the Swedish policy report Waldenström, Bastani and Hansson (2018).

property taxation, inheritance taxation and corporate income taxation, and how these taxes should be designed. In this way, we add a new angle to the discussion in Piketty (2014) and Atkinson (2015).

Second, we present a set of empirical facts, some newly made for this study, about the size, the composition and the distribution of private wealth in Sweden. Among the new evidence is a documentation of correlations between labor income and different forms of capital and capital income. These correlations are interesting from an optimal tax perspective as they are suggestive of a robust relationship between the ability to generate labor income and the ability to generate capital income, providing support in favor of capital income taxation. Furthermore, we present new facts about the Swedish wealth distribution, specifically the status of the very top based on a newly assembled data set of Swedish billionaires. The distribution of capital has not played a prominent role in traditional theories of optimal capital taxation, but some recent studies highlight the potentially adverse effects of a skewed wealth distribution (Saez and Stantcheva 2017).

Third, we present the first results of a newly conducted tax attitude survey targeting a large and representative sample of the Swedish population. The survey allows us to investigate details in the popular support for different forms of capital taxation, shedding light on the political feasibility of capital taxation. This is a question that has been rather neglected by the previous literature on optimal capital taxation. In practice, however, the social acceptance of taxation matters greatly for how policymakers choose to design taxes in practice.

The rest of the paper is organized as follows. Section 2 reviews the theoretical literature on optimal capital taxation and the main arguments against and in favor of the taxation of capital. Section 3 describes the evolution of the stock of capital and its distribution, distinguishing between inequality of outcome and inequality of opportunity. Section 4 describes how capital is taxed today in Sweden and in other countries, and how different types of capital taxes affect economic activity according to the recent empirical literature. Section 5 discusses international perspectives of capital taxation, with a focus on the role of hidden offshore wealth and information exchange agreements. Section 6 examines the political feasibility of capital taxation by presenting the results from a unique attitude survey among Swedish households containing specific questions about different types of capital taxes. Finally, section 7 offers a concluding discussion, delivering a number of concrete policy recommendations, and discusses limitations and ideas for future research.

2. Should capital be taxed? Theoretical perspectives

In this section, we discuss the current theoretical research on the subject of capital taxation. The purpose is to provide a unified discussion about the optimal taxation of capital with an eye towards practical policy recommendations. The survey complements earlier articles on the connection between optimal tax theory and tax policy, such as Mankiw, Weinzerl and Yagan (2009), Banks and Diamond (2010), Diamond and Saez (2013) and Jacobs (2013).

A persistent feature of the economy is that capital income is more unevenly distributed than labor income. Thus, from a purely distributional point of view, capital taxes appear desirable as instruments to combat inequality. The relevant question, however, is to which extent capital taxation enables the tax system as a whole to more efficiently raise tax revenue and achieve distributional objectives. Our discussion about the optimal taxation of capital will focus mainly on the desirability of capital taxation in economies where labor income is already subject to progressive income taxation. As explained below, whether the government is assumed to employ a linear or a nonlinear tax on labor income plays a key role in determining the desirability of capital income taxation.

To approach the question of the most desirable way to tax capital, a framework for the analysis is needed that specifies the objective of tax policy as well as the relevant constraints facing the policymaker. Most of our discussion will be based on the modern approach to optimal taxation, initiated by Mirrlees (1971), where the government balances the gains from redistribution and the financing of several private and public goods, with the harmful effects of taxes on economic activity. The normative assumption is that the government strives to equalize differences in economic outcomes between individuals with different skills/capacities to earn income. If the government could observe each individual's skill level, the tax planner could assign each individual a tax or transfer depending on their unique personal capacity to earn income. Such a hypothetical tax system would fulfill all of society's distributional objectives, whatever those may be, without disrupting economic activity. Individual economic circumstances are not, however, observable by the government and individuals have no incentives to truthfully reveal them. For this reason, taxes must be based on observable characteristics and economic quantities, such as income or wealth. To the extent these quantities can be manipulated by individuals, taxes distort economic activity. For example, income is the result of a combination of skill and effort. An efficient tax system encourages individuals to exert effort

according to their abilities, while discouraging high skill individuals to reduce efforts in order to replicate the income of low-skill individuals and thereby qualify for a lower tax burden.

While the effects of taxes on individual behavior are quantifiable through empirical studies, and the distribution of earning ability, at least indirectly, can be recovered from observable data, the value to society of the services provided by the public sector must be specified by the researcher. The most common approach is to assume that the government maximizes a social welfare function describing how the well-being of different individuals should be measured and compared. Researchers often compute optimal policies under different social welfare functions with the hope of identifying desirable features of tax systems that are fairly robust with respect to assumptions regarding the value of redistribution and public services.[3]

The original Mirrlees (1971) model was static. However, subsequent contributions have also analyzed richer, multi-period, Mirrleesian economies. In such models, researchers need to specify how individual skills evolve over time. A common approach is to view individual skills as partially pre-determined (depending for example on inherited traits, the childhood environment, access to education etc.), partially evolving over time (as a consequence of circumstances, such as luck, and health conditions), and partially being the result of economic choices (such as the investment in education, on-the-job training etc.). This implies that, at any point in time, the distribution of economic outcomes depends on the initial heterogeneity in the economy (what individuals are born with), current and past realizations of economic shocks as well as individuals' past economic choices.[4]

2.1 Early vs. modern approaches to analyze capital taxation

In the early macroeconomic models used to study optimal capital taxation, the analysis centered on the dynamic decisions of a representative individual, focusing purely on the efficiency properties of a tax system that raises a given amount of revenue. In these models, distributional concerns were absent. At the same time, introducing heterogeneity in terms of skills, as

[3] See Bastani and Lundberg (2017) for a comprehensive analysis of the implicit social welfare weights inherent in Swedish labor income taxation 1971–2012, assuming taxes have been set optimally.

[4] The underlying reasons for why skills differ, matter for the interpretation of government interventions to reduce inequality. The extent progressive income taxation can be regarded as redistribution and the extent it can be regarded as insurance particularly carry weight in political discussions about the design of the tax system. In practice, making a distinction between redistribution and social insurance is difficult as it is hard for an empirical researcher to assess whether the inequality in outcomes that is observed in the data is the result of choices, pre-determined characteristics, or chance (good or bad luck).

in the Mirrlees (1971) framework, did not appear to change the result that capital taxation should not be taxed, at least not in the simple setting of Atkinson and Stiglitz (1976).

Today, these models serve as important theoretical benchmarks. If all inequality in capital income originates from inequality in labor income (because of differences in work ability), it is perhaps not surprising to find an unimportant role for capital income taxation in the optimal tax system. The opposite extreme would be a situation where all inequality derived from inequality in capital income. In such a situation, the only way to achieve redistribution would be to tax capital income.

The major development in the recent research literature is that researchers now are beginning to explore the implications of individual heterogeneity beyond differences in labor market ability for the design of optimal tax systems.[5] The most attractive reason to tax capital income, in our view, is the regular empirical finding that there is substantial heterogeneity in capital income conditional on labor income. This suggests that capital income taxes can complement labor income taxes in achieving redistribution. The normative implications of this heterogeneity depend on where the inequality in capital income derives from. The literature has recently highlighted heterogeneity in bequest behavior (Farhi and Werning 2013a), in the likelihood to receive and give bequests (Piketty and Saez 2013), and in investment returns (Kristjánsson 2016, Jacobs et al. 2018). All these heterogeneities can lead to a role for positive optimal capital income taxation.[6]

2.2 What is capital?

A tax on capital refers to any tax on the return to savings, capital gains, dividend income, firms' profits (corporate taxation), property taxation, inheritance/estate taxation and wealth taxation. Sometimes it is useful to divide these taxes into two categories depending on whether or not the tax is levied on an income stream (flow taxation) or on the stock of capital. In many cases, it does not matter from an economic perspective whether the stock or the flow is taxed. For example, if the annual rate of return on an investment is 4 percent, an annual

[5] The fact that a vast majority of studies of optimal capital taxation consider models with a single dimensional heterogeneity is not because scholars consider this to be the most appropriate assumption, but rather that there are severe mathematical difficulties involved in solving for optimal income taxes in economies with multidimensional taxpayer heterogeneity. A small, recent optimal tax literature studies the implications of multidimensional heterogeneity for optimal capital taxation, but under restrictive assumptions, such as by restricting taxes to be linear.

[6] Another type of heterogeneity stems from life-cycle considerations in overlapping generations models, as individuals in different ages have different capital income (even conditional on having the same labor income). In these models, capital income taxation becomes a substitute for age dependent taxation.

wealth tax of 1 percent is equivalent to a capital income tax of 25 percent (in terms of the total annual tax burden). In most theoretical models, taxes on the stock and the flow are equivalent. However, as will be discussed briefly below, if rates of return differ across individuals, or are uncertain, taxes on the stock of capital and capital income taxes are no longer equivalent. In addition, taxes on the stock of capital may give rise to liquidity problems.

Capital is necessary for investment and as a vehicle for individuals to transfer resources across time periods. In addition, capital goods can provide consumption benefits. An investment in a house is a way to transfer resources into the future (savings) but the house also provides consumption benefits if it serves as a dwelling for its owner. Similarly, art, stamp collections, or rare artifacts provide the owner with utility in addition to serving as investment vehicles. Moreover, simply holding wealth (without it necessarily being invested in a particular capital good) may provide individuals with utility due to the power and influence it may convey.[7]

2.3 Why capital income not should be taxed

One way to approach the issue of capital taxation is to study a neoclassical growth model where an infinitely lived representative individual supplies labor supply in each time period and transfers resources across time periods through savings in order to smooth consumption.[8] The savings of the representative individual finances the investments in the economy and the optimal tax problem is to design taxes on labor and capital income in every time period in order to reach a given amount of tax revenue in the most efficient way (maximizing the welfare of the representative individual). Since the model does not specify what the tax revenue should be used for, the theory does not address the possibility for capital taxation to contribute to a reduction in income inequality. In this research tradition, Chamley (1986) and Judd (1985) argue that the tax on capital should be zero in the long run. The intuition is that taxing capital today is the same as taxing all productive uses of this capital in the future. This implies exponentially growing distortions of investment over time. The conclusion is therefore that capital income should not be taxed. To raise the desired tax revenue, the government should only use taxes on labor, as they affect production today and have no permanent effect on the size of the capital stock.

[7] This is one reason for putting wealth in the utility function; see Saez and Stantcheva (2017).
[8] The infinite horizon of the representative individual can be interpreted as an infinite dynasty where different generations are perfectly linked through inheritance.

The Chamley-Judd analysis has a simple and powerful logic, and perhaps this can explain why the result has been so influential. However, the analysis, while serving as a useful benchmark, has several important shortcomings, as we will elaborate on below.

It is well-known that capital income taxation becomes very distortionary over long time horizons. The reason is that the interest that is earned on the saving becomes more and more important to finance future consumption the further one looks into the future and it is the interest income that is taxed through capital income taxation. In the Chamley-Judd setup, individuals have unrealistic infinite planning horizons, which implies that this effect becomes very strong.[9] The unrealistic infinite planning horizons reflect the decisions applying for a dynasty, where different generations are perfectly connected through altruistic bequests. This neglects the inequality that is created over time between individuals who receive and individuals who do not receive inheritances (which we come back to below).[10]

A different departure point to study the taxation of capital income are models building on Mirrlees (1971) where individuals differ in their ability to generate labor income and tax revenue is used to finance public expenditure and redistribution. In contrast to the Ramsey-type optimal tax problem analyzed by Chamley-Judd, this class of models generates an equity-efficiency trade-off. The question then becomes: Does the taxation of capital income enable redistribution at a lower efficiency cost?

Atkinson and Stiglitz (1976), henceforth AS, one of the most influential studies in public finance have contributed to the view that capital income should not be taxed. Their fundamental contribution was to provide conditions under which it is more efficient to use progressive income taxation to raise revenue and redistribute, rather than employing differentiated commodity taxation, since this avoids distorting the consumption choices of individuals. The AS result has subsequently been used to argue that capital income should not be taxed, since con-

[9] This is also the reason why subsequent studies have found that the zero capital income tax result is surprisingly robust and that only weak assumptions regarding the structure of individuals' preferences are needed (Atkeson, Chari and Kehoe 1999). However, the general applicability of the result has been questioned on mathematical grounds by Straub and Werning (2014). See also Jacobs and Rusu (2017).

[10] However, it should be noted that even for modest planning horizons, the compounding effect of capital income taxation can become quite strong. This is considered by some as a reason to tax pension savings and other long-term investments more leniently. Diamond (2009) presents an illustrative example highlighting that a 30 percent tax on capital income only imposes a wedge of 3 percent between consumption today and consumption tomorrow (if the return is 10 percent) but that the tax wedge becomes 67 percent between consumption today and 40 years into the future. This should be compared with a 30 percent income tax, which implies a wedge of 30 percent between income today and consumption today.

sumption in different time periods can be viewed as different commodities. While intuitively appealing, the result is not very robust to perturbations in the modelling framework.

First of all, AS analyzed a model where individuals live for two time periods, and work only during the first (later studies have extended the analysis to life spans over several periods). A zero tax on capital income is then optimal only if the labor income tax is allowed to be a complicated function of annual and historical labor incomes. Such labor income taxation does not exist in practice, restricting the policy relevance of the application of the AS result to the issue of optimal capital income taxation.

Second, and perhaps most importantly, a fundamental restriction of the AS framework is that individuals are assumed to differ only along a single dimension. This implies that all inequality in capital income originates from individuals' labor incomes (and labor earning abilities, in particular). Later in this section, we discuss how heterogeneity in additional dimensions, for example, in the form of inheritances received or differences in returns to investment, creates robust reasons to tax capital income.[11]

2.4 Robust reasons to tax capital and capital income

2.4.1 The accumulation of human capital in relation to physical capital

One of the most important objections to the Chamley-Judd analysis concerns its assumption that only capital accumulates over time. In economies with progressive income taxation, an equally serious concern should be to provide incentives for individuals to invest in education, exert effort on the job, and advance in their careers. That is, the accumulation of human capital can be just as important as the accumulation of physical capital. Jacobs and Bovenberg (2010) analyze the role of human capital accumulation for the desirability of taxing capital income. They find that a positive tax on capital income serves to alleviate the distortions of the labor tax on human capital accumulation. Since that study, there has been a surge of papers emphasizing the importance of taking human capital accumulation into account in optimal tax analysis. Stantcheva (2017) is a recent contribution that further discusses this strand of the literature.

[11] Another case where the AS results break down, is when investment affects the remuneration of low and high skilled labor differently. Pirttilä and Tuomala (2001) show that if an increase in investment leads to a decrease in the relative wage of low-income households, then a positive tax on capital income is desirable. The reason is that discouraging savings through capital income taxation reduces wage dispersion, which in turn makes progressive labor income taxation more efficient.

2.4.2 The correlation between capital and ability and heterogeneous returns

As we have already mentioned, the workhorse models of optimal taxation build on the assumption that individuals only differ with respect to their earnings abilities. All capital is saved labor income, and differences in capital between individuals are therefore a result of difference in skill and effort in the labor market. Some recent studies shed light on the fact that individuals differ in other important dimensions, which may affect the distribution of wealth. One example is that individuals can be differently skilled in seeking a high return on their investments, and another is that individuals may differ in how they value future consumption (for example, during retirement). If such characteristics are correlated with individuals' earnings abilities, that would create a robust relationship between capital income and skill among individuals with similar labor incomes. Taxes on capital thereby become useful as indirect means to tax people with high ability.[12]

Empirical studies show that high-income people save more than low-income people do.[13] One explanation could be that low- and high-*skill* individuals differ in their savings behavior. If high-skill individuals save more, it means that the government can, through capital income taxation, impose different tax burdens on low- and high-skill individuals, even if they report the same labor income. An increase in capital income taxation coupled with a reduction in the labor income tax thereby has the potential to raise the overall efficiency of the tax system.[14] The reason is that in this case individuals' capital incomes are informative about individuals underlying earnings individuals, and it is precisely the difficulty of taxing ability, which is the reason why the government has to use distortionary income taxation.[15] Of course, one can question the fairness of imposing a different tax treatment depending on when individuals prefer to consume their income. Indeed, some economists argue that only differences in economic circumstances should affect the design of income taxation, and that individuals who have the same labor income should face the same tax burden. However, if differences in savings behavior would be the result of individual mistakes (for example, failure to estimate how

[12] Banks and Diamond (2010), one of the background chapters to the Mirrlees Review, consider this to be one of the most compelling reasons to tax savings.
[13] See, for example, Dynan, Skinner and Zeldes (2004).
[14] See Saez (2002), Diamond and Spinnewijn (2011) and Golosov et al. (2013).
[15] Gordon and Kopczuk (2014) show in a US study that individuals who have high capital income or more valuable properties tend to have higher wages. To the extent wages approximate earnings abilities, this supports the notion that taxes on capital can serve as indirect ways to tax individuals with high skill. We show in section 3 that the situation seems to be similar in Sweden.

much one values consumption in the future, for example at retirement), that would perhaps make it easier to motivate a differential tax treatment.[16]

In traditional models, individuals are assumed to earn the same risk-adjusted return on their investments. There is however a growing empirical literature documenting sizable differences in returns across individuals.[17] If individuals with high labor earnings ability also have higher ability to generate a high return on their investment, because of access to social networks, information, or due to the economies of scale, it is in general optimal to tax capital income.[18] There is also a potential fairness aspect here since the profitability of an investment is not only determined by hard work but can also depend on luck or circumstance.

2.4.3 The role of inheritance

What are the implications of inheritance for the optimal taxation of capital?[19] One way to analyze this question is to focus on two generations where all capital (and inheritance) derives from the work efforts of the first generation. In such a framework, Farhi and Werning (2010) show that if one takes into account the welfare of the parents (those who give bequests) but not the welfare of the children (those who receive bequests) then the inheritance tax should be zero, essentially in line with the AS theorem. When also taking into account the welfare of those who receive bequests, then they find that it is optimal with a progressive (negative) inheritance tax which subsidizes inheritances, but with a degree of subsidization that decreases in the size of the inheritance.[20] If it is not possible to subsidize inheritance for some exogenous reason, the degree of subsidization will be zero for all but the largest inheritances, which should be taxed. The usefulness of the progressive estate tax is that it equalizes the bequests that people receive, which raises the welfare of the second generation.

The above model shares a similar limitation to the models that argued for zero capital income taxes, namely, that individuals only differ in a single dimension (in terms of their earnings

[16] The issue of the treatment of pension savings in the tax system when individuals are subjective to self-control problems or cognitive biases, and the appropriate role of the government to deal with such issues is an important topic. See Moser and Silva (2017) and Hosseini and Shourideh (2017) for two recent contributions.
[17] See Bach, Calvet and Sodini (2017).
[18] Individuals with high skill could achieve a higher return either by redirecting some of their time from labor supply into activities that raise their return on investment or individuals with high earnings ability could simply be assumed to be inherently better investors.
[19] The discussion here complements earlier surveys on the topic, such as Cremer and Pestieau (2011).
[20] Since giving bequests can be viewed as consumption, the AS theorem suggests bequests should be taxed to ensure uniform taxation of commodities. The benefit to the recipient is an externality, and therefore motivates to tax bequests less than other consumption goods. However, the 'double-dividend' motivation for subsidizing bequests has recently been criticized by Boadway and Cuff (2015).

ability). Cremer, Pestieau and Rochet (2003) relax this assumption and assume that individuals have the same preference for saving, but instead differ in terms of their endowments/inheritance (assumed to be exogenous). If there is a positive correlation between inheritance and skill (for instance, due to a genetic correlation in skill across time) this implies that two individuals with the same labor income, but with different skills, also differ in terms of the amount they can consume because of their inheritance. This implies that these two individuals have different demand functions for goods (including future consumption) and provides a role for taxing capital income. The arguments rely on the government not being able to observe inheritance; otherwise, all differences in initial endowments could be eliminated through confiscatory taxation.[21]

Farhi and Werning (2013a) build upon Farhi and Werning (2010) and highlight the fact that parents differ in terms of how altruistic they are towards their children. This creates inequality between children with parents of similar economic background, but where the parents differ in their how much they bequeath to their children. The optimal estate tax takes into account that inheritance taxation discourages labor supply activity of the parents, while it levels the playing field of the child generation. In comparison to their earlier study, Farhi and Werning (2013a) find it can be optimal to tax inheritance if the principle of equality of opportunity carries sufficient weight in the objective function of the tax designer, which they argue could be an explanation why inheritance taxation exists in many countries.

A restrictive assumption in the analysis of Farhi and Werning (2010, 2013a) is that they examine a two-period model, with one generation of parents who give bequests and one generation of children who only consume. Piketty and Saez (2013) study a more realistic setup where each generation both gives and receives bequests. This implies that those who bequeath to a greater extent are those who have inherited in the past. In addition, their analysis takes into account a correlation in earnings abilities across generations, which implies that those who receive large inheritances are more likely to also be individuals with a high earnings ability. Taken together, these aspects create stronger reasons to tax inheritance.[22] Piketty and Saez present simulations where inheritance taxes up to 50-60 percent are optimal and argue that their results can explain why many countries tax capital at the levels they do today. The underlying reason for capital taxation in their model is the presence of inheritance, but

[21] See also Brunner and Pech (2012) for an extension.

[22] For mathematical reasons, Piketty and Saez restrict attention to a linear inheritance tax. Their analysis is therefore not informative about the structure of an optimal progressive inheritance tax, analyzed by Farhi and Werning.

the authors argue that not all capital taxes need to be inheritance taxes. Their optimal tax structure can be interpreted as a combination of inheritance taxes, taxes on lifetime wealth (wealth taxes, property taxes) and taxes on capital income.[23]

2.4.4 "Normal" and "Excess" returns

The literature on optimal income taxation has almost exclusively analyzed how the so-called "normal" return to savings should be taxed (such as the return to an average investment or the yield of a government bond). The theoretical discussion about the undesirability or desirability to tax capital income normally refers to the taxation of the normal rate of return. In practice, returns are heterogeneous across individuals. Returns greater than the normal rate are referred to as "excess" returns and can be the result of either factors over which individuals exert control, or factors that individuals cannot affect. In the case these excess returns reflect chance events, it is an excess return, and should be taxed as it causes few distortions. On the other hand, if these excess gains are the result of productive economic activity, the argument to tax excess returns is not as clear.

It is a difficult, but important, empirical exercise to determine to which extent taxing excess returns means capturing economic rents and to which extent it represents a distortionary punishment of skilled investors. The most important difference between taxes on the stock of capital, and capital income taxes is the taxation of excess returns. If the normal return on an investment is 5 percent, a capital income tax of 20 percent is comparable to a wealth tax of 1 percent. However, for individuals who receive a return greater than 5 percent, they will have to pay tax on the excess return under capital income taxation, but not under a wealth tax. If the higher return is a result of luck or circumstance rather than effort, capital income taxes are therefore strictly preferable to wealth taxes.

Most economists agree that it is desirable to tax excess returns. This view is also reflected in the Mirrlees Review (Mirrlees et al. 2011). The academic discussion has rather centered on the whether or not to tax the normal return to savings. It is worth noticing that the Mirrlees-report recommends not taxing the normal return to savings, which therefore goes against their

[23] De Nardi and Yang (2016) quantitatively analyze inheritance taxation in the US. In their model, individuals are born with different circumstances, both with respect to inheritance and in how much their parents have invested in their human capital (alternatively, allowing for a genetic correlation in ability across generations). They find that in the long-run equilibrium, estate taxes of inheritances over a certain threshold have small or insignificant effects on the capital accumulation of the economy, but can deliver large welfare gains for a newborn who do not know in which economic environment they will grow up, while generating large welfare losses for the very rich.

background report, Banks and Diamond (2010). The main argument is that the taxation of the normal rate of return violates principles of neutrality in the tax system.[24] However, the purpose of the tax system is not to achieve neutrality, but to maximize social welfare. Thus, capital income taxation must be judged by how it interacts with the desire to redistribute income at the lowest efficiency cost. In light of this, there are good reasons to tax both the normal and the excess return to savings.

2.4.5 The role for capital income taxation in lifecycle models

In the Chamley-Judd analysis, a key reason for the zero capital income tax results is that individuals were assumed to have infinite planning horizons. Subsequent literature, especially papers investigating the role of capital income taxation with the help of calibrated models, often employ overlapping generations models (OLG) where the conclusions regarding the desirability of capital income taxation are quite different as compared to the infinite-horizon representative-agent model.

Atkinson and Sandmo (1980) is a seminal study of capital taxation in an OLG framework where each generation lives for two periods, working in the first, and being retired in the second. In this setting, they found that it can be desirable to tax capital income for a reason related to the well-known property of OLG models, namely that the economy does not always reach its full production capacity since current generations do not take into account the effects of their savings on future generations (each generation lives for a finite period whereas the economy lives forever). This dynamic inefficiency can effortlessly be corrected if the government is free to issue public debt or is allowed to use age-dependent lump-sum transfers. However, when there are restrictions on the use of such instruments, a positive capital tax can be desirable as it enables redistribution between different generations.

Atkinson and Sandmo demonstrated that a positive tax capital on capital income can be desirable in order to induce agents to save more if the income effect on savings is sufficiently strong. Moreover, a positive capital tax can finance tax reductions on labor, which can be a way to make younger generations save more. At the end of the day, it is however unclear how large of a role intergenerational redistribution issues should play when designing taxes on

[24] Norway allows, since 2006, a tax-free normal rate of return on investments in stocks. According to Sørensen (2005) this system does not distort firm's marginal investment decisions and how these investments are financed within the firm. This conclusion has been criticized by Lindhe and Södersten (2012) who suggest that neutrality of this kind is not fulfilled when the returns to investments largely are determined by international capital markets.

labor and capital. There are other ways to redistribute between generations that are more effective, for example by adjusting the pension system. The Atkinson-Sandmo framework also only considered a model with a representative agent. Later studies have analyzed OLG models with redistribution motives both between and within generations (due to skill heterogeneity), which makes the policy implications of dynamic inefficiency less clear.[25]

In the early public finance papers, it was common to analyze models where individuals work only in the first period of life. The subsequent literature has analyzed the optimal taxation of capital income in lifecycle models where workers work in multiple periods. In such a setting, age-dependent labor income taxes become desirable due to age-specific labor supply behavior.[26] Erosa and Gervais (2002) show that if age dependent labor income taxes are not available, and (realistically) individuals' life-cycle productivity profiles are not flat, positive capital income taxes are desirable because they can serve as a substitute for age dependent labor income taxation. The intuition is that if consumption is a stronger complement to leisure later in life, as compared to earlier in life, it is optimal to tax savings in order to boost labor supply and reduce the distortions associated with labor income taxation. This is reminiscent of the classic result by Corlett and Hague (1953) recommending that goods complementary to leisure should be taxed. However, the reason for a positive tax on capital income in life-cycle models survives even if the utility function is weakly separable between consumption and leisure, making it an inherently dynamic result. [27] The life-cycle elements in labor supply is one of the essential features of the economy analyzed by Conesa, Kitao and Krueger (2009), who find a positive and sizable optimal tax on capital income in their simulations calibrated to fit the US economy.

The early literature analyzing capital income taxation in dynamic frameworks considered economies with a representative individual and with a focus on linear (proportional) tax instruments (and in the case of Erosa and Gervais 2002, a representative individual within each generation).[28] The following literature has analyzed richer dynamic models where agents are heterogeneous in skills, work in multiple periods, and face deterministic or stochastic productivity profiles over their life cycles. The goal of the social planner in these settings is to

[25] See Conesa, Kitao and Krueger (2009), Bastani, Blomquist and Micheletto (2013) and also Auerbach (2015).
[26] These effects are present in any life-cycle model, not only models where generations overlap (OLG).
[27] See propositions 3.2 and 3.3 in Erosa and Gervais (2002).
[28] There are some exceptions, such as the paper by Ordover and Phelps (1979), that considered the optimal non-linear taxation of labor and capital income in an OLG model where agents are heterogeneous in skills, as in Mirrlees (1971). However, in these papers, individuals typically supplied labor in the first period and were retired in the second.

achieve redistribution or insurance at the lowest efficiency cost. These models imply that, in general, it is optimal to tax savings since individuals tend to react to progressive income taxation by working less and consuming their savings. This result is similar to the motivation for taxing savings that occur in life-cycles models of the type studied by Erosa and Gervais (2002). Here, consumption late in the life cycle is more complementary to leisure than is consumption early in the life cycle. However, a key difference is that the taxation of savings in dynamic Mirrlees models arises from the desire to redistribute income (or provide insurance) through nonlinear income taxation and the taxation of savings enables to counteract the distortions associated with income taxation and thereby perform redistribution at a lower efficiency cost. To see this most clearly, consider the case of a high wage thirty-year-old. If this person anticipates having a high wage also when in his/her fifties, he/she might choose to work less when in his/her fifties. The benefit of doing so would be that, when this person is in his/her fifties and is working less, he/she would have the same income as a low-wage person working full time and, if there is progressive income taxation, qualify for a lower tax burden. However, the high-wage person would save a larger amount as compared to the low wage person, and therefore be able to consume more. Taxing savings implies that such reduction in labor supply in response to progressive income taxation becomes less attractive.

The desirability of taxing savings to improve the efficiency of the tax system crucially depends on the sophistication of the income tax available to the government. If the government could impose different taxes on individuals in different ages then high wage individuals in their fifties could be provided with age-specific incentives to supply high amounts of labor without the need to disrupt the incentives of thirty-year olds. However, in contrast to the analysis of optimal capital taxation in representative agent models, the presence of within-generation heterogeneity makes it desirable to tax capital income even if the labor income tax is allowed to be age dependent. If the labor income tax is even more sophisticated, however, so that it can be both age and *history* dependent (depending on the present and past labor incomes of an individual) then the gains of taxing savings to combat labor income tax distortions becomes smaller or disappear completely.[29] In the above example, an individual supplying a high income when young could be rewarded if he/she continues to earn a high income when middle-aged if the income tax is history dependent, mitigating the adverse effects of savings on future labor supply.

[29] In fact, with deterministic productivity profiles, zero taxation of capital income is optimal if the income tax is history dependent.

2.4.6 The role of capital income taxation in models with uncertainty

A well-known situation, in which the models of Atkinson-Stiglitz and Chamley-Judd lead to a positive capital income tax, is when future earnings are uncertain. In a perfect market, individuals would be able to handle the prospect of an uncertain income by borrowing in periods with low income and pay back these loans when incomes have recovered. The problem is that the market is not perfect, individuals cannot always borrow, and there are many risks that are difficult or impossible for individuals to insure themselves against. This can give rise to precautionary savings, where individuals save in periods with high income to secure their consumption in periods with (unexpected) low incomes. In such a situation, individuals will save more as compared to situation where they are informed about their future income earnings capacity.

Aiyagari (1994) considered an infinite-horizon model where individuals face uncertainty about their future income, the government optimizes a proportional income tax, and individuals only decide about how much they want to consume in each time period. In this setting, Aiyagari shows that precautionary savings can motivate the taxation of savings in combination with reductions in labor income taxation.[30] This achieves redistribution between those who are borrowing constrained and those who are not through the tax system. In practice, it means that the government helps to provide the insurance that the market fails to provide.[31]

The distinction whether or not individuals face deterministic or stochastic productivity profiles over their life cycle also matters for the desirability to tax savings in models analyzing *nonlinear* income tax systems. If individuals face uncertainty regarding their future productivity, individuals might self-insure through their savings. This precautionary motive to save implies a negative impact on labor supply. The reason is that individuals tend to save "too much" (depending on the third derivative of the utility function) and will bring the same amount of savings into the future, irrespectively of if they realize a high or a low productivity in the future, which has a negative effect on labor supply in both states. The provision of insurance over the life cycle in response to uncertain productivity is the focus of the so-called *New Dynamic Public Finance* literature (see Golosov et al. 2006).[32] Dynamic uncertainty seems, however, to be of secondary importance to the taxation of capital income, as suggested by Farhi and Werning (2013b) and Bastani, Blomquist and Micheletto (2013).

[30] See also Chamley (2001).
[31] Borrowing constraints are common components of modern models used to analyze capital income taxation, such as Conesa et al. (2009).
[32] Two of the most important papers in this literature are Albanesi and Sleet (2006) and Golosov et al. (2016).

2.4.7 The Nordic Dual Income Tax

The previous discussions suggest that the ideal tax system is likely to be a fully nonlinear function of both labor and capital income. In other words, individuals with low and high labor income should face different capital income taxes and optimal capital income taxes are likely to be progressive, namely, the capital income tax rate is different for individuals with low and high levels of capital income. In practice, tax systems do not take this advanced form. One reason is the problems of tax arbitrage. If one tried to tax savings through a nonlinear function, there would be large incentives for someone with a high marginal tax on savings to ask a friend or a relative with a lower marginal tax on savings to save for him. This is essentially the same argument that prevents the nonlinear taxation of commodities, namely, the difficulties for the government to observe and verify personal consumption levels.

The US and many other countries adopt some form of the so-called *comprehensive income tax* where the sum of labor and capital income is taxed together according to a nonlinear tax schedule.[33] A benefit of the comprehensive income tax is that it taxes all sources of income, at the margin, at the same rate, which reduces incentives for tax planning. However, according to optimal tax principles, taxing labor and capital income at the same rate is sub-optimal.

A more flexible system is the Nordic so-called *Dual Income Tax*, which combines the progressive taxation of labor income with the proportional taxation of capital income.[34] From an optimal tax perspective, such a system has the desirable feature that the capital income tax rate and the labor income tax rate can be made different for high-income earners. At the same time, an optimal dual income tax must take into account the possibility for individuals to shift between the labor and capital income tax bases. The latter is usually presented as an argument in favor of not making the difference between the top marginal labor income tax rate and the proportional capital income tax rate too large.[35]

[33] Such systems are based on the notion that it is the sum of all incomes that is relevant to the well-being of individuals. In addition, having individuals with the same total income pay the same income tax can be argued to respect the principle of horizontal equity. In practice, however, the comprehensive income measure that is available to tax authorities is seldom a complete account of all the sources of income that are relevant to an individuals' welfare, as there are sources of income that are not observable, such as the intra-family transfers and unrealized capital gains.

[34] The progressive taxation of labor income is administratively feasible by virtue of the now widespread use of third-party reporting of income to the tax authority (Kleven et al. 2011).

[35] See Christiansen and Tuomala (2008) for a theoretical argument in favor of taxing capital income due to the possibilities for income shifting. See also Selin and Simula (2017) for a recent analysis of the social welfare effects of income shifting.

3. Distributional aspects of capital income and wealth

There are several aspects of capital income and wealth that are relevant to our understanding of the role of capital taxation in advanced economies. There are many different types of capital; some are linked to property ownership, others to financial investments. Some fortunes are the result of hard and successful work, while others emerge by chance (such as receiving an inheritance). To understand the desirability of capital taxation, it is crucial how capital has been created, how sensitive it is to taxation, and how it contributes to individuals' total socio-economic status.

In section 2, we argued that wealth and capital income should be taxed to the extent that it enables the tax system to better target individuals with high earnings ability, thereby serving as an efficient complement to progressive labor income taxation. There can also be direct equity consequences of the distribution of wealth. Individuals might value wealth *per se* and not only due to the consumption flow it provides. For example, wealth can provide a sense of security, social status, power and influence as well as opportunities to engage in tax evasion and tax avoidance. The distribution of wealth has also efficiency consequences. A high concentration of wealth can enable large investments but can also lead to a concentration of power, creating distortions in the political system. In sum, there are many reasons to empirically analyze the distribution of different types of capital income and wealth.

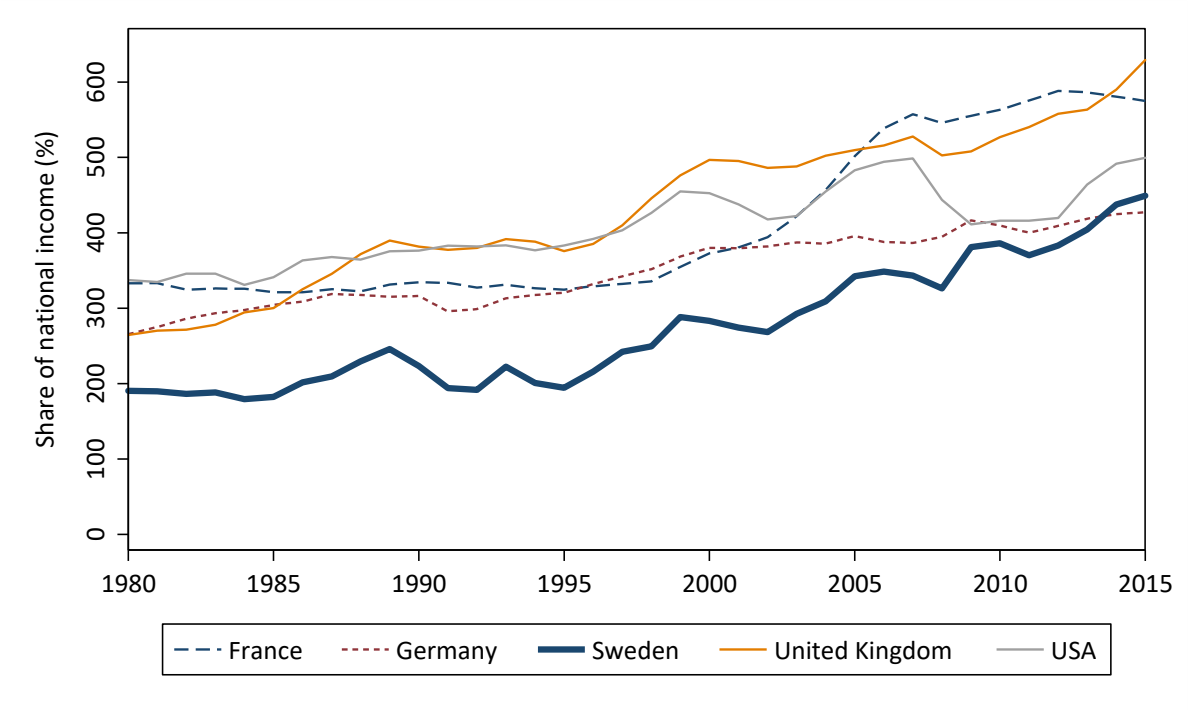
3.1 The extent of capital

We measure the capital stock as the sum of asset values less the value of liabilities.[36] Since this is also the standard definition of wealth, we will use the concepts of "wealth" and "capital" interchangeably. Figure 3.1 displays the total value of net private wealth as a share of national income sine 1980 in five countries: Sweden, France, Germany, United Kingdom and the US. The figure shows that the relative value of capital was smaller in Sweden during the 1980s and early 1990s, with a ratio of approximately 200 percent compared to 300–400 percent in the other countries. However, from the mid-1990s the Swedish ratio grew rapidly, more than doubled in 20 years, catching up with other countries. Noteworthy is that this capi-

[36] There are, of course, other ways to measure the size of the capital stock in Sweden, but they generally provide a similar picture. The book value of assets in the business sector, that is, the total of capital in the form of plant and machinery and financial assets, currently corresponds to eleven times national income, which is a triple since 1980 (Waldenström 2017). Venture capital and private equity have also grown much in Sweden. A recent overview of the private equity market shows that Sweden has been exceptionally successful in attracting and conveying this form of venture capital. Today, Sweden is one of Europe's largest and most competitive private equity markets, as big as the UK and four times the average in the other Nordic countries.

tal growth was not a result of a transfer of public funds to the private sector, which occurred in many other countries.[37]

Figure 3.1: Private wealth-income ratios in five countries (% of national income)



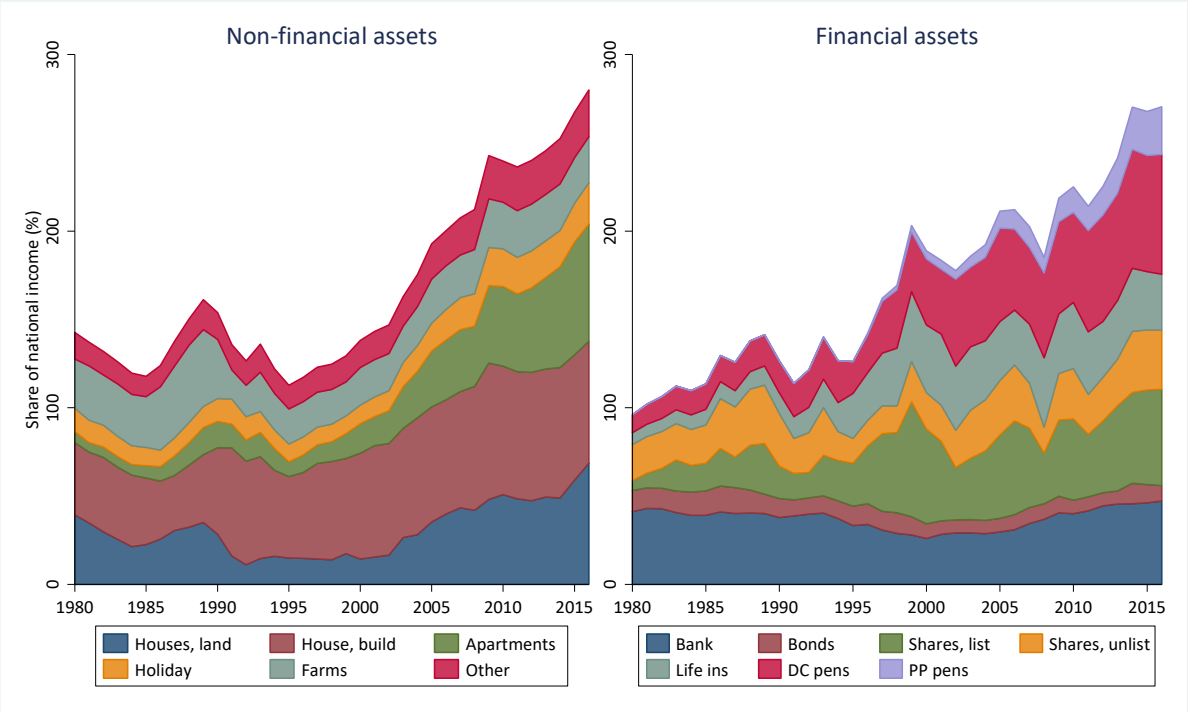
Source: SNWD for Sweden, and World Wealth and Income Database (WID) for the other countries.

Next, we take a closer look at the composition of wealth between non-financial and financial assets, shown in Figure 3.2. The figure reflects the fact that the housing market boomed in the 1980s following Sweden's credit market deregulation, but that this boom is swamped by the subsequent increase after 1995, when non-financial assets almost tripled as share of national income. During this period, the value of land increased the most and doubled their share of the total value of real estate, from one fifth to half. This development is not explained by increases in the housing stock. Instead, the main factor is rising house prices: prices of single-family homes increased fourfold and condominium apartments increased eightfold. Sweden thus followed an international trend of rising house prices, but when comparing with other countries it appears as if Sweden takes a top position in terms of price increases, together with Denmark and Spain (Philiponnet and Turrini 2017).

[37] Alvaredo et al. (2017) documents a shift from public to private wealth in a number of Western economies during the 1980s and 1990s whereas Waldenström (2017) shows how Sweden departed from this general tendency.

Financial asset values also increased remarkably fast since the 1990s. This increase is partly explained by rising values of corporate shares (from 20 to 55 percent of national income), but the biggest reason is the expansion of pension funds that led to a rise in assets from about 20 to 100 percent of national income. While the corporate share appreciation is mainly due to a stock price increase of 300 percent since 1995, the growth in pension capital is largely attributable to new savings.

Figure 3.2: Private wealth composition in Sweden



Note: "Houses" refers to single-family homes. "Apartments" is the value of condominium apartments. "Holiday" denotes all kinds of holiday homes. Shares are stock exchange listed and non-listed. "Life ins" denotes a collection of accounts containing collective and individual insurance savings whereas "DC pens" show the value of funded occupational pension plans and "PP pens" is the publicly run premium pension plan. *Source*: Swedish National Wealth Database.

Pension wealth thus plays a major role in Swedish household portfolios as it does in most industrialized countries. The pension assets referred to here are *funded*, i.e., stored in accounts with individual beneficiaries and typically linked to a defined contribution plan. These pensions are part of the official wealth definition and shown in the figures above. In Sweden, they comprise today half of all financial assets and one third of total net wealth of households. However, the pension system also contains *unfunded* pension assets, which are tied to promises about future income streams but otherwise no legally specified financial claims. Unfunded pension assets are not part of official wealth concepts and therefore left out of most analyses of aggregate or individual wealth. Whether this is the best approach may be dis-

cussed; several studies show how private wealth accumulation tends to be crowded out by unfunded pension schemes (Gale 1988; Chetty et al. 2014). The estimated value of unfunded pension wealth in Sweden is enormous. According to the pension authority, the public pension debt to households is twice as large as all funded pension and life insurance assets and half of total private wealth.

Offshore capital is a specific kind of household asset that matters for the discussion of capital taxation. Capital flight to tax havens has been a controversial issue in rich countries for a long time, and Sweden is no exception. Regardless of how important capital flight is in reality, the international mobility of capital constitutes one of the most important binding restrictions on nation state's ability to tax capital.

The extent of offshore capital owned by Swedish citizens is unknown. There exist some attempts to estimate it, but the results vary and the uncertainty remains large. Roine and Waldenström (2009) presented calculations using two macro-statistical methods, one based on the gap in financial savings between national and financial accounts and the other based on accumulated net errors and omission in the Balance of Payments.[38] Their results pointed to roughly similar levels of about 500 billion kronor (or between five and ten percent of all domestic financial assets). However, later calculations by the same authors showed just how uncertain these estimates were by displaying how they varied with changes in the methods to calculate national income and in the reporting of the financial accounts.[39] A recent study by Alstadsæter, Johannesen and Zucman (2017) uses new information about foreigners' assets on Swiss accounts in 2007 to estimate total foreign capital in all rich economies. Their estimate for Sweden for 2007 is that there is SEK 180 billion in hidden foreign capital, which would amount to approximately 3 percent of households' financial assets. They also use information from Swedish banks about people who have repatriated funds in connection with tax amnesties, and document that these are almost exclusively people who belong to the top of the wealth distribution. This offers hard evidence that the offshore capital primarily refers

[38] The first of these methods was to compare the savings in the national accounts (income minus consumption) and savings in the financial accounts (accumulated household net holdings in financial intermediaries). The accumulated net errors and omissions in the Balance of Payments draws on the assertion that some of the payments for exported goods and services did not return to Sweden and that residual, accumulated over time, could indicate capital flight. Both these methods are well-known since long, used in Sweden by the Swedish Tax Agency and the Swedish Riksbank.

[39] Among other things, the updated savings gap between national and financial accounts showed capital flowing in the opposite direction than expected: into Sweden during the early 2000s, when taxes on inheritance and wealth remained intact, and out from Sweden a few years later when these taxes had disappeared.

to owners belonging to the top of the domestic wealth distribution, which means that domestic inequality is higher than what the official statistics indicate.

3.2 Capital and the inequality of outcome

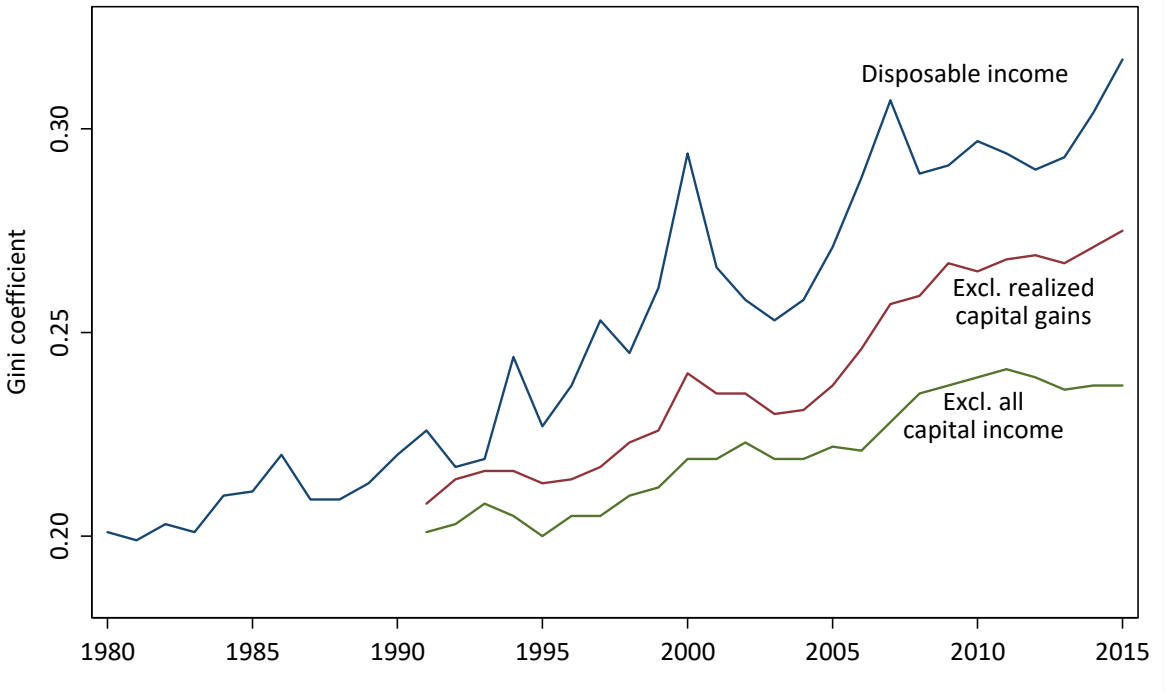
We refer to the cross-sectional dispersion of certain outcomes, such as income or wealth, as inequality of outcome. This inequality concept is arguably the most commonly used in the public debate and also among policymakers and academic scholars. This section outlines some specific dimensions in which wealth holding influences inequality: the inequality of household incomes, the capital share in national income, the inequality of household wealth and the wealth concentration in the top of the wealth distribution.

We begin by showing the evolution of income inequality in Sweden over the past four decades. Figure 3.3 shows the Gini coefficient for disposable household income in three cases: i) when income includes all capital income, ii) when it only includes dividends and interest income but not realized capital gains, and iii) when it excludes all capital income.[40] Two clear results appear. First, capital income increases income equality. When all capital income is deducted, the Gini coefficient decreases by roughly 20 percent, and when we only remove realized capital gains, it drops by about 10 percent. Second, capital income magnifies the increasing trend in income inequality during recent years; the figure shows that about half of the increase since 1995 stems from capital income. In an international perspective, Sweden's level of income equality remains low, as most developed countries score a Gini coefficient between 0.3 and 0.5 depending on income concept and time period. That said, the rate of increase in income inequality in Sweden since 1980 is one of the largest among all countries.[41]

[40] The reason for distinguishing between these different forms of capital income is partly due to Swedish income tax legislation, which does this separation, and partly because they refer to slightly different forms of wealth returns. Realized capital gains are indeed a much lumpier, and problematic, income source since it cannot distinguish between the time when the capital gain arose and when it was realized. Nevertheless, Roine and Waldenström (2008, 2012) have shown that realized capital gains in Sweden are systematically associated with other capital incomes and also with gross income from all sources,

[41] See Morelli, Smeeding and Thomson (2015) and Roine and Waldenström (2015) for descriptions of the trends in income and wealth distribution in the developed world.

Figure 3.3: Income inequality in Sweden and the role of capital income

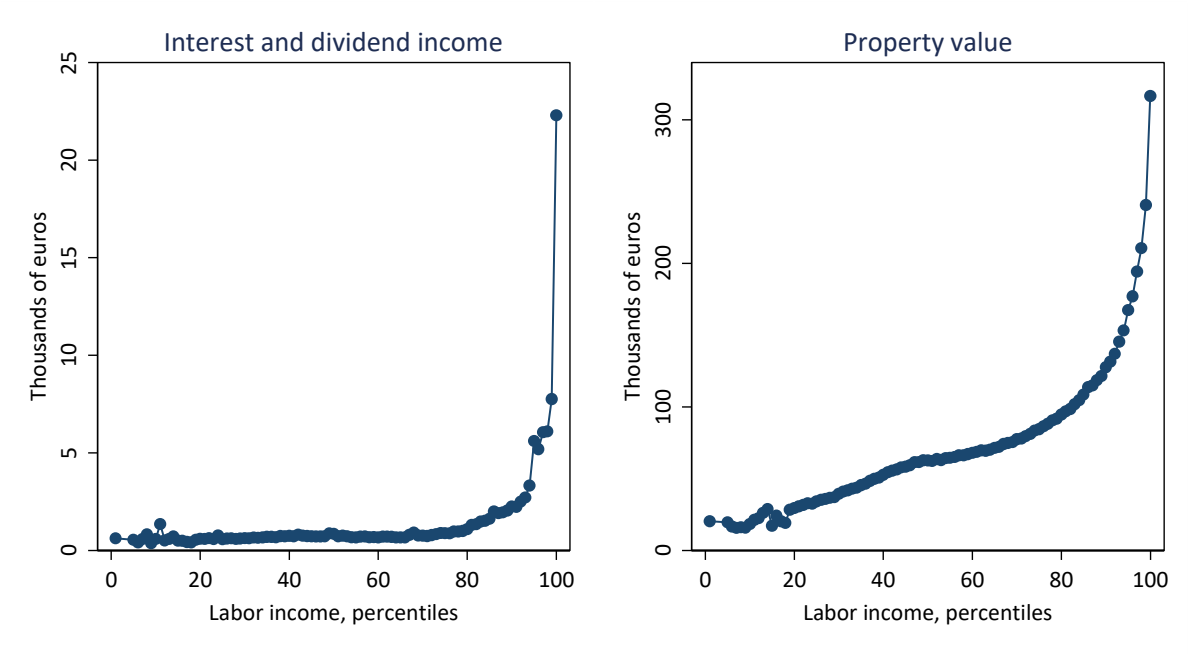


Note: Gini coefficients over the equivalized household distribution using Swedish administrative microdata. *Source*: Swedish Ministry of Finance.

In section 2 we emphasized the potential importance of the correlation between earnings ability and wealth ownership. However, little is known empirically about this correlation. An exception is a study of US households by Gordon and Kopczuk (2014), which finds that both high labor income and large personal wealth indeed correlates with wage rates, which can be seen as proxies for earnings abilities.

In Figure 3.4, we show the correlation between labor income and different forms of capital ownership in Sweden. Specifically, we map capital income and property ownership (housing market value) onto the labor income distribution of adult individuals, averaged over the years 2012–2013. Interest and dividend incomes are remarkably small for most Swedes, which partially reflect low market interest rates during our examination period, but it also generally reflects low levels of financial savings among Swedish households. House ownership appears to be more broadly distributed in the population but is also monotonically increasing in the earnings distribution. In both cases, there is a sharp increase in the level of capital income and property values in the top of the earnings distribution.

Figure 3.4: Correlation between capital and labor income



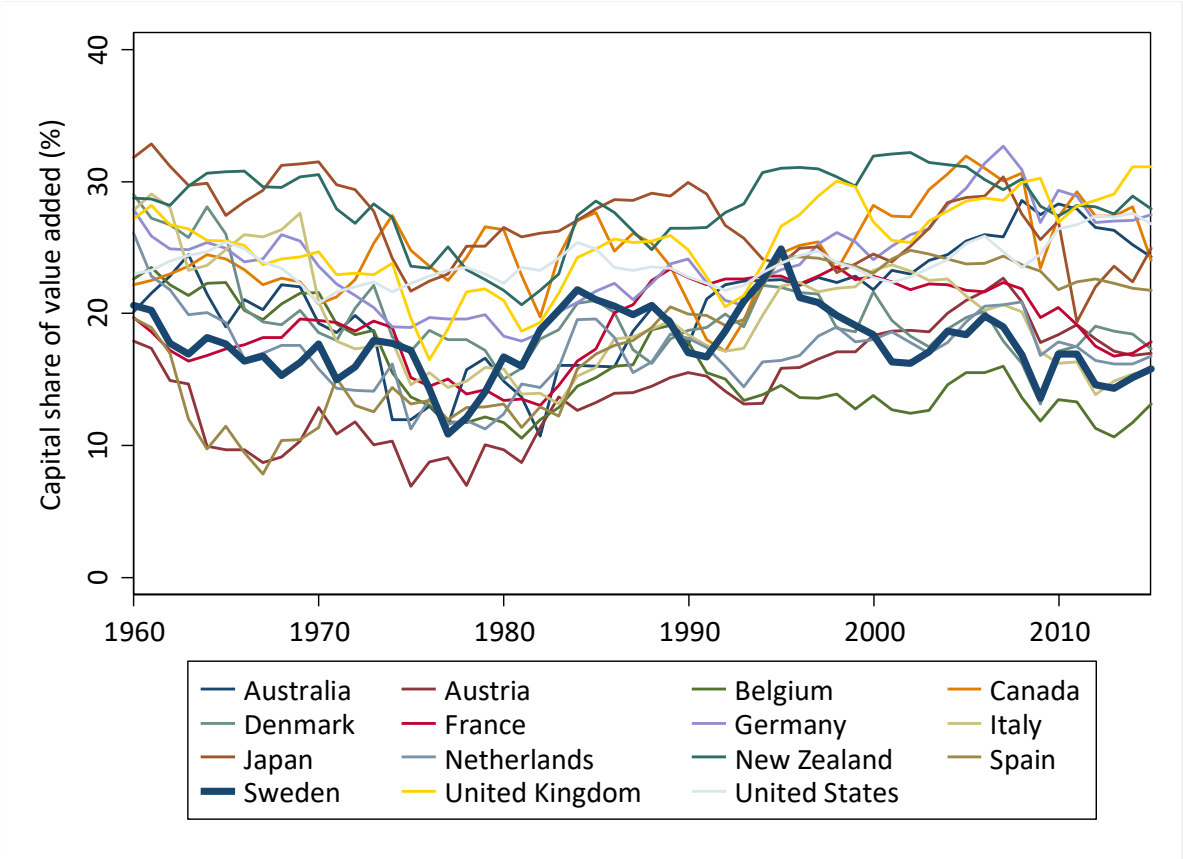
Notes: Adults (20+) ranked according to the taxable labor income. All incomes and property values are averaged over the years 2012–2013. Properties do not include tenant-owned apartments. *Source*: Swedish income and property tax registers, Statistics Sweden.

The capital share of total value added offers an alternative picture of the distributional role of capital.[42] Some recent studies have argued that there is a falling trend in the labor share, and thus a positive trend in the capital share (see, for example, Karabounis and Neiman, 2014), and Autor et al. (2017) point to the role of automation and digitization in accounting for this pattern. Figure 3.5 depicts the net capital share in 15 OECD countries since 1960.[43] As can be seen from this figure, the net capital share has been relatively stable throughout the period; most countries experienced dips in the late 1970s and bounce-backs in the 1980s. However, there is some considerable variation across countries. Since 1990, several Anglo-Saxon countries have experienced increasing capital shares whereas they have been stable or have fallen in most European countries, including Sweden (marked with a thick line in the figure). These differences cast doubt on the presence of a single explanatory factor behind this development. The evolution of labor and capital shares reflects combinations of institutional changes (e.g., labor market regulation), changes in taxation and changes in the production technology.

[42] Whether this aggregate outcome correlates with the degree of personal income inequality has been debated. The link is not perfect since not all capital owners have high income and many wage earners own capital. In a longer historical series, Bengtsson and Waldenström (2018) find relatively robust correlations between the capital share and personal top income shares.

[43] Data over capital shares net of depreciation come from the historical capital shares database of Bengtsson and Waldenström (2018), which uses a rich pool of sources but for the post-1960 era mostly the AMECO database compiled by the European Commission.

Figure 3.5: Capital share in 15 OECD countries, 1960–2015.



Note: Capital shares are computed as the corporate surplus net of depreciation divided by net national income.
Source: Historical capital shares database (Bengtsson and Waldenström, 2018).

Wealth inequality in Sweden, and its development over the past years, is more difficult to characterize than income inequality because of the scarcity of individual wealth data. When Sweden abolished its wealth tax, the collection of individual wealth information ceased, but even before there were problems with the coverage of certain assets, particularly non-listed corporate equity and funded pension assets. These measurement problems are not unique to Sweden but exist in virtually all countries.

A recent attempt to estimate the Swedish individual wealth distribution using capitalization techniques and information about taxable capital income is Lundberg and Waldenström (2018). Their combination of property tax assessments and capitalized net financial assets suggests that the level of wealth inequality in Sweden has been relatively stable since the early 2000s, a finding that is in line with the estimates of Bach et al. (2017). The financial crisis in 2008-2009, which coincided with the wealth tax repeal and property tax cuts, generated widening gaps between the top and the bottom of the distribution. Decompositions of

these changes suggest that the poor seem to have emptied their bank holdings during the crisis years while the distribution of property values became more dispersed.

A different way to assess wealth inequality is to focus on the wealth concentration in the extreme top of the distribution. Since 1981, Swedish business magazines have published lists of the richest Swedes, similar to the Forbes 400 list that started the year after. The Swedish list contained 26 individual fortunes in 1981 and in 2016 it contained 178 individuals having a personal wealth worth more than 1 billion SEK (about 100,000 million euros). Focusing on such an exclusive group in society may seem a bit extreme, not to mention the coarse methods underlying the creation of this data.[44] However, the amount of wealth controlled by this group is enormous: the 154 Swedish billionaire families living in Sweden in 2016 owned SEK 1,136 billion, which is equivalent to 6.5 percent of the total private net wealth in the country, or roughly equal to the net worth of central government (1,176 billion SEK). If one also includes 38 Swedish billionaire families living abroad, the total fortune associated with this exclusive group becomes SEK 2 220 billion, or 13 per cent of the wealth of all Swedish households.

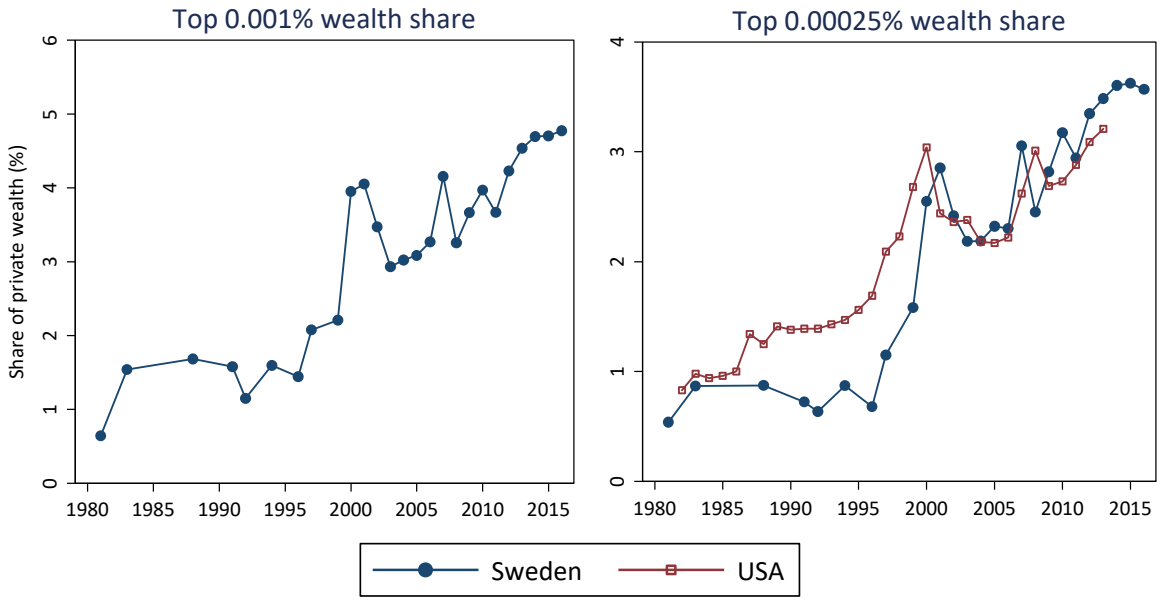
Figure 3.6 shows the evolution of wealth shares of the super-rich over the past 35 years. The left panel shows the share of the richest 0.001 percent, around 40 super rich Swedish families. The share has increased markedly over time, from 1 percent in the early 1980s, to 6 percent in 2016. The lumpiness of the curve is partly due to measurement differences across years, but partly also due to real economic changes. For example, the Swedish economic crisis in 1991–1993 appears in the form of a fall in 1992. The 1999–2000 financial bubble, the 2008 financial crisis and the recoil thereafter are also clearly visible.

Is this level and trend in wealth concentration among the super-rich unique for Sweden? Similar evidence does not exist for many other countries, but an exception is a compilation by Saez and Zucman (2016) of the data in the Forbes 400 where the data collection began in 1983, one year after the Swedish list was initiated. The right panel of Figure 3.6 shows the development of the wealth share of the super-rich in Sweden and in the United States, now depicting the share of the largest possible group for both countries, the richest 0.00025 per-

[44] The credibility of the material depends on the quality of the underlying journalistic effort. Estimating the resources of wealthy families is complex. The largest sources of error exist in the valuation of non-listed business equity and debt and the difficulties involved in obtaining a complete account of all assets.

cent (about 250 families in the U.S. and 10 families in Sweden). The results show that both the level and the rate of increase are astonishingly similar in the two countries.

Figure 3.6. The wealth share of super-rich: Sweden and the US, 1981–2016.



Source: Sweden: Own compilations of lists in Affärsvärlden, Veckans Affärer, Månadens Affärer. The US: Saez and Zucman (2016).

3.3 The role of capital in measures of equality of opportunity

One way to study equality of opportunity is to examine the persistence of income across generations, also known as intergenerational mobility, often measured by the correlation between father and son income. International comparisons are difficult to make, but correlations range between 0.25 and 0.5 in industrialized countries, with Sweden having one of the lowest correlations, and thus a relatively high degree of intergenerational mobility (Corak 2009; Björklund and Jäntti 2011). What is the role of capital income in estimates of intergenerational mobility?

Björklund, Roine and Waldenström (2012) compare how the relationship between father and son income varies both over the father income distribution and on whether the measured income includes capital income or not. Their main finding is that capital income does not matter much for the major part of the distribution. However, in the top percentile, capital income matters a lot. In the fathers' top 0.1 percentile, the intergenerational elasticity is 0.9, which indicates that the total income of fathers determines a substantial share of their sons' total income. The researchers examine potential confounding factors, and while there is no appar-

ent role for education, non-cognitive or cognitive skills, the authors find a consistent role for wealth ownership, which indicates that wealth matters for income mobility. The authors conclude that Sweden seems to combine high intergenerational mobility among low and middle earners with what could be described as "capitalist dynasties" in the absolute top.

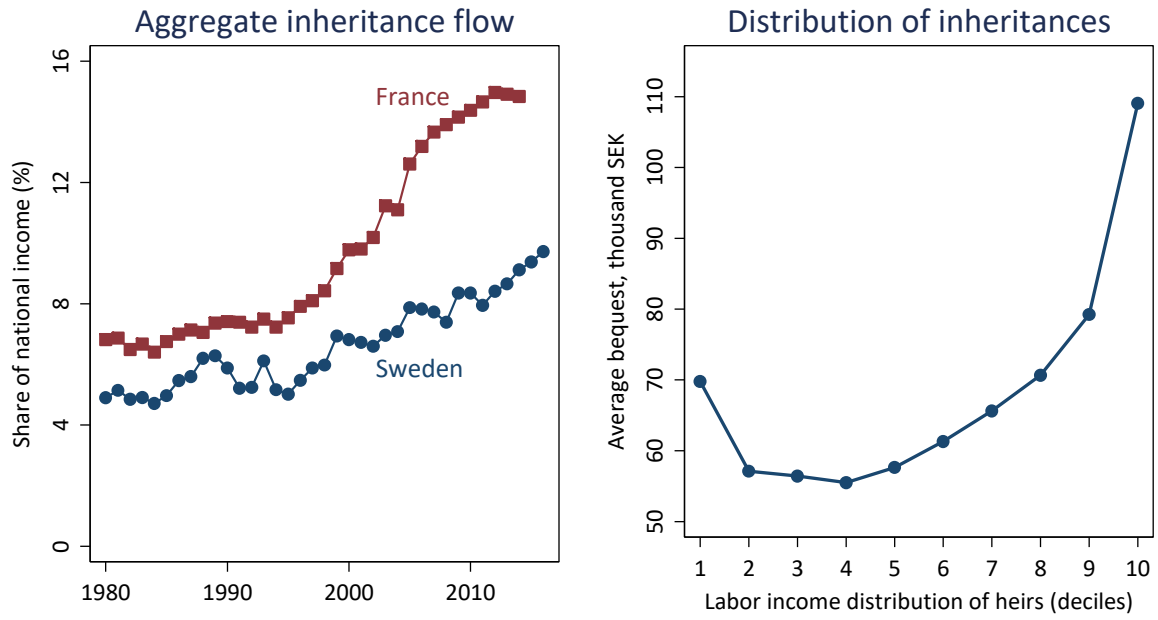
A largely unexplored phenomenon in the previous research literature is the mobility between generations in terms of wealth (where inheritance of course plays an important role). The main reason for this is the strong data requirements. A recent attempt to overcome these measurement problems was made by Adermon, Lindahl and Waldenström (2018) in their study of a Swedish multigenerational dataset. Their main finding is that the intergenerational mobility is lower in wealth than in labor income. On the same data set, they find wealth correlations of 0.3–0.4 and labor income correlations of 0.2–0.3. Similar findings are reported by Boserup, Kopczuk and Kreiner (2017) for Denmark.

Inheritance is a direct channel through which capital can influence intergenerational mobility, as well as the overall inequality of opportunity in society. Looking first at the aggregate, macroeconomic, picture, estimates of the annual flow of inheritance and lifetime gifts indicate a share of national income of between 5 and 15 percent. Figure 3.7's left panel shows this share for France and Sweden since 1980, drawing on recent estimates by Piketty (2011) for France and by Ohlsson, Roine and Waldenström (2014) for Sweden. In both countries, the importance of inheritances clearly trends upwards over this period.

The distributional impact of inheritance is more difficult to analyze because of the considerable data requirements. Adermon et al. (2018) match inheritances observed in probate inventory records with their intergenerational wealth dataset and find that a large part, perhaps half, of the measured mobility can be attributed to inheritance and gifts. This finding is in line with a study by Boserup, Kopczuk and Kreiner (2018) who documents that intergenerational wealth correlations are higher for Danish children and young adults with deceased parents or grandparents. Elinder, Erixson and Waldenström (2016) examine another angle of this issue, namely how inheritance affects the wealth distribution of heirs. By linking register data of inheritances to the wealth of heirs, they find a strong correlation between bequest size and pre-inheritance child wealth but that the relative importance of the inheritance is larger for less wealthy heirs. Thus, the wealth distribution is therefore somewhat compressed as a result

of inheritance.[45] However, as the most disadvantaged individuals in society do not inherit anything at all, this compressing effect of inheritances should not be overstated. Figure 3.7's right panel uses these same data to illustrate the average bequest size across the labor income distribution of the heirs. This shows a strong, positive correlation that is especially marked in the top of the distribution.

Figure 3.7: The role of inherited wealth: aggregate flow and distributional effects



Source: Inheritance flows are defined as aggregate flow of inherited wealth including *inter vivos* gifts divided by national income. For Sweden, data come from Ohlsson, Roine and Waldenström (2014) and for France from Piketty (2011, with updates). Distribution of inheritances from the Swedish inheritance tax register, average over the years 2002–2004 (for data description, see Elinder, Erixson and Waldenström, 2016).

4. Capital taxation in practice

In this section, we outline how Sweden and other developed countries currently tax capital income and wealth and we review recent empirical findings about the consequences of capital taxation for various aspects of economic activity.

4.1 Current practices in capital taxation

An overview of the Swedish capital taxation is given in Table 4.1. It shows the main capital taxes and their share in total capital tax revenue during three years since 1991. The corporate tax is clearly the largest single capital tax over the entire period, representing almost half of

[45] Similar results on slightly different data from Denmark is also found by Boserup, Kopczuk and Kreiner (2016).

total tax revenue. Capital income taxes have grown important in Sweden, largely due to increasing asset prices in both housing and financial markets. Today, they represent one quarter of total capital tax revenues and half of them come from taxes on realized capital gains. Property taxes (on households and corporations) represented one quarter of revenues in the 1990s but have become less important and today comprise about 15 percent of total capital taxes. Apart from these three large taxes, there are a number of other, smaller capital taxes on, for example, variants of imputed wealth returns, holdings of foreign residents, and wealth and inheritance taxes. The latter two taxes have been abolished.

Table 4.1: Capital taxation in Sweden 1991, 2004 and 2016 (percent of capital taxes).

	Capital tax revenues (% of total capital taxes)		
	1991	2004	2016
Property tax on owner-occupied housing	15	13	8
Property tax on other property	13	5	7
Stamp duty on property transfers	12	5	6
Capital income tax	1	9	26
Coupon tax on foreign residents	1	2	3
Tax on imputed pension fund returns	5	8	2
Wealth tax	4	4	-
Inheritance and gift tax	3	2	-
Corporate tax	40	53	49
Other capital taxes	7	0	0
Capital taxes, total	100	100	100
Capital tax revenue / Total tax revenue	7.3%	10.0%	11.4%
Capital tax revenue / GDP	3.6%	4.7%	5.0%
Capital tax revenue / Value of total private wealth	2.2%	1.8%	1.3%

Note: Property tax on owner-occupied housing is "municipal real estate charge" since 2008. The capital income tax includes tax on interest income (net of deductions), dividends and realized net capital gains. The tax on imputed pension fund returns consists of different taxes of imputed returns (on pension funds, capital insurance funds). "Other capital taxes", contained the proceeds from a financial transactions tax that was abolished in late 1991. *Sources*: Own compilations from the Swedish Tax Agency and the Ministry of Finance.

Comparing the total revenue from capital taxes with total taxes, and the macroeconomic development as a whole, offers some important hints on the role of capital taxation in Sweden. First, the revenue from capital taxes as a share of total tax revenue has remained relatively stable at around 10 percent, and the same result holds when relating it to GDP, with a share around five percent. However, when relating capital tax revenues to the value of the stock of privately owned wealth, which contains market-valued housing, land, corporate equity and other financial assets, everything net of debts, the trend is clearly decreasing. In 1991, the share was 2.2 percent, it was 1.8 percent in 2004 and it was 1.3 percent in 2016.

International comparisons of capital tax revenues are difficult to make due to the complex nature of capital taxation. Still, OECD's tax revenue statistics offer relatively comparable numbers, created specifically with the purpose to be comparable both between countries and across time periods. Figure 4.1 presents overall tax-to-GDP ratios for a selection of OECD countries, and Sweden appears in the small group of countries having a level well above 40 percent. Direct taxation of labor constitute the largest source of tax revenue in all these countries, followed by indirect taxation of consumption expenditures while capital taxation represents a minor share, about one tenth, of all revenues.

The relatively limited role of capital taxes is a bit exaggerated since some of personal capital income taxes are included in labor income taxes according to the OECD statistics. However, the levels are in line with macroeconomic fundamentals such as the size of the capital stock, real wealth returns and capital tax rates. With a private wealth to GDP ratio of 450 percent (which ranges between 300 and 600 percent in rich economies and is 400 percent in Sweden), a real rate of return of 3 percent and a capital income tax of 30 percent, effective capital tax revenues amount to 4 percent of GDP.[46]

The composition of capital tax revenues is shown in the figure's panel a). The corporate tax is clearly the most important, representing roughly half of total capital tax revenues in most countries. Property taxes, including both recurrent and transfer taxes, are also relatively important. Sweden is just below the OECD average in terms of the aggregate capital tax revenue as a share of GDP.

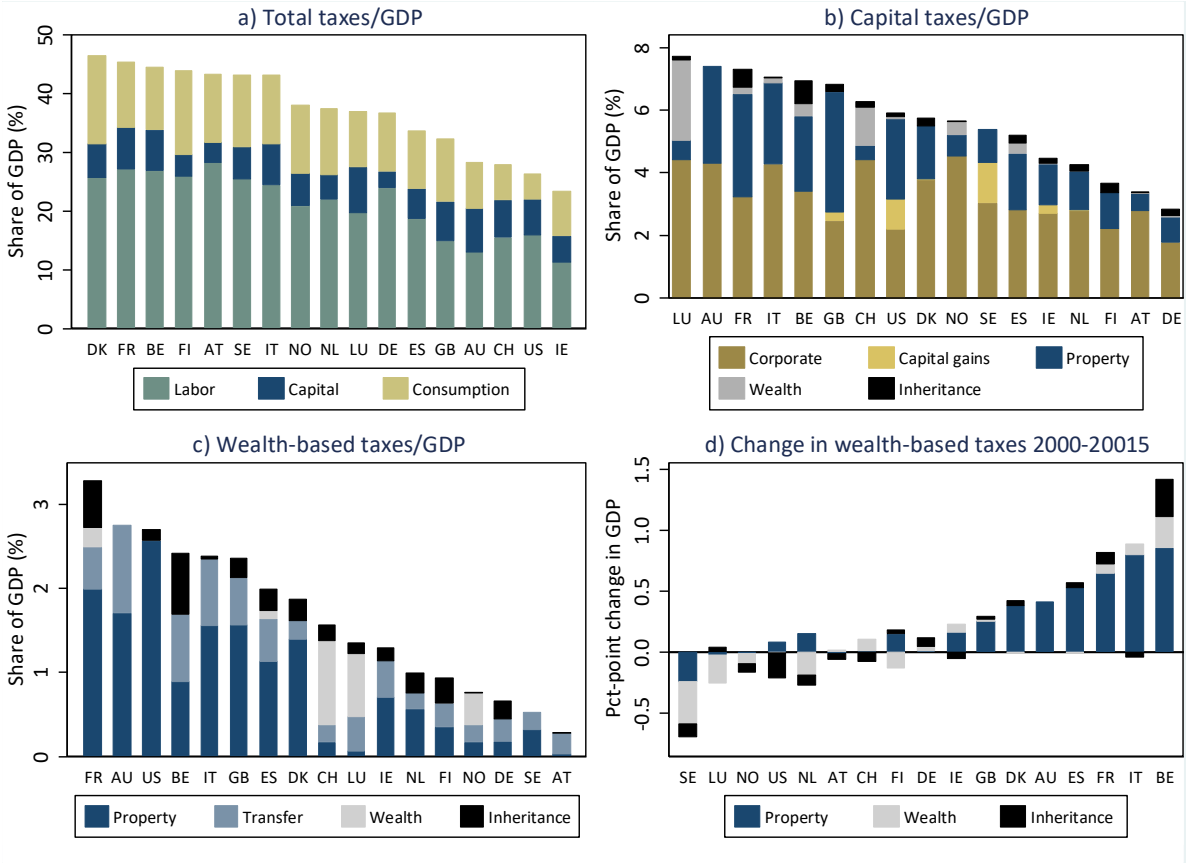
In panels c) and d), we focus in on wealth-based capital taxes: property taxes (recurrent and/or on transfers), net wealth taxes and inheritance/gift taxes.[47] These taxes play the biggest role in larger countries such as France, USA, Italy, Great Britain and Spain, and in two smaller countries, Belgium and Denmark, with revenues around 2–3 percent of GDP. In the other OECD countries, they matter much less and hover around one percent of GDP. Sweden is in the low end of the spectrum, with 0.5 percent, as the country neither has wealth taxation nor inheritance and gift taxation. The small reliance of wealth-based taxes in a high tax country such as Sweden is noteworthy. Panel d) shows changes in these wealth-based taxes since

[46] That is, $450\% \times 3\% \times 30\% = 4\%$. Alternatively, with a net capital share of national income ranging between 15 and 30 percent in most rich countries (it has been around 15-20 percent in Sweden since the 1990s) and a capital income tax of 30 percent, the capital tax revenue will range between 4.5 and 9 percent of GDP.

[47] We focus in this case on property taxes paid by households, thus excluding the (relatively marginal) property taxes paid by corporations. Classifying inheritances and gifts as *stocks*, i.e., part of the donors wealth (at death), is a matter of perspective as they may as well be regarded as income *flows* on behalf of the heirs.

2000. The Swedish property tax decrease, caused by the tax cuts since the late 2000s, stands out as exceptional, both when considering that house prices have multiplied by three-four times over this period and when comparing other countries. In almost all other OECD countries, property taxes have grown in importance, most notably in France, Britain, Belgium and Spain.

Figure 4.1: Tax revenues in OECD countries (percent of GDP).



Note and source: Data from 2015, OECD tax revenue statistics.

4.2 Different forms of capital taxation

The theoretical models discussed in section 2 pointed out robust reasons to tax capital, relying on neoclassical frameworks in which a single asset is used as vehicle for consumption smoothing and to fuel investments in the economy. In practice, individuals invest in different types of assets, which may motivate taxing these in different ways. In particular, not all forms of wealth are productive capital. In Sweden, most personal wealth derives from inheritances received and housing wealth, where the latter has increased substantially in importance in recent years due to the increased value of land.

If different assets are distinct inputs into production, economists usually prescribe uniform taxation of these inputs. This is based on the so-called production efficiency theorem developed in the seminal contribution of Diamond and Mirrlees (1971). In short, the result relies on the observation that taxing different input factors in different ways distorts production, and these distortions, in the end, manifest in the form of different consumer prices. As the effect of the input tax differentiation can be replicated by using differential taxation of final consumption goods, eliminating the differential taxation of production inputs and replacing it with differential taxation of final commodities can generate a Pareto-improvement, as this will increase total output produced in the economy.

However, the Diamond and Mirrlees analysis relied on some rather specific assumptions, such as that pure profits can be fully taxed. If this is not the case, it is desirable to impose higher tax rates on input factors used in sectors characterized by imperfect competition or assets where price increase mainly reflect economic rents (Dasgupta and Stiglitz 1972). Even though production efficiency might not be optimal in all cases, uniform taxation of inputs is usually regarded as a desirable principle in the tax system, especially as it difficult to figure out how an ideal tax differentiation looks like. Moreover, uniform taxation is also valuable to suppress attempts of special interest groups to pressure politicians to modify the tax system.

The remainder of this section discusses the most common taxes on wealth and capital income. We begin by briefly discussing the wealth tax and then proceed to investigate if there are specific reasons to tax investments in properties or corporate equity in different ways than other forms of investment.[48]

4.2.1 Wealth taxation

The basic idea with a wealth tax is to tax all forms of wealth, such as bank deposits, stocks, properties, cars and boats, and so on. In contrast to taxes on specific forms of wealth, for example property taxation, a general wealth tax targets all forms of wealth, which is desirable from both efficiency and equity perspectives. Of course, in principle, wealth taxes would not be needed if all income sources that form the basis of wealth would be taxed. A wealth tax can be viewed as a way to compensate for inability to tax income optimally in the past. This

[48] It is worth keeping in mind that a person investing in a company does not only pay capital income tax on dividends and capital gains, but also indirectly pays corporate income tax. A person investing in a property pays property taxation, as well as capital income taxation upon realization (together with potential transaction taxes).

can be due to an inability of the government to tax certain kinds of income (resulting from, say, tax evasion or tax planning), but also due to political or administrative failures.

The main problem with a wealth tax is that wealth is difficult to assess for tax purposes. This applies in particular to corporate capital. Moreover, the possibilities for individuals and corporations to move wealth abroad are a major obstacle to efficient wealth taxation.[49]

Wealth taxes, defined as taxes on household non-financial and net financial wealth, were commonplace in until the 1990s and 2000s when most countries decided to dismantle them. Today, only Spain and Luxembourg (and to some extent France and the Netherlands) in the EU, and Norway and Switzerland outside the EU, have such comprehensive forms of asset taxation.[50] The Swedish wealth tax was abolished on January 1, 2007. Previously, taxable net worth exceeding SEK 1.5 million for single persons and taxable net worth exceeding SEK 3 million for married or cohabiting households, was taxed at a rate of 1.5 percent.

The implementation of wealth taxes has been problematic. To begin with, there are several issues associated with properly defining the tax base. According to the official wealth definition in the UN's System of National Accounts, private wealth includes not only real estate, bank deposits, bonds, corporate equity etc., but also all funded insurance savings in life insurances and occupational pension schemes. Such a broad wealth tax base would be notable for many low-income households, but at the same time, to exclude insurance and occupational pension schemes would create imbalances with respect to the tax liability of similar assets. The valuation of assets can also difficult, especially concerning equity of non-listed firms. In the absence of secondary market prices, these firms have to be valued based on accountancy information and in the case of erroneous over-valuation, the liquidity effects created by the tax burden are troublesome. In an attempt to respond to such problems, most countries introduced reliefs, and even total exemptions, on business assets. However, while such measures alleviated some problems, they represented a departure from the conceptually advantageous broad-based feature of the general wealth tax. Finally, international mobility of capital has

[49] In ongoing work, Guvenen et al. (2017) analyze wealth taxes in a model where individuals have different returns to their investment. They propose that there could be welfare gains associated with shifting from capital income taxation to wealth taxation. The argument is that when only capital income is being taxed, the burden of taxation falls disproportionally on high skilled investors, whereas passive and less successful investors avoid taxation. An interesting conflict therefore arises between redistribution (those who generate high returns have a high earnings ability) and efficiency (taxing capital income can lead to reduced investment among high skill investors). This of course presumes that excess returns are created by productive activities and not luck or circumstance.

[50] Taxes of real estate wealth still exist in all rich countries, and taxes of the proceeds of financial wealth are also widely used.

been seen as a severe problem for the wealth tax. Even if we still do not know much about just how important this constraint is in reality (we discussed this issue in the previous section and return to it below), cross-border financial capital flight represents a credible criticism against wealth taxation.

There is not much empirical research on the efficiency cost of wealth taxes. The main reason is the lack of adequate data and credible identification strategies. Housing wealth constitutes the bulk of most household portfolios, and it is almost entirely insensitive to wealth taxation (apart from capitalization effects). Entrepreneurial activity and business wealth is perhaps what economists are mostly interested in, but is imperfectly covered in most wealth databases and sometimes not even part of the tax base. For this reason, empirical studies have focused on how the tax affects taxable wealth rather than the economically more relevant total marketable wealth, and as a consequence, most findings reflect reporting and/or avoidance responses rather than real capital accumulation effects.[51]

4.2.2 Capital income taxation

Capital income refers to the return on a person's capital stock, which includes interest income, dividends, realized and unrealized capital gains and firm profits. In Sweden, capital income has been taxed separately from labor income since the implementation of the dual income tax system in 1991. A benefit of the dual income tax system is that marginal tax rates on labor and capital income do not need to be the same. However, the tax differential must not be too large due to the possibilities for income shifting.

The uniformity of capital income taxation is an important principle in the Swedish tax system. The original idea was that a uniform proportional tax rate of 30 percent would apply to all asset types and holding periods, allowing deductions for capital losses and capital expenses, thereby minimizing incentives for tax planning, tax arbitrage and other distortionary activities. However, the uniformity turned out to be difficult to uphold due to political pressures and demands from special interest group to implement tax changes catered to gain specific groups in society.

Today, the uniformity of capital income taxation in Sweden has been more or less abandoned, partly through differentiated tax rates and partly through changes in the method used to calcu-

[51] Recent examples of such studies are Brühlhart et al. (2017) and Jakobsen et al. (2017), who find relatively strong negative effects, and Seim (2017) who find modest effects.

late taxable returns (actual or imputed). For example, dividends and financial capital gains associated with publicly traded shares that are held directly by its owners are taxed at a tax rate of 30 percent. Dividends and capital gains from non-listed companies, on the other hand, are taxed at a lower rate of 25 percent.

Policymakers have motivated the departure from uniformity in different ways. For example, the lower tax rate on closely held businesses was motivated by a need to promote business activity, especially among small and middle-sized firms. Some closely held firms can even achieve 20 percent capital income tax rate, a special treatment confined to owners holding a majority of the company's shares, who are working in their own firm, and who have paid a certain amount of wages and salaries to employees.[52] Moreover, dividends associated with shares held in a mutual fund are not taxed as dividend income if they are reinvested, but instead as capital gains (materializing only upon realization).

A noteworthy example of a departure from the uniformity of capital taxation is the Swedish introduction of a special "investment savings account" in 2012. Due to low market interest rates and government bond yields, the effective capital income tax rate in this special savings account has been roughly 10 percent on an average investment. That is, about one third of the tax paid on the returns on bank deposits or stock investments. Perhaps not so surprisingly, the number of such leniently taxed accounts has increased rapidly, and by the end of 2016, their total number amounted to over 2.3 million (in a population of 9 million). This rapid increase strongly suggests a distortionary, tax-driven re-allocation of investment.

International comparisons of the taxation of capital income are difficult to make due to the variation both in terms of tax rates and in terms of the definition of the tax base. In most other countries, capital and labor incomes are not separately taxed but instead aggregated and taxed according to a single schedule. Some countries allow for a basic deduction and apply a different (typically milder) tax treatment to investments held over longer time periods, which is important to take into account when assessing effective marginal tax rates on capital income. In Sweden, capital gains are taxed at the same rate from the first krona, with no consideration given to the holding period. Even though tax schemes in several other countries are progres-

[52] The taxation of realized capital gains in Sweden follows the same non-uniform pattern as the taxation of dividend income. However, real estate sale profits are taxed at yet another rate, 22 percent. This rate has changed several times since 1991; it was initially set at 15 percent, then it was raised to 20 percent in the early 2000s and finally it become 22 percent in 2008. On the other hand, the tax base is broad and uniform, including all kinds of real estate (primary home, secondary home, summer cottage, commercial real estate, land etc.) and no reliefs for longer holding periods.

sive with higher top tax rates than the Swedish flat capital tax rate, the deductions and holding period reliefs that are available in other countries can actually result in marginal tax rates substantially below the Swedish rate.

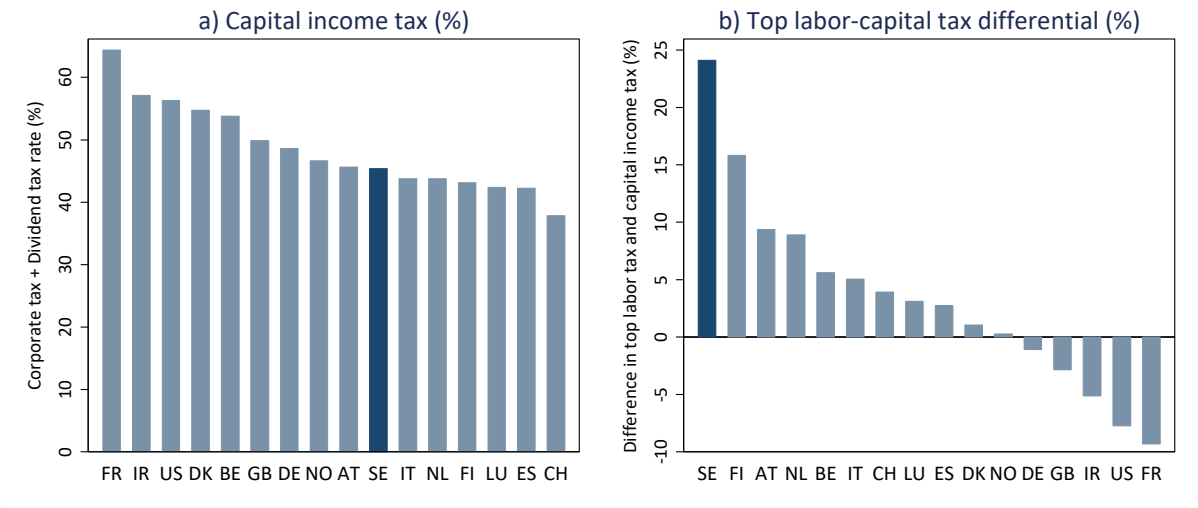
A proper comparison of the level of taxation of capital income, especially that referring to corporate profits, should not only focus on the dividend tax paid on after-corporate tax profits, but also include the corporate tax paid by the corporations (we discuss the corporate tax further in the next subsection). In Sweden, dividends from listed firms are currently taxed at a flat 30 percent tax rate and the corporate tax is 22 percent. This implies that the total tax rate paid by owners of listed companies on the profits of their firms is 45.4 percent.[53] Figure 4.2's panel a) shows an international comparison of this total tax rate on corporate profits, including both the corporate tax and the dividend tax, for a selection of OECD countries.[54] The tax rate varies from 38 percent in Switzerland to over 64 percent in France. Sweden is positioned in the middle between these countries.

The difference in marginal tax rates on labor and capital income can have important economic implications. In a general sense, it reflects society's perception of the relative importance of the accumulation of human capital vs real capital. As we discuss above, the optimal marginal tax rates do not need to be the same since they refer to different underlying income-generation processes. The level of these taxes reflects the overall ambitions of the public sector, which can be different across countries. However, it is not obvious that the *difference* between marginal tax rates on labor and capital income should be very different across rich countries since their labor and capital markets have become so similar. Panel b) displays the difference between the highest marginal tax rate on labor income (including the tax part of social security contributions) and on dividend income (including both corporate tax and individual dividend tax) for various OECD countries. Sweden has the largest difference among all of these countries, with almost a 25-percentage point differential in the top marginal tax rate. Finland comes relatively close to Sweden with a difference of 15 percentage points, while Denmark and Norway have almost zero percent. Several major countries such as France, Germany, the United Kingdom and the United States even have a negative differential. Comparing this result with the previous graph, which showed that Sweden did not devi-

[53] $(1-(1-22\%)(1-30\%)=45.4\%)$. Owners of non-listed firms pay 25 or 20 percent dividend tax rates.
[54] As we have already pointed out, comparisons like these should be taken with caution, but with respect to the Swedish case, they at least do not indicate that Sweden deviates substantially in its capital taxation in this particular dimension.

ate markedly in the total dividend-corporate profit tax, suggests that where Sweden stands out is in its high taxation of top labor incomes: at a 70 percent marginal tax rate.

Figure 4.2: Total maximum marginal tax on dividends from listed companies.



Note: OECD Tax Database, table "Statutory corporate income tax rate".

Cross-base income shifting represents a specific concern when having marginal tax differentials between labor and capital income. Few attempts have been made to divide the taxable income elasticity into labor and capital income components. One exception is Kleven and Schultz (2014), who show using Danish data that the elasticity of capital income is two to three times as high as the elasticity of labor income.[55]

In Sweden, where the tax differential between labor and capital income can be as high as 40 percentage points, the income shifting is discussed particularly with respect to two groups: small business owners and private equity partners. In the first case, owners of small corporations are often both employees and employers of their own firms, and can therefore to some extent, decide how much to pay themselves in dividends and salaries. The tax differential depends partly on the level of income (the marginal labor income tax including the tax content of social security contributions ranges between 40 and 70 percent) and partly on the dividend tax rate (20 or 25 percent depending on if the firm meets the obligations for low-tax dividends). Alstadsæter and Jacob (2016) have found evidence of income shifting among business owners by using a reform in 2006 in which both the tax differential and the amount eligible for reclassification increased. As for the second group, venture capitalists, the main

[55] See also Pirttilä and Selin (2002) for empirical evidence of income shifting in Finland.

issue has been how to define compensation in the form of carried interest in the tax code. After a series of court cases between the Swedish Tax Agency and one of the biggest venture capitalist firms, the Supreme Administrative Court decided in 2017 that carried interest were to be taxed as labor income.

4.2.3 Corporate taxation

The corporate income tax is a special tax on the profits accruing to private firms. Like other taxes, the corporate tax is ultimately born by individuals, the shareholders of the company, and it accrues beyond any taxes paid on dividends and capital gains. A classic question in public finance is whether or not the government should tax corporate capital for redistributive reasons because it is concentrated in the upper end of the income distribution. The answer to this question is not clear because a tax on corporate capital may lead to less investment, a lower stock of capital, a higher return to capital, and lower wages. Harberger (1962) found that, in a closed economy, a tax a corporate income tax mainly affects the owners of capital, with small effects on wage earners. However, in an open economy, the free mobility of capital changes this result, making it much more likely that wage earners bear a substantial part of its burden. The major constraint on the corporation tax is the possibility for firms to relocate their activities abroad. For this reason, a small open economy must calibrate their corporation tax in accordance with the levels of other similar countries. To identify the extent to which corporate taxation affects wages is a difficult task, both theoretically and empirically, as it represents an exercise in general equilibrium analysis. A recent empirical paper is Fuest, Peichl and Siegloch (2018) who analyze corporate taxation in Germany and find that about 40 percent of the burden of the corporate income tax is borne by wage earners.

There are three principal arguments in favor of a corporate income tax. First, and most importantly, the corporate income tax is a complement to the income tax as it is in practice difficult to tax individuals with low labor income and large fortunes derived from inventions, patents or other intellectual property. Incomes from such activities are taxed only at the moment when they accrue to shareholders in the form of dividends or capital gains. In this way, the corporate income tax becomes a way of taxing profits that otherwise would avoid taxation by being kept inside corporations. In addition, in a dual income tax system, the corporate income tax serves to make it less attractive to shift income from the personal to the corporate

income tax base.[56] Second, the corporate income tax is a way to tax foreign investors that do not pay capital income taxes in the host country. The third argument is that the corporation tax can be viewed as a payment for infrastructure that the government provides, such as roads, airports, bankruptcy management, or the value of a stable and secure democracy. The relevance of this argument can however be questioned, as the marginal cost of providing these services are often close to zero and firms contribute to tax revenue through other tax bases by hiring workers.

Corporate profits comprise the most important capital tax base in industrialized economies, as was shown in Figure 4.1. The importance of the corporate income tax as a revenue source offers a pragmatic motive for the corporate tax, but more common motives are that it is tax on foreign ownership and a tax on large business equity holdings (based on actual cash flows rather than assumed imputed returns as in the case of the wealth tax).

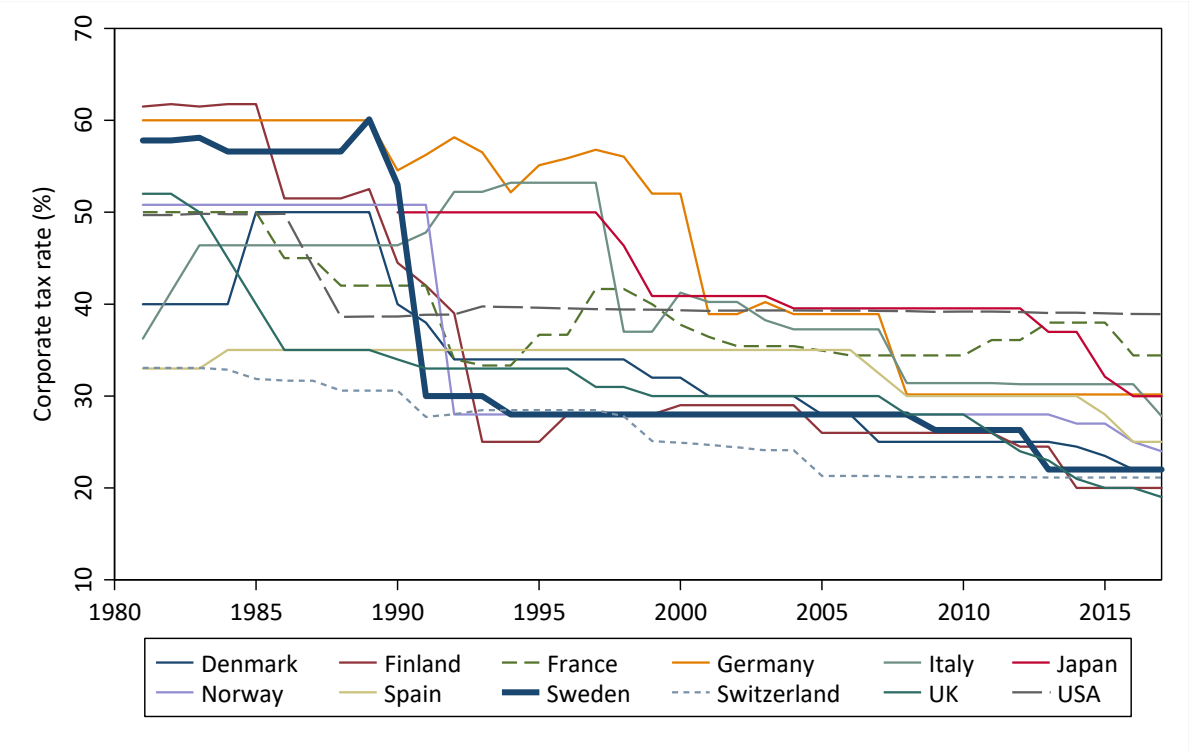
The current corporate tax rate in Sweden is 22 percent, a rate which is among the lower ones in the OECD countries. Figure 4.3 presents a cross-country comparison of statutory corporate tax rates since 1981, the first year of OECD's compiled statistics. A main message from the figure is that there is a clearly declining trend in in statutory corporate tax rates in OECD countries. In the early 1980s, no country had a corporate tax rate below 30 percent, and thirty years later, almost no country had a corporate tax rate above 30 percent.

The tax rates in 1981 ranged between 40 and 60 percent, and the unweighted average among all countries was 48 percent. Beginning in the 1990s, tax rates were decreased gradually and this has continued. In the late 2010s, the corporate tax ranges between 15 and 35 percent, and the unweighted average tax rate was 24 percent in 2017.[57]

[56] An additional reason to tax corporate capital arises if the corporate tax allows to "tag" individuals with high ability. Scheuer (2014) analyzes a model where individuals differ in their income earnings abilities and their cost of setting up a firm. This produces inequality in investment opportunities and therefore the corporate income tax becomes an indirect way of tagging high skill workers to the extent that high skill workers have lower costs of setting up a firm. The overall desirability of corporate income taxation for this purpose depends on how wages are affected.

[57] The trend in effective corporate tax rates could look different, for example, if deductions and other factors could be used to reduce actual tax payments (this was indeed the case in Sweden during the 1980s, thus overstating the fall in corporate tax rate in the early 1990s). In one of few international comparisons of statutory and effective corporate tax rates, Vella (2015) finds relatively small differences in trends since the late 1990s.

Figure 4.3: Statutory corporate tax rates in OECD countries, 1981–2017.



Source: OECD Tax Database.

What is the future for corporate taxation in the industrialized world? As of 2018, the US lowered its corporate tax rate from almost 40 to 21 percent, and both France and the UK have envisaged coming reductions. Sweden reduced its tax from 22 to 20.5 percent in 2018, and it is likely that the other Nordic countries will follow suit as they have in the past. This reciprocity in corporate taxation is well-known, and with an intensified globalization, some economists are discussing whether we are experiencing a "race to the bottom" in corporate taxation (see, for example, Devereux, Lockwood and Redoano 2003). Some argue that increased fiscal policy coordination between countries, for example, with the EU, could be the most effective way to handle the negative effects of tax competition.

4.2.4 Property taxation

Property taxation, or real estate taxation as it is called in some countries, is an annual tax on real property where the tax base may be land or buildings, or some combination of the two. The tax is usually based on an assessment of the market value of the property. Thus, a tax on property is a special tax on capital invested in land or buildings. In the case of housing, the return the owner gets is either that which can be obtained by renting out the house or using it as a personal accommodation. In the former case, the income accruing to the landlord is ob-

servable, and can be directly taxed. In the latter case, the tax authority needs to make an estimate of the value of the consumption the investment generates to its owner, which is referred to as the "imputed rent". According to the Atkinson-Stiglitz theorem, this imputed rent should be taxed according to all other consumption goods, unless there is a good reason not to. One such good reason could be if high skill individuals reduce their labor supply in order to perform home improvements that raise the value of the house. In this case, housing taxation becomes an indirect way of taxing leisure, increasing the attractiveness of work, which could mitigate the distortionary costs associated with progressive income taxation. Another reason why one would like to deviate from taxing properties in accordance with other goods would of course be if there are externalities. Some have argued that there are positive externalities if people take good care of their houses, as it provides a benefit to other people, and may result in better neighborhoods. Others argue that marginal quality improvements in housing produce negative externalities if individuals compare their housing consumption with others (that is, status-effects or envy, see Alpizar, Carlsson and Johansson-Stenman 2005, and Aronsson and Mannberg 2015).[58] Finally, if the value of a house mainly reflects the value of the land upon which it was built, and the land value reflects economic rents, then additional taxation of housing beyond that to achieve uniformity with respect to other goods is warranted. Finally, it is also desirable to distinguish between properties such as housing, and commercial properties that are used as inputs in production. If production efficiency is desirable, commercial properties should be taxed in the same way as other inputs in production.

Property taxation is often considered to be a highly efficient tax because of the immobility of land and that its value has little connection to individual effort. In our theoretical discussion above, we noted that land is the canonical example of a tax base for which price appreciation is independent of personal effort (a so-called "windfall gain"). In general, land prices are almost exclusively determined by demand and supply. For example, a new public transport facility that reduces commuting time in a certain area will result in higher land prices in that area. Still, this capitalization effect also goes for the buildings on the land, and therefore one usually taxes not only the land, but the entire real estate.

[58] A large literature has found that consumption goods are not only valued based on their absolute qualities, but to a large extent how they compare to the consumption of others. Alpizar et al. (2005) found that housing is consumption good where such 'relative consumption concerns' are the strongest. For instance, it is likely that a person could achieve a higher utility living in an expensive house in an area where the average price of housing is low, as compared to living in an equally expensive house in an area where the average price of housing is high (ceteris paribus).

There are different ways to tax property: as a percentage of its tax-assessed value, as a capital income tax on either imputed or actual (rental or capital gains) income, or with a stamp duty upon acquisition. Sweden currently uses all of these property taxes, with the annual tax on the property's value being the most important. The tax reform of 1991 stipulated that real estate should be taxed in a neutral manner with respect to other forms of capital. This resulted in a proportional tax rate of 1.5 percent of the tax-assessed value (typically 75 percent of the market value), corresponding roughly equal to a 30 percent capital income tax on an imputed three percent annual real return.

However, several deviations from the neutrality principle have emerged since the tax reform (and some were in place already in 1991). The most important of these changes was an overhaul in 2008 when the statutory tax rate was lowered from 1 to 0.75 percent and a nominal tax ceiling was introduced so that the proportional tax rate only applied up to housing values of around 100,000 euros. This made the property tax regressive and implied a massive tax cut for owners of expensive properties. Another important deviation from the uniformity principle concerns the taxation of tenant-owned apartments. Approximately one fifth of Swedish households live in tenant-owned apartments, typically organized in condominium associations. Their tax assessment differs from other private property in that the tax value is set to 30 percent of the market value (instead of 75 percent as for single-family homes).[59] In 2008, the capital income tax on imputed income for tenant-owned apartment buildings was also dropped, increasing the wedge in taxation to other private property. In addition to these deviations, lawmakers recently decided to make all newly constructed buildings, built 2012 or later, fully tax exempt for 15 years (an increase from previously five years).[60] The revenue impact of these reductions in Sweden's property taxation is clearly visible in the figures above. Sweden has today not only one of the lowest tax levels on real estate in all of the OECD, but the decrease in these taxes since the early 1990s is the largest among all compared countries.

[59] The reason for the lower assessment is that the tenant-owned apartment buildings are assessed similarly as rental apartment buildings, which are assessed at 30 percent because the rent regulation prevents landlords from charging market rents, and thus rental property cannot be sold at market value, but there is no such regulatory constraint on tenant-owned apartments.

[60] That this is a long period is shown by the fact that the median holding time for a Swedish family, living a single-family house, is 15 years, with average holding time being 20 years. This number was produced in October, 2017 upon our request by statisticians at the department of housing statistics at Statistics Sweden.

Progressive property taxes exist in several countries, for example, Denmark, Finland, France, Germany and Norway.[61] The correlation between individuals' capital ownership and their ability to generate income is one motivation for a proportional property tax. However, given the strong concentration of real estate capital in the upper part of the income distribution, a progressive property tax can be motivated as well. Another factor that could motivate a more progressive tax on real estate would be if wealth directly enters individuals' utility functions, as real estate wealth constitutes the bulk of total wealth for most households.

In the public debate, the property tax is a recurrent theme. Economists are often said to embrace this tax for its efficiency characteristics, while the general public is often said to be much less positive. In the US, so-called "property tax revolts" have erupted recurrently since the 1970s, often associated with middle-class homeowners protesting against the tax and many times successfully convincing policymakers to make alleviations (Martin 2008). There is little research about the determinants of the popularity of property taxation. A survey of Swedish citizens in the early 2000s studied by Hammar, Jagers and Nordblom (2008) showed that personal economic factors (such as being a home-owner) as well as broader, ideological beliefs (general views of taxation, distrust in politicians' ability) were significantly associated with the degree of support for the property tax.

Salience is another potential determinant of how taxpayers perceive property taxes.[62] Individual home-owners themselves often have the responsibility to pay the tax, in contrast to other taxes, such as income taxes, which often are withheld at source, and therefore less visible to taxpayers. Cabral and Hoxby (2012) study the relationship between salience and the level of property taxation in the US by comparing US states where the degree of salience varies as a function of technical features of the tax collection. They find that the salience of the property tax could be one important factor explaining why it is so unpopular.

Liquidity problems arising from paying tax on imputed property income constitute another possible reason for the low popularity of property taxation, but one that has received less attention in the academic literature. In Sweden, these liquidity effects have been discussed primarily in relation to two situations. One is the case when low-income households, typically old-age pensioners, own property in an area that experiences large house price increases for

[61] Progressivity can appear in different forms. There can be a progressive tax schedule, or a basic deduction in combination with a proportional tax rate.
[62] There is a small, but increasing literature on tax salience that touches upon different taxes (see Chetty, Looney and Kroft 2009, and Finkelstein 2009).

some exogenous reason (urban expansion or overall income growth). Increasing property tax payments in combination with low household income could put the new house-rich-but-income-poor families in a liquidity crisis. A political solution used in Sweden was to implement a *limitation rule*, which meant capping the tax levy at around five percent of the annual household income.[63] While this solved the liquidity crisis, it had the slight disadvantage of providing weaker incentives for the affected households to earn income in the lower income ranges. The second situation of liquidity problem was related to large increases in tax values due to the tax assessments made every three or six years, which could lead to relatively large, discrete jumps in tax burdens if house prices had increased much in the previous period. A *dampening rule* was therefore introduced in the mid-2000s, which smoothed out the tax increase over a three-year period, with one third of the increase carried out each year. Other alternatives for handling liquidity effects exist, for example, offering taxpayers to postpone the payment using a tax credit or the opportunity to borrow in order to pay the tax (called "reverse mortgages" in the US).

4.2.5 Inheritance taxation

The inheritance tax is paid by someone who inherits from a deceased person, and the estate tax is a tax on the assets of a deceased person. Independently of this legal distinction, both taxes serve the role of taxing the intergenerational transmission of wealth. A very substantial share of actual wealth is in fact inherited. In Sweden, the share of wealth that is inherited amounts to almost 50 percent (Ohlsson, Roine and Waldenström 2014), and the share varies between 30 and 60 percent in Western countries (Wolff 2015; Piketty and Zucman 2015). Those who inherit seem to be those who already have high economic ability and face beneficial economic circumstances (for example those with access to high quality education).[64]

As we saw in section 2, the correlation between skill and inheritance is an argument in favor of inheritance taxation. We also noticed that bequests can give utility both to the donor and the done. Thus, from a utilitarian social welfare maximization perspective, there is a case for

[63] The five-percent level was later deemed too generous and subsequently lowered to four percent. Holiday homes and other property were not included in the limitation rule-calculation.
[64] Elinder et al. (2016) find that in Sweden, those who have high labor income inherit the most.

subsidizing bequests. However, from the perspective of equality of opportunity, inheritance represents an undeserved advantage that should be taxed.[65]

Three specific efficiency considerations often appear in policy discussions about inheritance taxation. First, inheritance can have negative effects on government revenue if those who receive an inheritance work less (an income effect). From this perspective, inheritance taxation can provide additional positive effects on government revenue beyond the direct mechanical effect (this is sometimes labelled a positive "fiscal externality"). Second, taxing inheritance may make it less attractive for parents to work if a motivation for working is the possibility to transfer resources to the next generation. Third, to the extent that bequests are accidental, taxing them is efficient.[66]

Understanding why individuals bequeath their wealth is relevant when judging inheritance taxation, both from the perspective of correctly assessing welfare effects and for understanding how inheritance taxation affects work incentives. As it is notoriously difficult to quantify these effects empirically, it is hard to draw general conclusions about the desirability of inheritance taxation. However, we can conclude that inherited wealth has substantial effects on the wealth distribution, and an inheritance tax can be motivated from the principle of equality of opportunity.

Gifts transmitted during a person's life, *inter vivos*, represent an important part of total lifetime transfers. For this reason, inheritance taxation must always be accompanied by gift taxation. Taxing inheritance and *inter vivos* gifts is commonplace in the industrialized world. A majority of EU's member currently tax intergenerational transfers, and such taxes also exist in a number of large Asian and North American countries. Sweden is not among these countries after its repeal of the inheritance and gift tax in 2004.[67]

Table 4.2 presents some key features of the structure of inheritance taxation across a selection of countries: the basic deduction (exemption amount) and the lowest and highest statutory marginal tax rates. The table refers to children inheriting their parents according to the rules in 2017 (2004 for Sweden, due to the abolishment of the tax), but the comparability is still

[65] See Fleurbaey (2008) for a textbook exposition discussing equality of opportunity. There are, however, other transfers to children that are not taxed, such as human capital investment. This means that inheritance taxation might distort parent's decisions about how to invest in their children.
[66] However, Blumkin and Sadka (2004) and Cremer, Gahvari and Pestieau (2012) question the desirability of 100 percent taxation of accidental bequests.
[67] See Henrekson and Waldenström (2016) for an exposé of the historical development of Sweden's inheritance taxation and an analysis of the main factors of its demise.

not perfect. For example, in the UK and the US the tax is on the deceased's estate whereas the other countries tax the bequests that heirs receive. The lowest and highest tax rates apply at different inherited amounts, and there are also differences in which assets are included in the tax base. Interestingly, Sweden stands out by having had the by far lowest basic deduction amount, about 7 thousand euros, while the US exempts the largest amount, approximately 4,675 thousand euros, from the estate tax. The size of the exemption amount directly determines how large group of the heirs that will be affected by the tax; in Sweden, about one third of all heirs paid an inheritance tax, while in the US, about 0.2 percent of all deceased had an estate that was taxed.

Table 4.2: Comparison of the level of inheritance taxation across countries

	Basic deduction (thousand euros)	Marginal inheritance tax rate (%)	
		Lowest	Highest
Denmark	37	15	15
Finland	20	7	19
France	100	5	45
Germany	500	7	30
Netherlands	20	10	20
Sweden*	7	10	30
United Kingdom	270	40	40
USA	4,675	18	40

Notes: The Swedish level (*) refers to 2004 when the inheritance tax was removed. The UK and US taxes refer to estates (wealth of the deceased) while the other countries' taxes refer to bequests (inheritance lots received by heirs). Deductions and tax rates refer to children heirs, which are typically the lowest taxed class of heirs, with the largest basic deduction amounts (spouses were sometimes allowed to deduct more) and lowest marginal tax rates. Basic deduction amounts are in euros, transformed for Denmark (DKK 282,600), Sweden (SEK 70,000), the UK (GBP 325,000) and the US (USD 550,000) using market exchange rates of 2017 (average).

One recurrent issue with the inheritance and gift tax is how business assets should be treated, in particular those relating to the generational succession of family firms. Many countries have introduced reliefs for these asset types. In Sweden, all corporate assets in closely held firms were totally tax exempt at the time of the abolishment of the tax. One often-stated motivation for these reliefs concerns the liquidity problems that can arise as heirs potentially need to sell shares to finance the payment of the tax (and then potentially incur additional taxes when latent capital gains become realized). Valuation problems have also been named a reason for implementing special reliefs on inherited business assets.

Estimating the consequences of inheritance taxation on economic efficiency is difficult, both because adequate longitudinal data sources are usually lacking and also because identifying the effects empirically is challenging. One of the major empirical challenges is to distinguish actual capital accumulation effects from tax planning (reporting effects). In a survey of the literature, Kopczuk (2013) concludes that there seem to be relatively small effects of inheritance taxation on the taxable inheritance. Goupille-Lebret and Infante (2017) examine changes in the French inheritance taxation and the effects on private savings in life insurance funds. Using discontinuities in the tax schedule with respect to time and age, the authors disentangle real accumulation effects from avoidance responses. However, the real accumulation responses are found to be small. Kopczuk (2007) made an influential study of estate tax planning in the US, exploiting the receipt of news about terminal illness. The results show that the estates of those individuals who received the news substantially decreased in value, primarily due to tax planning.

Another strand of the literature has studied if there are any more general efficiency considerations of inheriting wealth in the context of entrepreneurial activities and family-firm successions. In an unpublished study of Swedish administrative register data on inheritances and firm performance, Escobar (2017) finds that firms whose owners inherit significant amounts tend to survive longer than other, comparable firms. However, this survival does not seem to be driven by higher productivity, measured as firm profits or owners' incomes, but instead by enabling small business owners of lower ability to subsist. A similar conclusion regarding the effects of inheritance on entrepreneurial performance was presented by Bennedsen et al. (2007) based on a large Danish micro dataset of family firms, which contains information on whether or not the main owner has deceased. An instrumental variable approach is used exploiting the sex of the first-born child as instrument for whether the firm is taken over by the first-born son in the family or by an external professional CEO. The main result is that there is a large, negative impact of sons inheriting the firm leadership on the firm's subsequent performance. These studies suggest that inheritances may be associated with negative efficiency effects on industrial performance.

5. International capital mobility, hidden wealth and information exchange

This section discusses the relevance of cross-border capital mobility in the context of capital taxation. Specifically, we first discuss open-economy aspects of optimal tax models, and then

turn to empirical analyses of the amount of offshore tax evasion and, finally, the political and institutional responses concerning informational exchange agreements and their impact on the possibility to tax financial capital.

5.1 Capital taxation in an open economy

In a closed economy, the efficiency costs of capital taxation relate to how individuals change their intertemporal consumption patterns and how capital taxation discourages productive domestic investments and growth. In an open economy, additional efficiency costs arise to the extent that individuals and firms move their economic activity abroad.

Most countries' tax systems abide by the so-called residence principle, which means that individuals are liable to pay taxes on all their incomes, independently of where these incomes were earned. An important determinant of the economic costs of capital taxation is the possibilities for individuals to engage in tax evasion and tax planning, thereby avoiding taxation in their home country. As there is a clear upward trend in terms of information exchange agreements between countries, the possibilities to avoid taxation in the home country are diminishing. This increases the capacity of small open economies to tax capital. If all tax planning and tax avoidance possibilities disappear, the only way for an individual to avoid taxation in the home country is to migrate.

Perhaps more importantly are the possibilities for firms to relocate in response to tax differentials across countries.[68] Large economies have greater capacity to tax firms due to the infrastructure large countries provide and agglomeration effects (the importance of clusters such as Silicon Valley in the US is undisputed), but for small open economies, a fundamental constraint on tax policy is tax competition between countries with similar institutional character.

The international mobility of capital due to tax differentials across countries is analyzed in the literature on tax competition, which models the interactions between countries as a strategic game. The early literature recognized this game as essentially zero-sum, where the individual country does not take into account that an increased tax rate increases the tax revenue in other countries if capital moves abroad. The equilibrium tax rate is therefore too low from

[68] Capital taxes are primarily relevant for firms' decisions on where to locate their headquarters and intellectual property. Where firms decide to place their production is equally affected by other taxes, such as labor income taxes and consumption taxes.

the perspective of global welfare maximization.[69] To correct this inefficiency, international coordination of capital taxation is necessary.

Tax competition limits the taxation power of governments. This can have both good and bad consequences. For example, tax competition might discipline states and force them to make the public sector more efficient. At the same time, tax competition can affect the distribution of welfare in the economy if it makes it more difficult to tax capital income, which empirically is more unevenly distributed than labor incomes.

5.2 Capital flight and hidden wealth in tax havens

Tax-driven capital flight and the stock of hidden wealth in offshore tax havens have been studied many times of the past years, but due to the scarcity and complex nature of data, it has been difficult to make firm conclusions about the role of capital taxation for international capital mobility and tax evasion. What stands absolutely clear, however, is that the amounts evaded are vast. Zucman (2013) attempted to estimate the extent of hidden offshore wealth globally using an ingenious approach based on netting out financial assets and liabilities in country balance sheets with the purpose of identifying unexplained gaps. His finding was that approximately USD 6 trillion, or 8 percent of global wealth, was placed in tax havens in 2007. Annual tax losses due to tax evasion are also significant, estimated to range between 300 and 1000 billion globally, of which the majority of these are concentrated to OECD countries (Crivelli, De Mooij and Keen, 2016).

Country-level evidence can offer important hints to the channels through which taxes and monitoring efforts affect tax-driven capital mobility. Statistics from the Swiss tax authorities presented in Johannesen (2014) support the existence of extensive tax evasion; 80 per cent of all wealth that Europeans placed in Switzerland is not reported in their respective countries, which thus strongly suggests avoidance of domestic taxes. The evolution of tax evasion and hidden offshore wealth over time can indicate the importance of past tax changes. Alstadsæter, Johannesen and Zucman (2018) show that the phenomenon of hiding wealth in offshore tax havens is old, dating back to the early postwar period but that its relative importance has grown over time. Roine and Waldenström (2009) examine the case of Sweden and estimate a notable increase in offshore wealth following the country's liberalization of the capital account in 1989, which removed most formal restrictions on cross-border flows.

[69] Zodrow and Mieszkowski (1986); Wilson (1986).

The distributional consequences of this tax evasion have been studied recently by Alstadsæter, Johannesen and Zucman (2017) using newly released leaked documents of named tax evaders (see also our discussions about this issue in section 3.1). These documents come from the renowned "Swiss leaks" and "Panama papers", which contain lists of private individuals from Europe and the US holding assets in tax havens. The researchers use information about names and addresses to locate thousands of Scandinavian individuals in these documents and then link them to administrative tax registers in Denmark, Norway and Sweden. Using this evidence, they document that these individuals appear to be relatively wealthy; about 80 percent of them belong to the top 0.01 percentile of their countries' wealth distribution. While this shows that domestic wealth inequality is larger than what the official estimates show, it also suggests that tax evasion could be widespread and that these rich individuals evade approximately one third of their personal taxes.

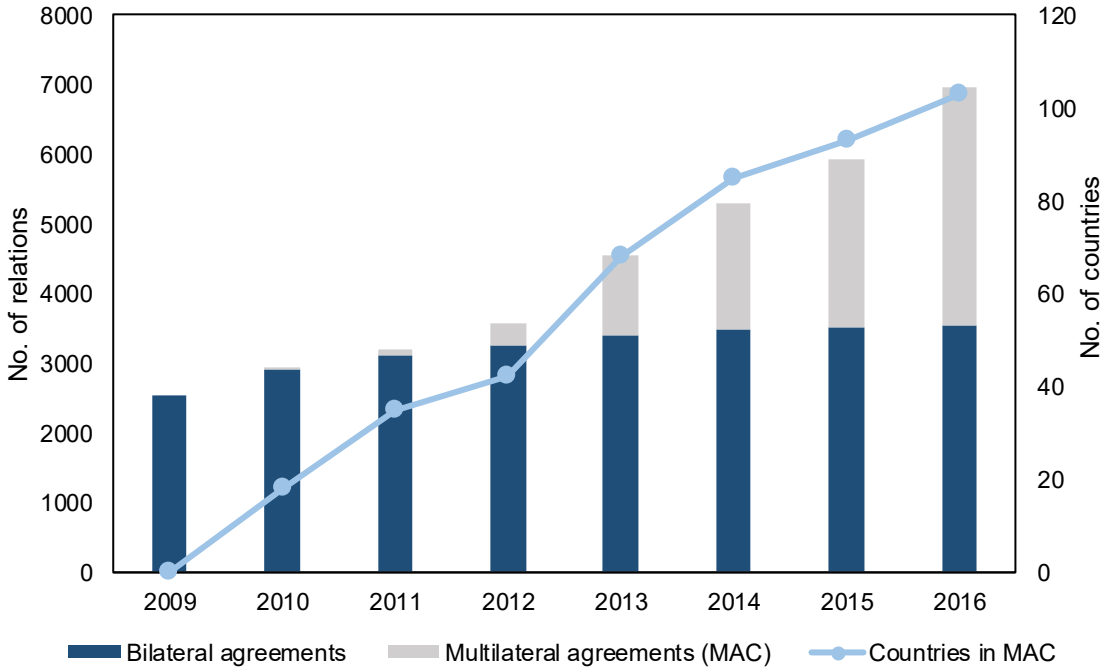
Avoiding domestic capital taxes through individual migration represents a high-cost tax-avoidance strategy. In Sweden, there are several well-known cases concerning the emigration of the country's most successful entrepreneurs for tax reasons in the 1970s: Ruben Rausing (founder of Tetra Pak), Ingvar Kamprad (founder of IKEA), Erling Persson (founder of H&M) and Bertil Hult (founder of EF Education). While these migration decisions, of course, also reflect business-related considerations, they exemplify a certain kind of tax-driven international mobility. There are some recent studies examining the role of tax-induced mobility and how tax differentials across countries influence moving patterns of some high-income groups, such as professional football players (Kleven, Landais and Saez 2013), high-income earners in Denmark (Kleven, Landais and Saez 2014), and scientists and innovators (Akcigit, Baslandze och Stantcheva 2016; Moretti and Wilson 2015). The results from these studies are relatively consistent in that relative top marginal income taxes seem to be correlated with migration patterns among high-ability individuals.

5.3 Information exchange agreements

Increased transparency and greater information exchange between countries could counter the problems of tax evasion and the tax-driven capital flight to tax havens. In recent years, there has been a rapid and intensive development to install infrastructures for information exchange between countries, initiated and directed by cross-national organizations such as OECD, G20 and EU, but bilateral initiatives also exist. These efforts largely consist of introducing reporting standards and automated information exchange arrangements, aimed at curbing tax eva-

sion and tax planning.[70] Figure 5.1 shows one result of this development: the number of countries and number of cross-country exchange relations in the world each year since 2009.

Figure 5.1: The evolution of information exchange agreements in the world.



Source: OECD Tax Policy and Statistics Division.

The impact of these information exchange agreements is still under scrutiny, but an increasing number of studies suggest that they have significantly reduced tax evasion. OECD (2017) estimates that over 500,000 taxpayers have disclosed assets over the past eight years, resulting in an increase of over 85 billion euros in tax revenues. For Sweden, 9,800 Swedes had recovered about 1.8 billion kronor by March 2016 through self-corrections.

Some research studies have found evidence of capital flowing back from tax havens as a result of the information treaties, and particularly those that are signed at the multilateral level. Johannesen and Zucman (2014) study the effect of bilateral treaties regarding the reporting of banking transactions. Their main finding is that tax evaders seem sensitivity to the risk of exposure, but instead of repatriating, shifted their funds to tax havens that were not covered by the treaties. Slemrod et al. (2017) analyze how a series of US initiatives have affected tax evasion of US citizens presumably hiding assets around the world. Although results are pre-

[70] Among these initiatives are OECD's Base Erosion and Profit Shifting (BEPS), EU's Anti-Tax Avoidance Package (ATAP) and the US's Foreign Account Tax Compliance Act (FATCA).

liminary, individuals reporting foreign assets increased by 20 percent, but the largest effect came from voluntary compliance outside the control initiatives.

The effectiveness of information exchange agreements relies ultimately on the extent of participation among countries. The finding by Johannesen and Zucman (2014) of tax evaders moving to tax havens outside the treaties, underscores this issue. Elsayyad and Konrad (2012) highlight the importance of signing multilateral agreements in order to minimize the risk of a single non-participating tax haven reaping all the hidden wealth. A related problem is how to sanction non-complying countries.

6. The political feasibility of capital taxation

Taxes are set in a political context, where politicians are influenced not only by informed economic advice but also by the opinion of voters and various special interest groups. Tax policy can thereby be described as politicians' careful balancing between the *economic desirability* of taxes with their *political feasibility*. There is a very specific political dimension to capital taxes, as they relate to the relatively skewed distribution of wealth and capital income. In a historical analysis of taxes on high incomes, wealth and inheritance, Scheve and Stasavage (2016) document that taxes on the very rich were significantly increased during wartimes, especially the two World Wars of the twentieth century. The authors argue that public sacrifice through mass mobilization and warfare created a political pressure to force the economic elite to make sacrifices. Instead of contributing with their lives, the elite contributed with their wealth, collected through capital taxes.

The political economy of capital taxation has not received much attention in the economic literature. The recent study by Scheuer and Wolitzky (2016) is an exception, focusing on the relationship between the dispersion of the capital stock and the political support in favor of taxing it. The authors argue that a fundamental constraint on tax policy is the threat of a radical reform that would imply a substantial redistribution of wealth.[71]

In this section, we examine the political feasibility of capital taxation by presenting results from a newly conducted attitude survey among Swedish adults. The survey was designed by us in collaboration with Statistics Sweden and disseminated in paper format to 4,000 random-

[71] A more general discussion of the role of political institutions for tax policy is offered in Alt, Preston och Sibieta (2010). They emphasize that the framing of policy issues and that transparency and accountability are all key for the implementation and sustainability of tax policies.

ly selected individuals during May-June 2017.[72] The response rate was 49 percent, which is high in comparison with similar research-related surveys. Having the active participation of Statistics Sweden allowed us to link all respondents to administrative registers containing information about income, property ownership, educational background and a number of household characteristics (including the same variables for all household members).

The survey contained a total of 16 questions. Out of these, seven dealt with taxes and the others were about background characteristics (housing and employment details not available in registers; checks to verify that the sampled individual also was the one answering the questionnaire) and general views of policy and the economy. Our ambition was to keep questions simple and free from complicated concepts and numerical calculations; given that we know from the experimental literature that difficult survey questions have a negative effect on both response rates and the quality of answers (Lenzner, Kaczmirek and Lenzner 2009).

6.1 Attitudes to taxes on property, inheritance and wealth

The property tax is probably the most debated of all capital taxes. In Sweden, this tax has spurred sentiments and drastic policy proposals, including the change in 2008 that lowered the overall tax rate and also introduced a nominal ceiling of the tax payment, which meant falling effective tax rates in the value of the property. As a marker of the tension between the economic desirability and the political feasibility of the property tax, the Swedish Minister of Finance expressed it clearly when characterizing its current status: "All economists love it, but the people of Sweden hate it."[73]

Our survey asks questions about what people think about introducing a property tax in the form of a proportional tax on the tax-assessed value of the property. Formally, Sweden has a tax on property, but the government proclaimed in 2008 that the tax was replaced by a "municipal charge" and this has interestingly enough been widely accepted by the public.[74] This name change, together with the tax rate change, is generally viewed as a political success, with much less public complaints about the tax compared with before the reform in 2008. It is

[72] The total survey was sent out to 12,000 individuals, but two thirds of these were place in groups that received specific informational treatments about the wealth distribution. This experimental design implies that the respondents in these groups are not be fully representative for the rest of the (untreated) population, and they are therefore left out of the analysis in this study. The results from the experiment on the preferences of wealth redistribution are presented in Bastani and Waldenström (2018).

[73] Minister of Finance Magdalena Andersson in September 2014, two weeks before the general elections (Expressen 2014-09-04, https://www.expressen.se/nyheter/val2014/har-ger-hon-rakt-svar-om-fastighetsskatten/).

[74] Formally, the "municipal charge" is a central government tax, collected by the state mandatorily from all property owners without any requirements on the state to deliver anything in return.

interesting since it points to the role of framing for the legitimacy and efficiency of taxation (Traub 1999). However, the name change also complicates matters for us when we ask about introducing a property tax, as in some sense it already exists. To reduce this ambiguity, we begin the question with a short text, where we define property taxation as a payment of a certain percentage of the property's value each year, and that Sweden had such a tax until 2008 when it was replaced by a small municipal property tax. In addition, we ask about different variants of the property tax that is to be introduced in order to see how people react to different tax designs. Specifically, we asked about what people thought about the following taxes:

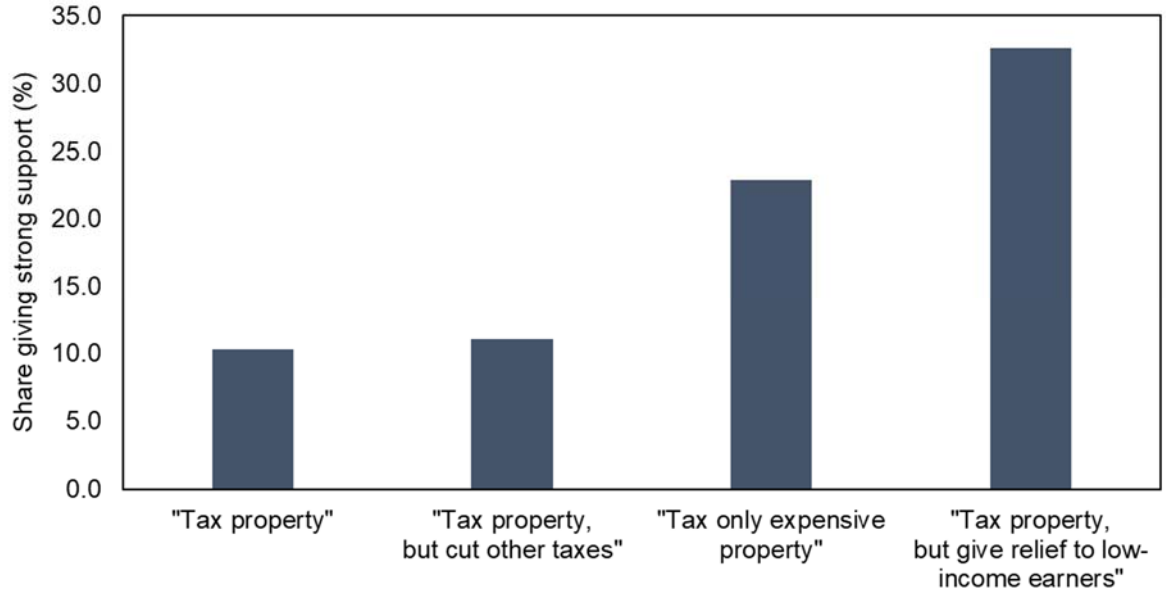
i. "A tax on property". This is the baseline case.
ii. "A tax on property, but decrease other taxes at the same time". This question separates between people's view of a property tax and their views of the general tax level.
iii. "A tax on expensive property". This question aims to capture people's attitudes to progressive property taxation. Note that we do not specify "expensive", which is intentional since it avoids setting a specific nominal threshold that could be deemed either low or high depending on how people perceive this level (as such perceptions depend on a host of factors, such as the respondent's geographical location).
iv. "A tax on property but let low-income earners pay less". This question states that the tax is associated with a restriction rule, which limits the tax payment for low-income earners. Such a rule existed in the 2000s, which emerged partly as a response to an intense public debate regarding residents in certain coastal regions that had experienced dramatic increases in property values, while the long-time owners themselves often had low income. The limit rule meant that the tax would not exceed 4-5 percent of the household's total income (but we do not inform about this in the survey).

Figure 6.1 displays the share of Swedes expressing strong support for a property tax under the four different tax designs.[75] In the baseline case of a proportional property tax on all property, a relatively small share expresses strong support (ten percent) and it does not change when we add the condition that the general tax level would be adjusted ensuring that the introduction of a new property tax would not raise overall taxes. This indicates that the small support for property taxation is not a consequence of a general sentiment against taxation.[76] When we ask about a property tax on expensive real estate, that is, a progressive property tax, the strong support more than doubles from 11 to 23 percent.

[75] The question had five different answer categories: "agree completely", "agree to a large extent", "agree to some extent", "disagree completely" and "no opinion" (see the Survey in the Appendix). We define as "strong support" those answering either "agree completely" or "agree for the most part".
[76] Had we instead chosen to give concrete examples of the adjustments, e.g., by a certain decrease in income or consumption taxes, the responses might have been different.

Finally, when we ask about a property tax that also has a limitation rule, the support increases further. In this case, one third of the population strongly supports a property tax. When we also include the group expressing "support to some extent", which represents 14 percent, the number of proponents of a property tax outnumbers the opponents (44 percent).

Figure 6.1: Share giving strong support for the introduction of a property tax.



Note: Survey responses (see the text for further information).

Inheritance taxation was abolished in Sweden in 2004, but it has since then remained a reference point in the Swedish tax policy debate. We examine the popular views of inheritance and gift taxes in the same way as we did for the property tax. That is, we first ask about what they think of such a tax and then add specific, relevant aspects of the tax that could affect the attitudes. Before asking, we informed the respondents of what we mean by this tax, which is particularly important since Sweden has not had an inheritance tax for quite some time. Similar to how we did for the property tax, we examine the role of the design of the tax on its acceptance in the general public. The different variants are the following:

i. "A tax on bequests" (baseline case).
ii. "A tax on bequests, but a decrease in other taxes". This separates between those who give unconditional support for the tax and those who like the idea of the tax but do not want to see an increase in the overall tax level.
iii. "A tax on large bequests." The inheritance tax that existed in Sweden had a very low exemption amount, much lower than other countries. The question emphasizes that the tax would be different in this important respect. It also implies that the tax would be progressive.

iv. "A tax on bequests, but not family-firm successions". The negative impact on entrepreneurship and family firms is a common argument against inheritance taxation. This question picks up this dimension.

Figure 6.2 shows that 11 percent of the Swedish adult population expresses a strong support for an inheritance tax while 68 percent disagrees with introducing such tax (not shown in the figure). We also asked about a scenario where the inheritance tax would be introduced and other taxes would be reduced. In a small interview survey in the US, Frank (2009) showed how the opinion shifted from wanting to abolish the estate tax to wanting to keep it after having been informed about how the abolishment would lead to increases in other taxes, lowered social spending or increased government debt. In our survey, the support for the inheritance tax changes only marginally when asking about general tax level effects: the strong support increases from 11 to 13 percent (from 24 to 31 percent when also including the group yielding some support).

When asked about a tax on large bequests only, the support increases significantly. The share giving a strong support more than doubles to 23 percent, and the share expressing any support exceeds 40 percent of the population. However, the group opposing such tax is still larger equal to 51 percent.[77] The large opposition to a progressive inheritance tax is puzzling, since there is good reason to believe that such a tax would affect only a small group in the population. Since we do not specify the tax threshold and also lack information about expected inheritances of the respondents, we cannot pinpoint those among the respondents who answer according to their self-interest and those who do not. But if one compares with the threshold where the central government income tax kicks in (where statutory marginal income tax rates on labor income increase from around 30 percent to around 50 percent), it is paid by around 35 percent of taxpayers. Thus, if the inheritance tax would have such progressiveness, 65 percent of respondents would support the tax if they were completely guided by their self-interest. It is possible that the inheritance tax raises oppositions along other dimensions, for example, pertaining to its intrusion into the "family sphere", or that most people believe

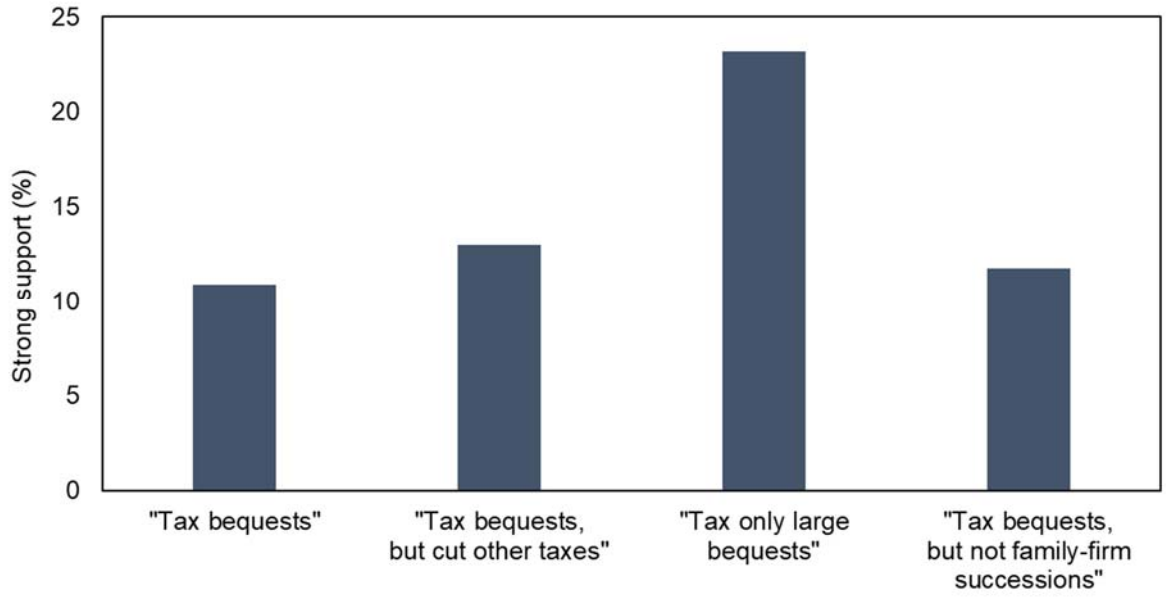
[77] Another, often mentioned, aspect of inheritance tax is that it makes it difficult for generational shifts. We specifically asked what is considered as an inheritance tax where inherited family companies were exempted (as in the case of Swedish inheritance tax). About one third gives some form of support, while about half takes away from it. However, the group without perception has grown significantly in relation to the first two questions (from almost 10 percent to 20 percent). Finally, we asked about an estate tax, which is tax on the deceased's wealth (this is the current variant of inheritance taxation in the United States and the United Kingdom). Nor does this variant of inheritance tax affect public opinion, and a third of them provide some kind of support, just over 50 percent disregard such reform and the rest is unthinkable.

themselves to have an opportunity to accumulate an enough large fortune to become taxable even under a progressive inheritance tax.

We also ask about an inheritance tax that offers reliefs for family-firm successions, but that does not seem to affect the support for an inheritance tax notably; the share giving strong or some support is virtually identical. However, the share opposing the tax drops from 68 percent in the baseline case to 52 percent, and those without opinion rises from 8 to 22 percent.

A clear pattern in the responses to both the real estate and inheritance tax questions is how much the *design*, or structure, of the taxes matters for their popularity. In the case of the property tax, it seems that already the name change in 2008, from a "state property tax" to a "municipal property charge", had a great effect on people's perceptions, and sentiments, about this tax. Moreover, our survey shows that the support doubles, or even triples, when we add simple features to the tax, such as a basic deduction or a relief for cash-constrained households. It is noteworthy that both these variants have a strong distributional content, underlining the link between wealth inequality and the political support for capital taxation.

Figure 6.2: Attitudes to inheritance tax



Note: Survey responses (see the text for further information).

We also ask about people's attitude to a wealth tax. Sweden had a wealth tax up until 2007, when it was abolished. The tax base was household net wealth above a certain threshold (about 150,000 euros in 2007). In principle, all assets and liabilities were taxable, but in practice, there were plenty of exemptions of, in particular, non-listed business equity (and some

listed shares), consumer durables and funded pensions and life insurance assets. The survey responses indicate a relatively large support for introducing a wealth tax in Sweden. About 23 percent, approximately as many as supported a tax on expensive property, express a strong support in favor of a wealth tax. An additional 27 percent state that they support the tax "to some extent". This means that 50 percent of the population supports the notion of introducing a wealth tax, while the group opposing this makes up 41 percent. Perhaps this reflects some general support in favor of taxing wealth in a way that is not plagued by the implementation problems of the property and inheritance tax that might still occupy the minds of many respondents, given the historical experience of these taxes in Sweden.

Next, we run multivariate regressions to get more information about the role of individual characteristics in determining capital tax attitudes. The dependent variable is the support for a certain capital tax, which we regress on background variables reflecting income, wealth, home ownership, educational attainment, employment status, age and sex.[78] Table 6.1 presents the regression results. Several patterns emerge. First, private economic incentives seem to matter for how a person views a tax, which is in line with several previous surveys of preferences for income redistribution from different countries (see, for example, Gemmell, Morrisey and Pinar 2004; Hammar, Jagers and Nordblom 2008; Ballard-Rosa, Martin and Scheve 2016). If one starts by glancing at the regression constants, which show the tax support among low-educated, low-paid, young women, the coefficients are highly positive throughout and statistically significant. Adding variables accounting for social and economic status, the support is gradually reduced. For example, home ownership almost halves the likelihood of supporting a property tax. High-income earners are more negative against these taxes, and their support drops especially regarding a property tax that is designed progressively, either through a basic deduction or through a relief for low-income earners. High-income earners are also more negative towards an inheritance tax. Wealth is only significantly associated with a negative tax attitude for those with relatively large wealth; the top wealth percentile has large and significant negative coefficients throughout the different specifications. Self-employment, finally, is significantly associated with a lower support in the case of progres-

[78] Note that the dependent variable is here any kind of support, including the "support fully", "support mostly" and "support to some extent" responses. The results are similar when using only strong supporters in the response dummy variable, which indicates that the main dividing line is that between giving any support and being opposed to the tax. Since there are fewer individuals in the group giving strong support, we have less variance in the background characteristics and these regressions are therefore somewhat less informative in that respect.

sive real estate and inheritance taxes, but interestingly enough not in the special case where we ask about an inheritance tax where family-firm wealth is exempt.

Second, the responses are consistent with other (non-selfish) explanations to tax attitudes. The result that high education, especially university education, is robustly associated with a support for taxes, even after controlling for personal economic status, has resonance in several dimensions. One concerns the link between information and perception of tax liabilities and attitudes towards taxes. Gemmell et al. (2004) and Hammar et al. (2008) found that misperceptions about the tax levels were lower among high-educated people, and that this made them more positive to taxes relative to lower-educated respondents. Another dimension is political and relates to the recent analysis of Piketty (2018), which shows how the well-educated elite in Western societies has gone from being politically right-wing oriented to being predominantly left-wing oriented.

Table 6.1: Determinants of attitudes to taxes on property, inheritance and wealth.

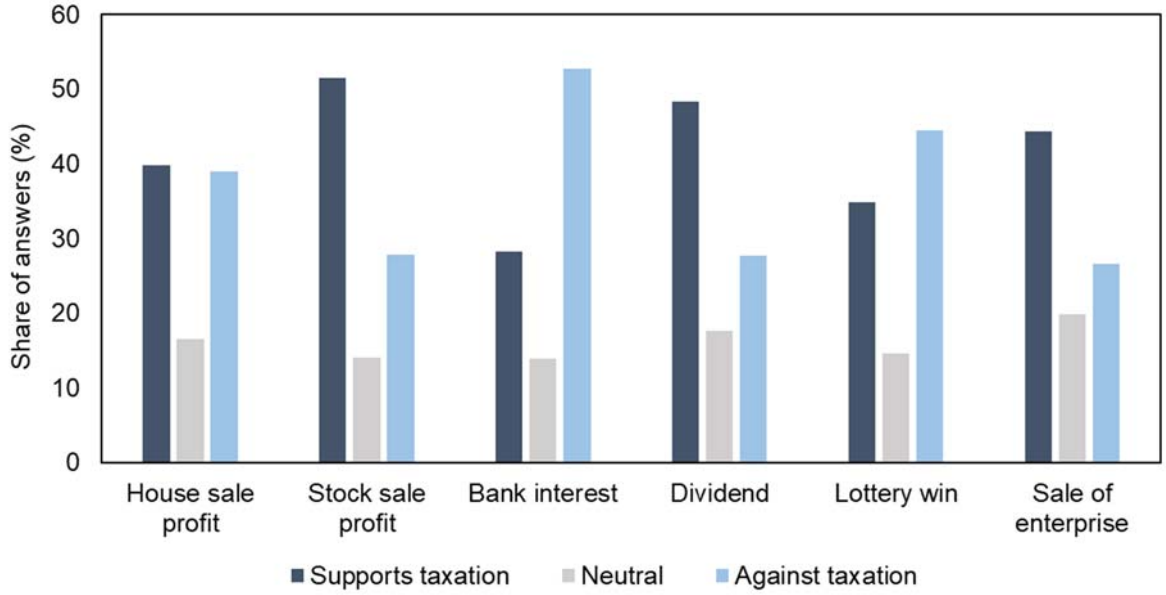
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Property tax				Inheritance tax			
	Baseline	Baseline, but cut other taxes	Only expensive property	Baseline, but with relief to low-inc.	Baseline	Baseline, but cut other taxes	Only large bequests	Wealth tax
Secondary school	-0.02	0.03	-0.06	-0.08	-0.08	0.00	-0.08	0.08
	(0.07)	(0.08)	(0.08)	(0.08)	(0.07)	(0.07)	(0.07)	(0.07)
University	0.14*	0.15*	-0.02	-0.01	0.05	0.12	0.00	0.21***
	(0.08)	(0.08)	(0.09)	(0.08)	(0.07)	(0.08)	(0.07)	(0.08)
Self-employed	0.03	-0.04	-0.20**	-0.11	-0.07	-0.14	-0.18**	-0.11
	(0.10)	(0.08)	(0.09)	(0.10)	(0.08)	(0.08)	(0.08)	(0.11)
Homeowner	-0.16**	-0.15**	-0.08	-0.02	-0.01	-0.02	0.05	-0.15**
	(0.07)	(0.07)	(0.08)	(0.08)	(0.06)	(0.07)	(0.07)	(0.07)
Income P50-90	-0.02	-0.07	-0.03	-0.05	-0.02	-0.16***	-0.04	-0.08
	(0.05)	(0.05)	(0.06)	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)
Income Top10-1%	-0.12*	-0.01	-0.12	-0.13	-0.09	-0.12	-0.06	-0.19**
	(0.07)	(0.08)	(0.08)	(0.09)	(0.07)	(0.08)	(0.08)	(0.07)
Income Top1%	-0.11	-0.14	-0.33***	-0.30***	-0.23***	-0.16	-0.28***	-0.32***
	(0.10)	(0.09)	(0.08)	(0.09)	(0.07)	(0.10)	(0.09)	(0.10)
Wealth P50-90	0.06	-0.06	-0.05	-0.04	0.04	-0.02	0.01	-0.01
	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.05)	(0.06)	(0.06)
Wealth Top10-1%	0.01	-0.13**	-0.07	-0.05	-0.05	-0.09	-0.05	-0.11
	(0.06)	(0.06)	(0.07)	(0.08)	(0.06)	(0.06)	(0.07)	(0.07)
Wealth Top1%	-0.17***	-0.26***	-0.16*	-0.21**	-0.13*	-0.20***	-0.28***	-0.31***
	(0.06)	(0.06)	(0.09)	(0.09)	(0.07)	(0.07)	(0.07)	(0.07)
Constant	0.41***	0.55***	0.43***	0.47***	0.23*	0.16*	0.28**	0.51***
	(0.13)	(0.14)	(0.13)	(0.13)	(0.12)	(0.09)	(0.12)	(0.11)
Observations	1,762	1,807	1,741	1,785	1,799	1,792	1,780	1,845
R-squared	0.07	0.08	0.10	0.07	0.05	0.08	0.10	0.09

Note: Dependent variables are dummy variables equal to one if the individual gives any support for the respective tax. All regressions are weighted by sample-stratification weights.

6.2 Attitudes to capital income taxes

Capital income taxation is a broad term referring to the taxation of the returns to many different types of investments. We therefore ask about what people think of different kinds of capital income taxes. Figure 6.3 shows that the support is greatest for taxes on realized capital gains from stock sales, on profits from company sales and on dividend income. Least support is given to taxation of interest income and lottery winnings, while capital gains from housing sales have about as many supporting it as not supporting it.

Figure 6.3: Attitudes to capital income taxes.



Note: The bars show the percentage of respondents in the attitude survey.

We run individual regressions of the support for these capital income taxes on the same set of register-data background characteristics as above. Table 6.2 shows results that are overall less explicit, indicating that these taxes do not provoke the same sentiments as do the real estate and inheritance taxes. University education is consistently positively associated with all of these taxes. Homeownership only affects the tax on realized property gains whereas middle-income earners (the P50-90 income fractile) are more negative than others to taxing realized capital gains, interest earnings and dividend income.

Table 6.2: Multivariate regressions on capital income tax attitudes

	(1) House sale Profit	(2) Stock sale profit	(3) Bank interest	(4) Dividend income	(5) Lottery win	(6) Sale of enterprise
Secondary educ.	0.03	-0.03	0.07	0.02	0.04	0.03
	(0.08)	(0.08)	(0.05)	(0.08)	(0.07)	(0.07)
University educ.	0.21**	0.21**	0.11*	0.18**	0.29***	0.17**
	(0.09)	(0.08)	(0.06)	(0.08)	(0.08)	(0.08)
Self-Employment	-0.01	-0.03	0.03	-0.03	-0.06	-0.11
	(0.11)	(0.10)	(0.09)	(0.10)	(0.09)	(0.09)
Homeowner	-0.15**	-0.01	0.10	0.06	0.01	-0.05
	(0.08)	(0.08)	(0.07)	(0.08)	(0.07)	(0.07)
Income P50-90	-0.14**	-0.09	-0.13***	-0.10*	-0.03	-0.03
	(0.06)	(0.06)	(0.05)	(0.06)	(0.05)	(0.05)
Income Top10-1%	-0.04	-0.01	-0.11	-0.03	0.07	-0.01
	(0.08)	(0.08)	(0.07)	(0.09)	(0.08)	(0.08)
Income Top1%	0.03	0.06	0.10	-0.02	0.06	0.04
	(0.12)	(0.10)	(0.12)	(0.11)	(0.12)	(0.12)
Wealth P50-90	0.11*	0.07	0.02	0.01	-0.02	0.11*
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Wealth Top10-1%	0.05	-0.01	-0.05	-0.08	0.09	0.10
	(0.07)	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)
Wealth Top1%	-0.01	0.01	-0.06	-0.10	0.09	0.05
	(0.09)	(0.10)	(0.09)	(0.10)	(0.09)	(0.10)
Constant	0.32**	0.39***	0.23*	0.28**	0.31**	0.40***
	(0.14)	(0.14)	(0.13)	(0.14)	(0.14)	(0.14)
Observations	1,798	1,802	1,799	1,788	1,799	1,796
R-squared	0.08	0.06	0.06	0.05	0.11	0.05

Note: Dependent variable is a dummy equal to one for giving support (strong or to some extent) to the proposed tax. Independent variables are dummies for maximum secondary school or university degrees, self-employment status, homeownership or belonging to certain income or net wealth fractiles. Suppressed controls are dummies for age (5-year intervals) and sex.

7. Concluding discussion

This study has analyzed the role of capital taxation in wealthy nations. Much of the policy-related and academic discussion of taxes in these countries has been devoted to labor income taxes and their implications for the economy. Although capital taxes play a smaller role in the government budget, we believe that overlooking the influence of capital taxes in modern, internationalized welfare states can become problematic, both economically and politically.

An important explanation for the disinterest in capital taxation stems from the academic economic literature. For decades, economists have relied on canonical optimal tax models that do a poor job explaining inequality in wealth and capital income. Studies from the 1970s and 1980s almost closed the case on capital taxation by showing convincingly that they had a minor role to play in an optimal tax system. In recent years, however, scholars are increasing-

ly bringing in capital taxation from the cold and have questioned many of the conventional wisdoms. Taxes on capital are today increasingly regarded as potentially both efficient and equitable parts of fiscal policy. Perhaps most importantly, as individuals with higher incomes (or more precisely, higher earnings capacity) often are those who have high capital income or have inherited wealth, capital income taxation becomes an efficient complement to progressive labor income taxation.

The main contribution of our study is the ambition to make a broad analysis of capital taxation. We believe in the importance of analyzing capital and capital taxation from several different angles. We have discussed theoretical arguments against and in favor of capital taxation, empirical facts about the size and distribution of the tax base, current practices and their implications for efficiency and distribution, domestic vs. international dimensions and the political context. The broad approach was possible by our decision to focus on the economic context of one country, Sweden.

In concluding our analysis, we land in a number of recommendations for policy. First, the optimal tax system is likely to be a complicated function of labor and capital income. We have argued that the Nordic dual income tax system which taxes labor income progressively and capital income at a proportional rate represents a reasonable trade-off between optimal tax principles and administrative feasibility. It recognizes that the labor and capital income tax bases are different, respond differently to taxation, and have different distributional implications. Moreover, the proportionality of the capital income tax avoids issues connected with tax planning and tax arbitrage.

Second, capital taxation is complex as it refers to the taxation of many different types investments. It is desirable to tax different investments as uniform as possible to avoid distortions in investment decisions. In practice, however, uniformity is difficult to achieve as there are many different forms of investments and there are practical problems associated with taxing each of them.

Third, property taxation can be motivated on equity grounds and the efficiency costs are small. Capital gains on property should be taxed just like any other investment. In addition, the imputed income from owner-occupied housing should be taxed, as this represents a consumption benefit. Liquidity problems can arise when taxing the imputed income from owned-occupied housing, which motivates relating tax payments to total household income. Sweden

had implemented such limitation rules with success. Our attitude survey clearly points to the importance of such a rule, as it is associated with a large increase in support for property taxation. The continuous tax-value assessment of properties can create problems given the volatility of asset prices. For this reason, special "dampening rules" can be employed to minimize the uncertainty of tax payments.

Fourth, inheritance taxation can be motivated on equity grounds and the efficiency costs appear to be small. Sweden abolished its inheritance tax in 2004, but many Western countries still tax inheritances and gifts. One important reason for why the Swedish tax lost its legitimacy, and was eventually abolished, was its particular design of taxing small bequests while exempting transfers of corporate fortunes, whether small or large, from the tax. Great attention needs to be paid to practical problems associated with inheritance taxes, for example, the issue of valuation and the possibility for individuals to avoid the tax using relatively simple avoidance strategies. These issues notwithstanding, the inheritance tax is without doubt one of the most powerful ways to combat inequality of opportunity.

Fifth, wealth taxation hardly exists anymore in the industrialized world, but it has received increasing political and academic attention. A wealth tax has the attractive property of uniformly taxing all types of wealth, thus avoiding any distortions across asset types. However, a general wealth tax is problematic, especially concerning business assets. The valuation of unlisted corporate shares is difficult and administratively costly to implement on an annual basis. Liquidity problems arise when the tax has to be paid despite losses in the business. In general, we think that income-based taxation of business wealth, such as the taxes on corporate profits, dividends and capital gains, are preferable to a general wealth tax.

Sixth, corporate income taxes constitute the largest source of capital tax revenues in most developed economies. A main motivation to tax corporate profits at the corporate level is that it is a way to tax foreign ownership of domestic firms. Another reason is distributional: the corporate tax is probably the best way to tax business equity, which comprises the most significant type of wealth among the wealthiest individuals in all countries. A major obstacle to corporate taxation is tax competition between nations, predicted by some to yield a "race to the bottom", driving down corporate tax rates to zero. Statutory corporate tax rates have trended downwards; but corporate tax revenues as a share of the total economy have remained stable over recent decades. Still, for countries to be able to tax financial, and especial-

ly corporate capital, in an increasingly integrated global economy, multilateral policy coordination will be required.

Seventh, the distributional implications of taxing wealth and capital income are significant, but the efficiency effects are still uncertain. It is sometimes argued that we know much more about the efficiency effects of labor income taxation. However, most studies focus on short-run responses, whereas it is the long-run responses that are most important for policy. We simply do not know very much about to which extent taxes discourage investments in education and demanding career choices. In light of this uncertainty, it seems appropriate to be equally careful about the distortionary effects of labor income taxes on human capital investments as one should be about the distortionary effects of taxes on physical capital accumulation. Given the large reliance of progressive labor income taxation in many modern welfare states, we think that a better balance between labor and capital taxation can be achieved.

A specific contribution of our study is the attention paid to the mechanisms through which the support for capital taxation is established in the population, a question that has not been studied extensively by economists. The social acceptance of the tax system is important for its long-term stability. While economists can make clear recommendations about which tax bases are preferable, politicians also need to take into account whether these tax bases are politically feasible. Capital taxes appear to be particularly important in times of economic and political turmoil, as wage earner sacrifices regarding jobs and wages generate demands for similar sacrifices from the owners of capital. A new wave of studies attempt to examine these issues. Progress along these lines has been made by Scheuer and Wolitzky (2016) who theoretically study the design of capital taxation under the threat of a radical political reform. Scheve and Stasavage (2016) offer important historical examples of how capital taxes have evolved. One strand of the literature examines how taxpayer attitudes shape, and are shaped by, institutional circumstances (for example, Kuziemko et al. 2015, Fisman et al. 2017, Alesina, Stancheva and Teso 2018). Our survey of household attitudes to capital taxes, one of the first of its kind, gave some clues about the underlying mechanisms behind the social acceptance of capital taxation, but more work is needed.

Finally, we wish to emphasize that there are certain angles and questions that we have not been able to cover. One of these is that governments can facilitate an egalitarian income and wealth distribution in other ways than through taxation, for example by giving individuals better incentives and opportunities to create wealth. Tax revenues can also be used to redis-

tribute through the expenditure side of the government budget, for example by increasing the quality in publicly financed education.

Another question that we have only touched lightly upon is how automation of the workforce and the digitalization of services will affect the importance of capital and capital taxation. Some recent studies argue that there is a current trend in falling wage shares in total value added and that this trend could reflect how automation and digitalization gradually shifts economic advantage from labor to capital (Autor et al. 2017). However, a number of important questions remain unresolved. One is that not every nation exhibits such falling secular trends in labor shares. This casts doubt on the automation hypothesis since virtually all countries are exposed to the technological transformation process. History shows a number of examples of how new technological developments have changed the composition of labor with long-run outcomes being quite different from the temporary effects (Mokyr, Vickers and Ziebarth 2015). Furthermore, the theoretical basis for understanding the role of capital taxation in light of these changes is still lacking. Given the substantial uncertainty about the core facts concerning the evolution of the capital stock and the return to capital, many different angles remain to be examined more closely. We hope that these and related questions will attract considerable attention in the years to come.

References

Adermon, A., M. Lindahl and D. Waldenström (2018). "Intergenerational wealth mobility and the role of inheritance: Evidence from multiple generations." *Economic Journal*, forthcoming.

Aiyagari, S. R. (1994). "Uninsured idiosyncratic risk and aggregate saving." *Quarterly Journal of Economics* 109(3): 659–684.

Akcigit, U., S. Baslandze and S. Stantcheva (2016). "Taxation and the international migration of inventors." *American Economic Review* 106(10): 2930–2981.

Albanesi, S. and C. Sleet (2006). "Dynamic optimal taxation with private information." *Review of Economic Studies* 73(1): 1–30.

Alpizar, F., F. Carlsson and O. Johansson-Stenman (2005). "How much do we care about absolute versus relative income and consumption?" *Journal of Economic Behavior and Organization* 56(3): 405–421.

Alstadsæter, A. and M. Jacob (2016). "Dividend taxes and income shifting." *Scandinavian Journal of Economics* 118(4): 693–717.

Alstadsæter, A., N. Johannesen and G. Zucman (2017). "Tax evasion and inequality." NBER Working Paper No. 23772.

Alstadsæter, A., N. Johannesen and G. Zucman (2018). "Who Owns the Wealth in Tax Havens? Macro Evidence and Implications for Global Inequality." *Journal of Public Economics*, forthcoming.

Alt, J., I. Preston and L. Sibieta (2010). "The Political Economy of Tax Policy." in S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba (eds.). *Dimensions of Tax Design: The Mirrlees Review*, Oxford: Oxford University Press

Aronsson, T. and A. Mannberg (2015). "Relative consumption of housing: Marginal saving subsidies and income taxes as a second-best policy?" *Journal of Economic Behavior and Organization* 116: 439–450.

Atkeson, A., V. V. Chari and P. J. Kehoe (1999). "Taxing capital income: A bad idea." *Federal Reserve Bank of Minneapolis Quarterly Review* 23(3): 3–17.

Atkinson, A. B. (2015). *Inequality. What can be done?* Cambridge, MA: Harvard University Press.

Atkinson, A. B. and A. Sandmo (1980). "Welfare implications of the taxation of savings." *Economic Journal* 90(359): 529–549.

Atkinson, A. B. and J. E. Stiglitz (1976). "The design of tax structure: direct versus indirect taxation." *Journal of Public Economics* 6(1–2): 55–75.

Auerbach, A. J. (2015). "Taxation and saving – a retrospective. *Economic Journal* 125(583): 464–492.

Autor, D., D. Dorn, L. F. Katz, C. Patterson and J. Van Reenen (2017). "Concentrating on the Fall of the Labor Share." NBER Working Paper No. 23108.

Bach, L., L. E. Calvet and P. Sodini (2017). "Rich pickings? Risk, return, and skill in the portfolios of the wealthy." Mimeo.

Ballard-Rosa, C., Martin, L., Scheve, K. (2016). "The Structure of American Income Tax Policy Preferences." *Journal of Politics* 79(1): 1–16.

Banks, J. and P. A. Diamond (2010). "The base for direct taxation." in: Mirrlees, J. A. et al. (ed.), *The Mirrlees Review. Dimensions of Tax Design*. Oxford: Oxford University Press.

Bastani, S., S. Blomquist and L. Micheletto (2013). "The welfare gains of age-related optimal income Taxation." *International Economic Review* 54(4): 1219–1249.

Bastani, S. and J. Lundberg (2017). "Political Preferences for Redistribution in Sweden." *Journal of Economic Inequality* 15(4): 345-367

Bastani, S. and D. Waldenström (2018). "The elasticity of preferences for capital taxation: Experimental evidence from a register-linked survey." Mimeo, Paris School of Economics.

Bengtsson, E. and D. Waldenström (2017). "Capital shares and income inequality: Evidence from the long run." *Journal of Economic History*, forthcoming.

Bennedsen, M., K. Meisner-Nielsen, F. Pérez-González and D. Wolfenson (2007). "Inside the family firm: The role of families on succession decisions and performance." *Quarterly Journal of Economics* 122(2): 647–691.

Bergh, A. (2014). *Sweden and the Revival of the Capitalist Welfare State*. Cheltenham: Edward Elgar.

Björklund, A. and M. Jäntti (2011). "Intergenerational Income Mobility and the Role of Family Background." in B. Nolan, W. Salverda, and T. M. Smeeding (eds.). *The Oxford Handbook of Economic Inequality*. Oxford: Oxford University Press.

Björklund, A., J. Roine and D. Waldenström (2012). "Intergenerational top income mobility in Sweden: Capitalist dynasties in the land of equal opportunity?" *Journal of Public Economics* 96(5–6): 474–484.

Blumkin, T., & Sadka, E. (2004). "Estate taxation with intended and accidental bequests." *Journal of Public Economics*, *88*(1-2): 1-21.

Boadway, R. and K. Cuff (2015). "Tax treatment of bequests when donor benefits are discounted." *International Tax and Public Finance* 22(4): 604–634.

Boserup, S., W. Kopczuk and C. Thustrup Kreiner (2016). "The Role of Bequests in Shaping Wealth Inequality: Evidence from Danish Wealth Records." *American Economic Review: Papers and Proceedings* 106(5): 656-661.

Boserup, S., W. Kopczuk and C. Thustrup Kreiner (2018). "Born with a silver spoon? Danish evidence on wealth inequality in childhood". *Economic Journal*, forthcoming.

Bruce, D. and M. Moshin (2006). "Tax policy and entrepreneurship: New time series evidence." *Small Business Economics* 26(5): 409–425.

Brülhart, M., J. Gruber, M. Krapf and K. Schmidheiny (2017). "The elasticity of taxable wealth: Evidence from Switzerland." Mimeo.

Brunner, J. K. and S. Pech (2012). "Optimal taxation of bequests in a model with initial wealth." *Scandinavian Journal of Economics* 114(4): 1368–1392.

Cabral, M. and C. Hoxby (2012). "The hated property tax: Salience, tax rates, and tax revolts." NBER Working Paper no. 18154.

Chamley, C. (1986). "Optimal taxation of capital income in general equilibrium with infinite lives." *Econometrica* 54(3): 607–622.

Chamley, C. (2001). "Capital income taxation, wealth distribution and borrowing constraints." *Journal of Public Economics* 79(1): 55–69.

Chetty, R., A. Looney and K. Kroft (2009). "Salience and Taxation: Theory and Evidence." *American Economic Review* 99(4): 1145–1177.

Chetty, R. and E. Saez (2005). "Dividend taxation and corporate behavior: Evidence from the 2003 dividend tax cut." *Quarterly Journal of Economics* 120(3): 791–833.

Chetty, R. and E. Saez (2006). "The effects of the 2003 dividend tax cut on corporate behavior: Interpreting the evidence." *American Economic Review* 96(2): 124–129.

Chetty, R., J. N. Friedman, T. Heien Nielsen, S. Leth Petersen and T. Olsen (2014). "Active vs. Passive Decisions and Crowd-out in Retirement Savings: Evidence from Denmark." *Quarterly Journal of Economics* 129(3): 1141–1219.

Christiansen, V. and M. Tuomala (2008). "On taxing capital income with income shifting." *International Tax and Public Finance* 15(4): 527–545.

Conesa, J. C., S. Kitao and D. Krueger (2009). "Taxing capital? Not a bad idea after all!." *American Economic Review* 99(1): 25–48.

Cowell, F. and P. Van Kerm (2016). "Wealth inequality: A survey." *Journal of Economic Surveys* 29(4): 671–710.

Cremer, H., P. Pestieau and J. C. Rochet (2003). "Capital income taxation when inherited wealth is not observable." *Journal of Public Economics* 87(11): 2475–2490.

Cremer, H. and P. Pestieau (2011). "Wealth and wealth transfer taxation: a survey." in The Elgar Guide to Tax Systems, E. Albi and J. Martinez-Vasquez (eds.). Edward Elgar, Northampton, MA. 183–217.

Crivelli E., R. De Mooij and M. Keen (2016). "Base erosion, profit shifting and developing countries." *FinanzArchiv: Public Finance Analysis* 72(3): 268–301.

Dasgupta, P. and J. Stiglitz (1972). "On optimal taxation and public production." *Review of Economic Studies* 39(1): 87-103.

De Nardi, M. and F. Yang (2016). "Wealth inequality, family background, and estate taxation." *Journal of Monetary Economics* 77: 130–145.

Diamond, P. and J. A. Mirrlees (1971). "Optimal taxation and public production I: Production efficiency." *American Economic Review* 61(1): 8–27.

Diamond, P. (2009). "Taxes and pensions." *Southern Economic Journal* 76(1): 2–15.

Diamond, P. and E. Saez (2011). "The case for a progressive tax: from basic research to policy recommendations." *Journal of Economic Perspectives* 25(4): 165–190.

Diamond, P. and J. Spinnewijn (2011). "Capital income taxes with heterogeneous discount rates." *American Economic Journal: Economic Policy* 3(4): 52–76.

Dynan, K. E., J. Skinner and S. P. Zeldes (2004). "Do the rich save more?" *Journal of Political Economy* 112(2): 397–444.

Elinder, M., O. Erixson and D. Waldenström (2016). "Inheritance and wealth inequality: Evidence from population registers." CEPR Discussion Paper.

Elsayyad, M. and K. Konrad (2012). "Fighting multiple tax havens." *Journal of International Economics* 86(2): 295–305.

Erosa, A. and M. Gervais (2002). "Optimal taxation in life-cycle economies." *Journal of Economic Theory* 105(2): 338–369.

Escobar, S. (2017). "Inheritance, access to capital and small business ownership: Evidence from Sweden." Mimeo, Uppsala University.

Farhi, E. and I. Werning (2010). "Progressive estate taxation." *Quarterly Journal of Economics* 125(2): 635–673.

Farhi, E. and I. Werning (2013a). "Estate taxation with altruism heterogeneity." *American Economic Review* 103(3): 489–495.

Farhi, E. and I. Werning (2013b). “Insurance and taxation over the life cycle.” *Review of Economic Studies* 80(2): 596–635.

Finkelstein, A. (2009). “E-ztax: Tax Salience and Tax Rates.” *Quarterly Journal of Economics*, 124(3): 969–1010.

Fleurbaey, M. (2008). *Fairness, Responsibility, and Welfare*. Oxford: Oxford University Press.

Frank, R. (2009). *The Return of The Economic Naturalist: How Economics Helps Make Sense of Your World*. New York: Virgin Books.

Fuest, C., A. Peichl and S. Siegloch (2018). “Do higher corporate taxes reduce wages? Micro evidence from Germany.” *American Economic Review* 108(2): 393–418.

Gemmell, N., O. Morrissey and A. Pinar (2004). “Tax perceptions and preferences over tax structure in the United Kingdom.” *Economic Journal* 114(493): F117–F138

Golosov, M., M. Troshkin, A. Tsyvinski and M. Weinzierl (2013). “Preference heterogeneity and optimal capital income taxation.” *Journal of Public Economics* 97: 160–175.

Golosov, M., Troshkin, M., & Tsyvinski, A. (2016). “Redistribution and social insurance.” *American Economic Review* 106(2): 359–386.

Golosov, M., A. Tsyvinski, I. Werning, P. Diamond and K. L. Judd (2006). “New dynamic public finance: A user’s guide.” *NBER Macroeconomics Annual* 21: 317–387.

Gordon, R. H. and W. Kopczuk (2014). “The choice of the personal income tax base.” *Journal of Public Economics* 118: 97–110.

Goupille-Lebret, J. and J. Infante (2017). “Behavioral responses to inheritance tax: Evidence from notches in France.” Mimeo.

Guvenen, F., G. Kambourov, B. Kuruscu, S. Ocampo and D. Chen (2017). “Use it or lose it: Efficiency gains from wealth taxation.” Mimeo.

Harberger, A. C. (1962). “The incidence of the corporation income tax.” *Journal of Political Economy* 70(3): 215–240.

Henrekson, M. and D. Waldenström (2016). “Inheritance taxation in Sweden, 1885–2004: The role of ideology, family firms and tax avoidance.” *Economic History Review* 69(4): 1228–1254.

Hosseini, R. and A. Shourideh (2017). “Retirement financing: An optimal reform approach.” Mimeo.

Jacobs, B. and A. L. Bovenberg (2010). “Human capital and optimal positive taxation of capital income.” *International Tax and Public Finance* 17(5): 451–478.

Jacobs, B. (2013). “From Optimal Tax Theory to Applied Tax Policy”, *FinanzArchiv* 69(3): 338–389.

Jacobs, B., A. Gerritsen, A. Rusu and K. Spiritus (2018) “Optimal Taxation of Capital Income When Rates of Return Are Heterogeneous.” Mimeo, Erasmus University Rotterdam.

Jacobs, B. and A. V. Rusu (2017). "Why is the Long-Run Tax on Capital Income Zero? Explaining the Chamley-Judd Result." Working Paper nr 17-011/VI, Tinbergen Institute.

Jakobsen, K., K. Jakobsen, H. Kleven and G. Zucman (2017). "Wealth taxation and wealth inequality: Evidence from Denmark 1980–2014." Mimeo.

Johannesen, N. and G. Zucman (2014). "The end of bank secrecy? An evaluation of the G20 tax haven crackdown." *American Economic Journal: Economic Policy* 6(1): 65–91.

Johannesen, N. and T. Stolper (2017). "The deterrence effect of whistleblowing – An event study of leaked customer information from banks in tax havens." Max Planck Institute for Tax Law and Public Finance.

Judd, K. L. (1985). "Redistributive taxation in a simple perfect foresight model." *Journal of Public Economics* 28(1): 59–83.

Kleven, H. and E. Schultz (2014). "Estimating taxable income responses using Danish tax reforms." *American Economic Journal: Economic Policy* 6(4): 271–301.

Kleven, H. J., Knudsen, M. B., Kreiner, C. T., Pedersen, S., & Saez, E. (2011). "Unwilling or unable to cheat? Evidence from a tax audit experiment in Denmark." *Econometrica*, *79*(3): 651-692.

Kleven, H., C. Landais and E. Saez (2013). "Taxation and international migration of superstars: Evidence from the European football market." *American Economic Review* 103(5): 1892–1924.

Kleven, H., C. Landais and E. Saez (2014). "Migration and wage effects of taxing top earners: Evidence from the foreigners tax scheme in Denmark." *Quarterly Journal of Economics* 129(1): 333–378.

Kopczuk, W. (2005). "Tax bases, tax rates and the elasticity of reported income." *Journal of Public Economics* 89(11–12): 2093–2119.

Kopczuk, W. (2013). "Taxation of intergenerational transfers and wealth" in: A. Auerbach, R. Chetty, M. Feldstein and E. Saez (eds.): *Handbook of Public Economics*, Volume 5, Amsterdam: Elsevier.

Kristjánsson, A. S. (2016). "Optimal taxation with endogenous return to capital." Working Paper nr 06/2016, Department of Economics, Oslo University.

Lenzner, T., L. Kaczmirek and A. Lenzner (2009). "Cognitive burden of survey questions and response times: A psycholinguistic experiment." *Applied Cognitive Psychology* 24(7): 1003–1020.

Lindbeck, A. (1997). "The Swedish Experiment." *Journal of Economic Literature* 35(3): 1273–1319.

Lindhe, T. och J. Södersten (2012). "The Norwegian shareholder tax reconsidered". *International Tax and Public Finance* 19(3): 424–441.

Lundberg, J. and D. Waldenström (2017). "Wealth inequality in Sweden: What can we learn from capitalized income data?" *Review of Income and Wealth*, forthcoming.

Martin, I. W. (2008). *The Permanent Tax Revolt: How the Property Tax Transformed American Politics*. Stanford: Stanford University Press.

Mirrlees, J. A. (1971). “An exploration in the theory of optimum income taxation.” *Review of Economic Studies* 38(2): 175–208.

Mirrlees, J., S. Adam, T. Besley, R. Blundell, B. Bond, R. Chote, M. Gammie, P. Johnson, E. Moretti and D. Wilson (2015). ”The effect of state taxes on the geographical location of top earners: evidence from star scientist.” Working Paper nr 2015-06, Federal Reserve Bank of San Francisco.

Mokyr, J., C. Vickers and N. L. Ziebarth (2015). “The History of Technological Anxiety and the Future of Economic Growth: Is This Time Different?” *Journal of Economic Perspectives* 29(3): 31–50.

Morelli, S., T. Smeeding and J. Thomson (2015). “Post-1970 trends in within-country inequality and poverty: rich and middle-income countries.” in A B Atkinson and F Bourguignon (eds.), *Handbook of Income Distribution, volume 2*, Amsterdam: Elsevier.

Moser, C. and P. Olea de Souza e Silva (2017). “Optimal paternalistic savings policies.” Working Paper.

Ohlsson, H., J. Roine and D. Waldenström (2014). “Inherited wealth in Sweden: 1810–2016.” CEPR Working Paper.

Ordover, J. A., & Phelps, E. S. (1979). The concept of optimal taxation in the overlapping-generations model of capital and wealth. *Journal of Public Economics*, *12*(1), 1-26.

Piketty, T. (2014). *Capital in the 21st Century*. New York: Belknap.

Piketty, T. (2018). “Brahmin Left vs Merchant Right: Rising Inequality & the Changing Structure of Political Conflict.” Mimeo, Paris School of Economics.

Piketty, T. and E. Saez (2013). “A theory of optimal inheritance taxation.” *Econometrica* 81(5): 1851–1886.

Piketty, T. and G. Zucman (2014). “Capital is Back: Wealth-Income Ratios in Rich Countries, 1700-2010.” *Quarterly Journal of Economics* 129(3): 1255–1310.

Piketty, T. and G. Zucman (2015). “Wealth and Inheritance in the Long Run.” in A B Atkinson and F Bourguignon (eds.), *Handbook of Income Distribution, volume 2*, Amsterdam: Elsevier.

Pirttilä, J. and H. Selin (2011). “Income shifting within a dual income tax system: Evidence from the Finnish tax reform of 1993.” *Scandinavian Journal of Economics* 113(1): 120–144.

Pirttilä, J. and M. Tuomala (2001). “On optimal non-linear taxation and public good provision in an overlapping generations-economy.” *Journal of Public Economics* 79(3): 485–501.

Philiponnet, N. and A. Turrini (2017). “Assessing House Price Developments in the EU.” DP No. 48, DG ECFIN, Brussels.

Roine, J. and D. Waldenström (2008). “The Evolution of Top Incomes in an Egalitarian Society: Sweden, 1903–2004.” *Journal of Public Economics* 92(1–2): 366–387.

Roine, J. and D. Waldenström (2009). “Wealth concentration over the path of development: Sweden, 1873–2006.” *Scandinavian Journal of Economics* 111(1): 151–187.

Roine, J. and D. Waldenström (2012). "On the Role of Capital Gains in Swedish Income Inequality." *Review of Income and Wealth* 58(3): 569–587.

Roine, J. and D. Waldenström (2015). "Long-run trends in the distribution of income and wealth." in A B Atkinson and F Bourguignon (eds.), *Handbook of Income Distribution, volume 2*, Amsterdam: Elsevier.

Saez, E. (2002). "Optimal income transfer programs: intensive versus extensive labor supply responses." *Quarterly Journal of Economics* 117(3): 1039–1073.

Saez, E. and G. Zucman (2016). "Wealth inequality in the United States since 1913: Evidence from capitalized income tax data." *Quarterly Journal of Economics* 131(2): 519–578.

Saez, E. and S. Stantcheva (2016). "Generalized social marginal welfare weights for optimal tax theory." *American Economic Review*, 106(1): 24–45.

Scheuer, F. (2014). "Entrepreneurial taxation with endogenous entry." *American Economic Journal: Economic Policy*, 6(2): 126–163.

Scheuer, F. and A. Wolitzky (2016). "Capital Taxation under Political Constraints." American Economic Review 106(8): 2304–2328.

Scheve, K. and D. Stasavage (2016). *Taxing the Rich. A History of Fiscal Fairness in the United States and Europe*. Princeton, N.J.: Princeton University Press.

Seim, D. (2017). "Behavioral responses to wealth taxes: Evidence from Sweden." *American Economic Journal: Economic Policy* 9(4): 395–421.

Skinner, J. (1996). "The dynamic efficiency cost of not taxing housing." *Journal of Public Economics* 59(3): 397–417.

Slemrod, J., N. Johannesen, P. Langetieg, D. Reck and M. Risch (2017). "Taxing hidden wealth: The consequences of U.S. enforcement initiatives on evasive foreign accounts." Mimeo.

Sørensen, P. B. (2005). "Neutral taxation of shareholder income." *International Tax and Public Finance* 12(6): 777–801.

Sørensen, Peter Birch (2010). *Swedish Tax Policy: Recent Trends and Future Challenges*. Rapport till Expertgruppen för Studier i Offentlig ekonomi 2010:4, Stockholm: Fritzes.

Stantcheva, S. (2017). "Optimal taxation and human capital policies over the life cycle." *Journal of Political Economy* 125(6).

Selin, H. and Simula, L. (2017). "Income Shifting as Income Creation? The Intensive vs. the Extensive Shifting Margins." CESifo Working Paper No. 6510.

Straub, L. and I. Werning (2014). "Positive long run capital taxation: Chamley-Judd revisited." Working Paper nr 20441, National Bureau of Economic Research.

Traub, S. (1999). *Framing Effects in Taxation: An Empirical Study Using the German Income Tax Schedule*. Heidelberg: Physica-Verlag.

Waldenström, D. (2016). "The national wealth of Sweden, 1810–2014." *Scandinavian Economic History Review* 64(1): 36–54.

Waldenström, D. (2017). “Wealth-income ratios in a small, developing economy: Sweden, 1810–2010.” *Journal of Economic History* 77(1): 285–313.

Waldenström, D., S. Bastani and Å. Hansson (2018). *Kapitalbeskattningens förutsättningar*. SNS Konjunkturrådsrapport 2018. Stockholm: SNS förlag.

Vella, J. (2015). “Nominal vs. Effective Corporate Tax Rates Applied by MNEs and an Overview of Aggressive Tax Planning Tools, Instruments and Methods.” European Commission.

Wilson, J. D. (1986). “A theory of interregional tax competition.” *Journal of Urban Economics*, 19(3): 296–315.

Wolff, E. N. (2015). *Inheriting Wealth in America. Future Boom or Bust?* Oxford: Oxford University Press.

Zodrow, G. R. and P. Mieszkowski (1986). “Pigou, Tiebout, property taxation, and the underprovision of local public goods.” *Journal of Urban Economics*, 19(3): 356–370.

Zucman, G. (2013). “The missing wealth of nations: Are Europe and the US net debtors or net creditors?” *Quarterly Journal of Economics* 128(3): 1321–1364.