How Should Consumption Be Taxed?

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We review the theoretical justification for consumption taxes in advanced economies, providing a systematic review of the extensive public finance literature that examines how goods and services should be taxed. Our discussion focuses on both the determinants of the optimal level of consumption taxation relative to other taxes, as well as the optimal differentiation of taxes across goods and services. We blend classical public finance results, recent developments in the optimal tax literature, and practical considerations. The aim is to provide guidance to academics and policymakers on the main trade-offs in consumption taxation and to highlight important areas where further research is needed.

Keywords: taxation, consumption, commodity, labor, capital, wealth

JEL classification: H 21, H 24

1. Introduction

In this paper, we review the theoretical rationale for consumption taxes in advanced economies and provide a systematic overview of the vast public finance literature that examines how goods and services should be taxed. We acknowledge that the relevant literature is based on a large number of different models and assumptions, making it difficult terrain for academics and policymakers to navigate. Moreover, there is little discussion of the basic principles of consumption taxation and the economic consequences of changing the relative importance of consumption and other taxes in the tax system. The purpose of this paper is to fill these gaps. Our discussion blends classical public finance results, recent developments in the optimal tax literature, and practical considerations.[1]

Given the various forms of consumption taxation that exist in practice, our paper focuses on two natural policy questions: (i) how should consumption

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be taxed relative to other tax bases such as income, capital, or wealth?, and (ii) how should consumption taxes be differentiated across goods and services? These two overarching questions will guide our discussion. On the issue of tax differentiation, it should be noted that differential tax rates can be created in a number of ways, such as through excise taxes, reductions or exemptions within the VAT system, or through deduction rules in the income tax code (e.g., for child care expenses, household services, or owner-occupied housing). Our discussion of tax differentiation will focus on the general rationale behind any form of differentiation –without taking a strong position on specific implementations of differential rates. In some cases, implementation may be important. For example, if the government wants to reduce environmentally harmful consumption, it is desirable to use an excise tax, which links the tax burden directly to the quantity consumed, rather than a tax based on the value of sales (price times quantity), since it is usually the quantity consumed that causes environmental damage.[2]

Regarding the optimal level of consumption taxation, it is sometimes claimed that if consumption taxes are raised and taxes on labor income are lowered, the reform would stimulate labor supply. We think this is a weak argument for consumption taxation, since the purpose of earning income is to consume, either today or in the future. Despite many similarities, we show that consumption is a broader tax base than labor income because it is financed not only by taxed labor income but also by wealth and undeclared income. However, in practice, the full potential of this broad tax base is often not realized because of the prevalence of exemptions for many goods and services within the VAT framework (as in the European Union). These exemptions can significantly reduce the effective tax base.

Critics of consumption taxes argue that they are regressive because low-income individuals consume a larger share of their income. Undesirable regressivity may be one reason why countries that rely heavily on consumption taxes have preferential tax rates for necessities such as food or medicine. However, such rebates are inefficient because distributional concerns can be better addressed through income taxation and targeted transfers to households. Addressing distributional concerns in this way avoids distortions of competition and distortions of consumption and production decisions. Moreover, the distributional effects of differentiated consumption taxes are notoriously difficult to quantify because they depend on how firms adjust their prices in response to the taxes. Of course, for some expenditures, it's not possible to provide compensation through the income tax system. Consider two individuals with

2 As another example, if the government wishes to subsidize child care in order to facilitate labor supply, providing the subsidy through income tax deductions or tax credits means that the government can fine-tune its effect on particularly targeted households.

identical incomes, one of whom requires expensive prescription eyeglasses to function effectively. Many would argue that this need reflects a necessity rather than a luxury, warranting some form of financial relief. However, income tax mechanisms cannot provide such specific assistance. Instead, compensation for these essential expenses would be more effectively addressed through targeted subsidies for items such as prescription eyeglasses.

The validity of the criticism of consumption taxes as regressive depends on whether we assess tax progressivity annually or over a lifetime (or even across generations). The key point, however, is that consumption taxes tend to be proportional, whereas income taxes often have progressive elements. This difference limits the degree of progressivity that can be achieved through consumption taxes alone. In reality, consumption taxes are part of a broader tax framework that includes various other types of taxes. Therefore, it's the overall distributional impact of the entire tax system that matters most. However, we highlight two elements that can indeed make consumption taxes contribute to increased tax progressivity. First, a tax shift from labor to consumption increases the tax revenue from labor income that is reclassified as lightly taxed capital income.[3] Second, a tax shift from labor to consumption increases the taxation of excess returns to capital, which is desirable on distributional grounds, provided that individuals with higher earning capacity earn higher returns on their investments.[4]

Overall, we conclude that there are compelling and diverse theoretical justifications for consumption taxation. Finding the appropriate level of consumption taxation, however, will require new quantitative advances that assess the relevance of these theoretical mechanisms.

Regarding the optimal differentiation of consumption taxes, two canonical results in public finance by Atkinson and Stiglitz (1976) and Diamond and Mirrlees (1971) provide seminal starting points. Taken together, they recommend that all goods and services should be subject to the same tax rate in order to avoid tax-induced distortions in consumption and production decisions. We argue that several practical considerations support this view. First, uniform tax rates are less susceptible to pressure from lobbying groups. Second, uniform rates are consistent with horizontal equity principles because they avoid redistribution among individuals with identical incomes but different consumption tastes. Third, uniform rates are administratively parsimonious and avoid delineation problems.

3 If the shift is accompanied by reductions in labor income tax rates for high earners, it also reduces the incentive to shift income across bases.

4 The change may also be motivated on efficiency grounds if the excess returns reflect rent-seeking rather than hard work and prudent investment. However, it should also be noted that excess returns provide important incentives for risky investment and entrepreneurship, which can stimulate economic growth.

However, we highlight two broad areas where differential consumption taxation is motivated. The first area is, of course, consumption that generates negative externalities or internalities. Typical examples are goods that have adverse effects on the environment or individual health, such as fossil fuels, alcoholic beverages, tobacco products, or sugary foods and beverages. Here, unit taxes are useful to improve economic efficiency by incorporating the social impacts of consumption into final prices. Taxes should be targeted at the underlying environmental or health problem and levied at levels that are motivated by the harm caused. They should not be used as a general tool to raise tax revenue.

The second area of differentiation concerns goods and services whose demand depends on the supply of labor, such as child care and household services. Subsidies for such services can provide redistribution at a lower efficiency cost by mitigating the distortionary effect of high marginal income tax rates. At the same time, such subsidies affect the choice of individuals between providing these services themselves and purchasing them in the market, thereby increasing the incentive to work in the market relative to the household sector and contributing to increased specialization in the economy.

As will be shown below, consumption taxes are quantitatively very important to the tax revenues of advanced economies. Yet the research literature discussing the theoretical underpinnings of these taxes is rarely reviewed.[5] There are some notable exceptions. As part of the Mirrlees Review (Mirrlees et al., 2011), Crawford et al. (2010) summarize the public finance literature to derive policy recommendations for VAT and excise duties on alcohol and tobacco for the United Kingdom. Cnossen and Jacobs (2020) produce a similar volume for the Netherlands. We complement both works by broadening the perspective beyond a specific national tax system. We also highlight a number of issues that have received less attention in these works, such as the taxation of excess returns to capital, the role of cross-base income shifting, and the implications of wealth differences for the commodity tax system.

By focusing on the question of how consumption should be taxed, our paper is related to previous work that has surveyed the optimal tax literature. For example, Jacobs (2013) and Boadway and Cuff (2022) cover a wide range of topics and apply their theoretical insights to a variety of policy issues, including the taxation of labor income, capital income, and pensions. However, indirect taxes, such as consumption taxes, are not their main focus. Therefore, the present survey significantly extends the review of this part of the

5 In contrast, capital taxes have received much more scholarly attention in recent years. Although wealth and capital income play an important role in explaining trends in inequality, capital taxes do not raise much revenue, and therefore their role in supporting modern welfare states is limited.

literature. Most surveys of the public finance literature focus on the taxation of labor and capital income, but largely abstract from consumption taxation (Mankiw et al., 2009; Banks and Diamond, 2010; Diamond and Saez, 2011; Bastani and Waldenström, 2020; Kaplow, 2022).

The work most closely related to ours is that of Christiansen and Smith (2021), who provide an in-depth textbook treatment of the economic principles behind the taxation of commodities, focusing in particular on the economic aspects of VAT, financial services, and international aspects of indirect taxation. Compared to their work, we place less emphasis on the above issues and instead focus more on the relationship between consumption and capital taxation, subsidies for child care and household services, and the implications of wealth differences and heterogeneous preferences, among others. We therefore see our work as complementary.

The paper is organized as follows. Section 2 briefly summarizes the practical relevance of consumption taxation. Section 3 discusses the optimal level of consumption taxes relative to other forms of taxation. The paper then addresses tax differentiation. Section 4 presents arguments for taxing consumption at a uniform rate. Section 5 discusses cases where differentiated consumption taxes may be justified. Section 6 concludes and suggests some areas for future research.

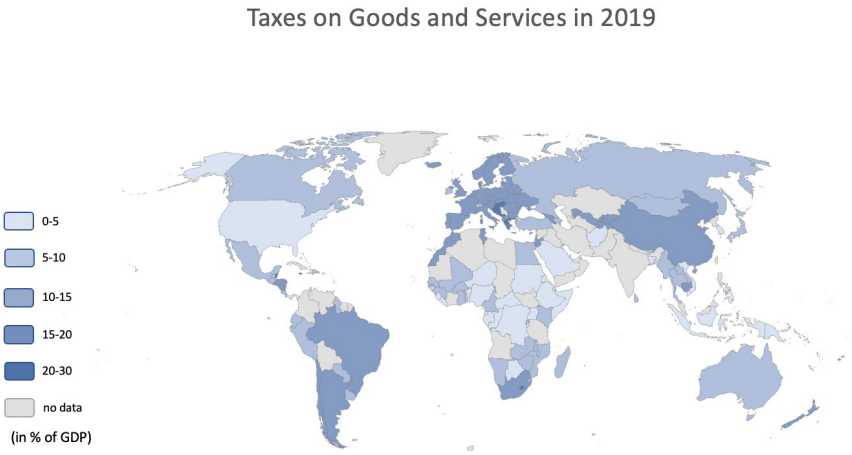
2. Consumption Taxation in Practice

Consumption is generally one of the most important tax bases around the world (Figure 1). In the 148 countries included in the UNU-WIDER Government Revenue Dataset, consumption taxes raised an average of 9.2% of GDP in 2019 (UNU-WIDER, 2021). The level of consumption taxation is even higher in the OECD, where it reached 10.8% of GDP in 2019 (OECD, 2022). As the close resemblance of these two figures indicates, consumption taxation is now ubiquitous at all stages of development.

In the OECD, consumption taxes are a large source of public revenue, accounting for about one-third of total tax revenue (Figure 2). However, as with most forms of taxation, there are notable differences between countries. Chile, Hungary, Latvia and Estonia are the OECD countries that rely most heavily on consumption taxes, raising more than 40% of their tax revenue from this source (OECD, 2022). The United States, Switzerland and Japan are at the opposite end of the spectrum, raising less than 20% of tax revenue from consumption taxes (OECD, 2022).

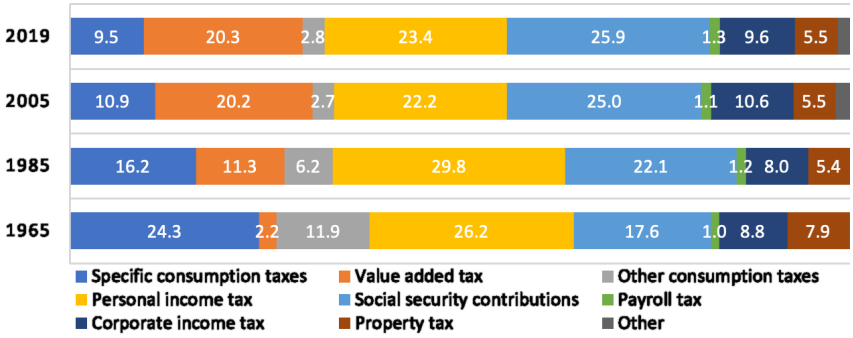
Consumption taxation typically consists of several layers. The main form of consumption taxation in most OECD countries is a value-added tax (VAT) – and in the United States, a sales tax. Both types of taxes are broad-based and

Figure 1
Consumption Tax Revenues as a Share of GDP in 2019



Data source: UNU-WIDER Government Revenue Dataset (UNU-WIDER, 2021).

Figure 2
Tax Structures as a Percentage of Total Taxation, 1965–2019, OECD Average



Note: Data source is OECD (2022). *Specific consumption taxes* are defined in line with the the OECD classification 5120 and contain in particular excise taxes, customs, import duties, and taxes on specific services.

target goods and services consumed by households.[6] In addition to general consumption taxes, tax authorities levy additional taxes on specific goods, of-

6 Sales taxes and VATs differ significantly in their implementation – VATs are levied at each stage of the production process, while sales taxes are levied only at the retail level. The approaches thus differ in their administrative complexity and their scope for tax evasion (e.g., OECD, 2020)

ten referred to as excise taxes. Goods commonly subject to specific taxes include alcoholic beverages, tobacco products, fossil fuels, motor vehicles, and, more recently, foods and beverages high in sugar or fat. Historically, such excise taxes have accounted for the largest share of consumption tax revenues. Nowadays, however, general consumption taxes in the form of VAT have become dominant, raising more than twice as much revenue as specific taxes; see Figure 2.

While the move toward VAT has been largely uniform (except in the United States) and includes 170 countries as of 2020 (OECD, 2020), the rate of VAT varies considerably from country to country.[7] The standard VAT rate ranges from as low as 5% in Canada or 7.7% in Switzerland to 25% in Denmark, Sweden, and Norway and as high as 27% in Hungary. Most countries apply reduced VAT rates or VAT exemptions to selected goods and services such as basic necessities (some food and beverages, housing, medicine, health care, etc.) and a wide range of other goods and services such as transportation, newspapers, cultural products, hospitality services, and agricultural inputs.[8] The level of rebates and the types of goods that qualify for them again vary widely from country to country (OECD, 2020). However, the proportion of goods that qualify for reduced or exempted rates is usually quite high.

3. Optimal Level of Consumption Taxation

When discussing consumption taxes, it is useful to distinguish between the general level of consumption taxes (relative to other taxes) and the extent to which taxes on goods and services should be differentiated. In this section, we focus on the first issue and examine the main advantages of consumption taxes relative to income taxes. The advantages and disadvantages of differentiated rates are discussed in sections 4 and 5 below.

We show that consumption taxes have many similarities to income taxes. The simple reason is that what is earned will be consumed sooner or later. Therefore, both labor and income taxes create comparable disincentives to work, to invest in education, to become an entrepreneur, and so on. But there are some important differences. In particular, consumption taxes achieve distributional gains by imposing an additional burden on wealthy individuals, individuals who earn excess returns to capital, and individuals who benefit from income shifting opportunities. Moreover, consumption taxes may be desirable from a tax enforcement perspective to the extent that undeclared income is

7 The United States is the only OECD country without a VAT, using a subnational sales tax instead.

8 New Zealand is the typical example of a country with an almost uniform system of commodity taxation (IMF, 2016).

used to finance domestic consumption. On the other hand, consumption taxes are typically constrained to be proportional, while income can more easily be taxed progressively. Overall, both income and consumption taxes should be strong pillars of the tax system.

3.1. Consumption Taxation and Labor Income Taxation

A common view is that increased reliance on consumption taxes (in exchange for reduced taxation of labor income) induces individuals to increase their labor supply. In its generality, this view is incorrect, since the purpose of earning income is to consume it, either today or tomorrow. The simplest way to illustrate the equivalence between labor income taxation and consumption taxation is to consider a world with two consumption goods x_1 and x_2 with prices p_1 and p_2 and constant marginal costs of production. For an individual with income y, the budget constraint is:

$$p_1 x_1 + p_2 x_2 = y. \tag{1}$$

Suppose the government imposes a uniform tax on the value of consumption goods, a so-called *ad-valorem* tax, with a tax rate of t_c. The tax implies that the expenditure on the left-hand side of the budget constraint is multiplied by $(1+t_c)$. An equivalent condition is obtained if the right-hand side of the constraint is instead divided by $(1+t_c)$, i.e,

$$(1+t_c)(p_1 x_1 + p_2 x_2) = y \quad \Longleftrightarrow \quad (p_1 x_1 + p_2 x_2) = (1-t_y)y, \tag{2}$$

where $t_y = 1 - 1/(1-t_c)$. Thus, a proportional consumption tax is mathematically equivalent to a proportional labor income tax.[9]

The equivalence between taxing labor income and taxing consumption can be broken if, for some reason, individuals consider future consumption expenditures to be less relevant. For example, if individuals are myopic and neglect future taxes, a shift to consumption taxation will mask some of the tax burden and may increase the perceived returns to work. In this case, a shift to consumption taxation may stimulate labor supply.[10] A related issue is that unanticipated tax changes are, by construction, not harmful to past labor supply. Thus, tax changes affect current incomes differently from past incomes. We outline the consequences of this distinction in section 3.2 below.

9 This example compares proportional consumption taxes to proportional labor income taxes. An important practical difference is that consumption taxes are in most cases proportional, while income taxes are often nonlinear (progressive). We discuss distributional aspects in section 3.6.

10 Consumption taxation is also a means of taxing transfer income when such transfer income is not taxed through the labor income tax (as is the case for some forms of transfer income in, for example, Sweden).

3.2. Consumption Taxation as an Implicit Wealth Tax

A popular argument for consumption taxation is that consumption is a broad tax base because it can be financed not only by income from labor and capital, but also by depletion of the consumer's wealth. To take up this argument, suppose that in addition to her labor income y, the consumer has a wealth stock W. The wealth stock can be interpreted as an unexpected inheritance or as income accumulated before the introduction of the tax system, and can therefore be considered exogenous. In this case, the budget constraint takes the form:

$$p_1 x_1 + p_2 x_2 = y + W. \tag{3}$$

In equation (3), taxes on labor income and consumption are no longer equivalent, since a part of consumption is financed by wealth W. Instead, a proportional consumption tax is equivalent to a proportional tax on both income and wealth.

The fact that consumption taxation implies an implicit tax on wealth can be considered desirable as it can lead to a reduction in wealth inequality. Moreover, by shifting the tax burden from current income to past income (wealth), consumption taxation will increase the incentive to work, provided that the tax reform is not anticipated. It should be noted, however, that such tax reforms affect individuals very differently depending on their position in the life cycle. An unexpected shift towards consumption taxation is mainly a tax on the older generation to the benefit of the younger generation.

3.3. Consumption Taxation as a Tax on Excess Returns

Next, we consider consumption taxation with an explicit dynamic perspective and relate consumption taxes to taxes on capital income. Again, we consider an individual with a lifetime labor income of y. Instead of choosing between different consumption goods at a given point in time, the problem now is how to allocate consumption over time. For simplicity, we assume that there are two life periods and that the individual finances consumption in both periods with the labor income earned in the first period. We also assume that there is only one consumption good in each period and that the producer price of consumption is unity.

As a first benchmark, we assume that the individual can save and borrow at the risk-free rate r, which is also the rate at which the government can lend and borrow. Then the individual's intertemporal budget constraint is

$$c_1 + \frac{c_2}{1+r} = y, \tag{4}$$

where the consumption levels in periods 1 and 2 are denoted by c_1 and c_2, respectively. In (4), the left-hand side is the present (discounted) value of the

individual's consumption, and the right-hand side is the present value of the individual's resources, equal to labor income. Note that (4) is a special case of (1), and thus the equivalence between consumption taxation and labor income taxation is maintained.

What is the relationship between consumption taxes and capital taxes? To shed light on this question, it is important to distinguish between normal and excess rates of return. Normal rates of return are the expected returns on an investment that reflect standard compensation for the use of capital, typically based on the risk-free rate plus a risk premium. Excess returns, on the other hand, are the additional profits that exceed these normal returns, often as a result of greater risk-taking, unique business strategies, luck, or market inefficiencies (such as economic rents).[11] Suppose, then, that individual savings s earn the normal return on their investment r, plus an excess return denoted by σ. In this case, consumption in the first period is $c_1 = y - s$ and consumption in the second period is $c_2 = (1+r+\sigma)s$. Assuming a proportional tax on consumption with a tax rate of t, and assuming that the government discounts the tax revenue by a factor of $1/(1+r)$ based on the normal rate of return, the present discounted value of the tax revenue is

$$R = t\left(c_1 + \frac{c_2}{1+r}\right) = t(y-s) + \frac{t(1+r+\sigma)s}{1+r} = ty + \frac{t\sigma s}{1+r}. \tag{5}$$

This equation illustrates that a consumption tax does not tax the normal return r and therefore does not distort how individuals allocate their consumption over the life cycle, which is often considered one of the main advantages of a consumption tax. However, the equation also illustrates that in the presence of excess returns, a consumption tax is no longer equivalent to a tax on labor income, since a tax on labor income does not tax the excess return σ, whereas a consumption tax does.

The fundamental difference is that labor income taxes are collected in period 1, while consumption taxes are only partially collected in period 1 (due to the tax deduction for savings), with the remainder collected in period 2. For a consumption tax, the revenue collected in the second period depends on the extent to which the investment technology of the individual differs from that

11 In the standard life-cycle model of consumption, the normal rate of return is thought of as the compensation required by an individual to postpone consumption, which could be approximated by the return on a government bond for a country with little debt. However, the returns to capital observed in practice reflect much more than the normal rate of return. Realized returns include compensation for risk (the expected risk premium) as well as higher returns due to informational advantages, economies of scale (larger investments typically yield higher returns), and rents (e.g., due to imperfect competition, patents, or natural monopolies). Realized returns also reflect differences between expected and actual returns due to stochastic factors beyond the individual's control. Distinguishing between normal and excess returns empirically is a difficult task.

of the government. In the absence of excess returns, there is no such difference, since both private agents and the government receive the common rate of return of r (which is not taxed by either the labor income tax or the consumption tax). However, in the presence of excess returns, a difference does emerge depending on the discount factor that the government applies to the collection of tax revenue in period 2.

In the presence of excess returns, consumption taxation is equivalent to labor income taxation combined with capital income taxation that allows a tax-free normal rate of return, the latter typically referred to as a *rate-of-return allowance*, RRA.[12] To see this result, note that we can rewrite the tax revenue in (5) as follows:

$$R = ty + \frac{t\sigma s}{1+r} = ty + \frac{t(r+\sigma)s - trs}{1+r}, \tag{6}$$

which illustrates that in the presence of excess returns, a consumption tax is equivalent to a proportional tax t on labor income y and capital income $(r+\sigma)s$, combined with a tax credit (RRA) of trs that accrues to the individual in period 2.

It is important to note that in both equations (5) and (6) we assume that the government discounts future tax revenues by $1/(1+r)$, i.e., using the private agent's normal rate of return. However, the appropriate discount factor to use in this context is not obvious, and this has been debated extensively in the literature, see Ahsan (1989), Ahsan (1990), Kaplow (1994), Zodrow (1995), Gentry and Hubbard (1997), and Ahsan and Tsigaris (1998).

The taxation of excess returns inherent in consumption taxation is desirable from an equity perspective because these returns contribute significantly to wealth inequality.[13] The taxation of excess returns can also be motivated by efficiency considerations to the extent that excess returns reflect economic rents. Beyond consumption taxation, excess returns can also serve as a general motivation for taxing capital income. For example, Gahvari and Micheletto (2016) and Gerritsen et al. (2020) show that excess returns motivate a positive capital income tax in the presence of an optimal nonlinear tax on labor income. The main driving force in their models is a positive correlation between unobserved earning ability and rates of return. Our discussion above provides a similar argument for the optimality of combining consumption and labor income taxes.

12 Such systems of capital income taxation are used for equity placements in Norway and for unlisted equity investments in Finland. A system of capital gains taxation with a rate of return allowance was also recommended by the Mirrlees Review (Mirrlees et al., 2011), a recommendation recently reiterated by Adam and Miller (2021).

13 See, e.g., Fagereng et al. (2020).

At the same time, excess returns also provide incentives for entrepreneurship and risky investment necessary for growth and international competitiveness, suggesting that taxes on excess returns should be limited. Finally, while we abstract from the motives for taxing the normal return to capital, it should be noted that the academic literature on optimal capital taxation, recently summarized by Bastani and Waldenström (2020), typically recommends taxing both the normal and the excess return to capital.[14] An important reason for taxing the normal return to saving arises when high-skilled agents save more than low-skilled agents, even conditional on labor income. This happens if there is heterogeneity in preferences, so that high-skilled agents discount the future less than low-skilled agents, or if there is heterogeneity in endowments, with high-skilled agents having higher wealth endowments on average. In addition, taxing the normal return to saving makes it less attractive for high-wage individuals to reduce their labor supply in response to progressive income taxation, since saving tends to be complementary to future reductions in labor supply.

3.4. Issues of Tax Administration and Tax Evasion

The theoretical result of section 3.1 – that taxing all goods and services at the same rate is equivalent to taxing labor income – does not take into account possible differences in the administrative costs of taxing labor and consumption. It also ignores the problem of tax evasion. Although these issues are considered important by policymakers and practitioners, they have not received much attention in the academic literature. Direct (personal) income taxation is based on the principle that individuals correctly report information to the tax authority on the income from labor and capital. Consumption taxation, on the other hand, requires that firms correctly collect taxes in connection with the transaction of goods and services, which they then submit to the tax authority. Because of these differences in tax collection, the balance between labor and consumption taxes can play an important role in the administrative costs of the overall tax system and the extent of tax evasion. Moreover, administrative costs and the scope for tax evasion depend not only on the distinction between labor and consumption taxes, but also on the details of implementation. In particular, when consumption is taxed through a VAT, the tax system acquires strong self-enforcing properties due to double reporting (Pomeranz, 2015). To date, only a few papers have considered tax evasion in studies of optimal consumption taxation (e.g., Cremer and Gahvari, 1993). This is clearly an area of high policy relevance where more research is needed.

14 The same conclusion is reached by Banks and Diamond (2010), one of the expert reports underlying the Mirrlees Review (Mirrlees et al., 2011).

An important example is the taxation of undeclared income, such as foreign income. To the extent that foreign income finances domestic consumption, consumption tax revenue is generated. Thus, increased reliance on consumption taxation may generate more tax revenue for the host country (Boadway et al., 1994).[15] Gordon and Nielsen (1997) argue that income and consumption taxes are avoided in different ways and that it is therefore desirable to combine labor and consumption taxes in the tax system.

3.5. Consumption Taxation and Cross-Base Income Shifting

An increased reliance on consumption taxation relative to the taxation of labor income also has implications for the taxation of entrepreneurs in the context of dual income tax systems. The dual income tax system is flexible in that it allows the government to set different tax rates on labor and capital income. For example, several countries tax capital income at a lower rate than labor income. However, such differentiation also invites cross-base income shifting, where entrepreneurs reclassify what is essentially labor income as capital income.[16]

What are the consumption tax implications of income shifting? A lower tax on labor income combined with a higher consumption tax rate implies an increased tax burden on entrepreneurs who finance their consumption by shifting labor income into lightly taxed capital income. Such a reform has desirable distributional implications, provided that those who shift are individuals with low welfare weights. Bastani and Waldenström (2021) present empirical evidence that individuals who engage in income shifting are disproportionately high-skilled individuals (who are associated with low welfare weights in typical social welfare functions).[17] To our knowledge, this argument for consumption taxation is novel in the academic literature.

3.6. Consumption Taxation and Progressivity

Above, we outlined some important distributional benefits of consumption taxation, namely that consumption taxes impose an additional burden on 1) wealthy individuals, 2) individuals who earn excess returns on capital, and 3) individuals who take advantage of income shifting opportunities. However, our analysis was based on comparing proportional consumption taxes

15 See also Kesselman (1989) and Richter and Boadway (2005).

16 For this reason, special income-splitting rules are usually required to specify how entrepreneurs' income should be allocated between the labor and capital tax bases. Selin and Simula (2020) study how the possibility of income shifting affects the design of optimal income taxation.

17 At the same time, the reform reduces the incentives for cross-base income shifting.

with proportional labor income taxes. In reality, labor income taxes are typically nonlinear (progressive), while consumption taxes are most often proportional – for administrative and informational reasons. Therefore, if broader distributional goals are pursued, proportional consumption taxes should be complemented by progressive income taxes.[18]

But not all redistribution must take place through the tax system. Regardless of whether the government relies on labor, consumption or capital taxes, the expenditure side of the government budget plays an important role in overall redistribution. For example, households with different incomes may benefit differently from publicly provided services. If households with higher incomes are not satisfied with the quality of certain services provided by the government, they will opt out and purchase these services privately (financed out of after-tax income). Since they pay for the services twice, once through the income tax bill and again through the private purchase, this arrangement implies an indirect form of redistribution from high-income to low-income households.

Regarding the distributive power of consumption taxes, it is important to note that, at least in principle, consumption taxes are not limited to being proportional. Consider the case of expenditure taxation. In a nutshell, expenditure taxation can be defined as the taxation of all income that is not saved or invested. By rewriting the intertemporal budget-constraint (4) of our simple two-period model in the form

$$c_1 + \frac{c_2}{1+r} = (y-s) + \frac{(1+r)s}{1+r}, \tag{7}$$

we note that it is equivalent to tax the consumption of all goods and services and to tax labor income minus savings in period 1 as well as savings (and its associated return) in period 2. An important property of expenditure taxation is that it is not based on anonymous transactions, but tied to the identity of the taxpayer in the same way as labor and capital income taxation. For this reason, expenditure taxation is often seen as a potential way to implement a progressive consumption tax. A major obstacle to expenditure taxation is the need to track individual savings with sufficient precision. The fact that the tax base is defined as income minus savings implies that individuals have incentives not only to misreport their labor income but also to exaggerate their savings in order to minimize the tax burden. For practical reasons, deductions for savings need to be allowed only for forms of saving where the margin of control is sufficiently large, which introduces distortions in individuals' savings portfolios. Given these serious complications, it is perhaps not surprising

18 Because low-skilled individuals tend to have lower savings rates, taxes on wealth or capital income are also useful complements. See Diamond and Spinnewijn (2011) and Golosov et al. (2013).

that expenditure taxes have not been permanently adopted in any country that we know of.[19]

It should be noted that progressive consumption taxes have attracted renewed interest in recent years in the face of growing wealth inequality.[20] Moreover, expenditure taxes have the attractive feature that consumption is taxed regardless of whether it occurs domestically or abroad. On the other hand, expenditure taxes can lead to tax revenue losses if individuals accumulate savings domestically during their working lives and then move abroad during retirement. Exit taxes, or taxes levied on individuals who relinquish residency or citizenship, could potentially mitigate such losses, but may create other problems.

Progressive consumption taxes are easier to implement if they are limited to goods purchased in non-anonymous markets, such as housing and land, utilities tied to property (such as electricity and water), or insurance contracts. However, since most goods and services are purchased anonymously, the distributive impact of such taxes would be limited. Once transactions become anonymous, tax arbitrage renders nonlinear consumption taxes ineffective. For example, if there were a progressive tax on tobacco, a smoker with a high annual tobacco consumption who faces a high marginal tax rate on tobacco could ask a friend with a low annual consumption to make the purchase on his behalf, thereby avoiding the high marginal tax rate. Combating such behavior is prohibitively complicated and costly for the tax authority.[21]

3.7. Consumption Taxation and Economic Stimulation

Tax reforms often help to stimulate an economy during a crisis. For example, lowering consumption taxes can be a way to increase consumption among broad segments of the population, thereby stimulating aggregate demand.[22] However, it is unclear how effective consumption tax cuts are given that firms can respond to such tax changes by adjusting output prices. For example, a VAT cut would have no effect on demand if firms refrain from lowering

19 Some elements of an expenditure tax can be obtained by introducing a deduction for retirement savings into the tax code.

20 See Frank (2016), for example.

21 Then why are progressive taxes on labor income feasible? The reason is that the tax authority can rely on third-party information from employers about individuals' sources of income. It is difficult for an individual with a high marginal tax rate to persuade his employer to transfer part of his labor income to a colleague with a lower marginal tax rate (and to persuade the colleague to pass on the extra income) as part of a tax avoidance scheme.

22 For example, Germany recently introduced a special tax cut in response to the Covid-19 pandemic that temporarily lowered the VAT for six months, from July 1 to December 31, 2020. The standard VAT rate was reduced from 19 to 16 percent and the reduced VAT rate was reduced from 7 to 5 percent.

consumer prices. Harju et al. (2018) and Benzarti et al. (2020) find evidence of such behavior. Since consumers do not benefit much, VAT cuts are mainly transfers to surviving firms, which is not necessarily the most effective policy response in a crisis.

An important aspect is that firms tend to adjust their prices more in response to VAT increases than to VAT cuts (Benzarti et al., 2020). Thus, pre-announced tax increases are likely to affect consumers' expectations about future prices. Based on similar reasoning, Feldstein (2002) proposes a pre-announced increase in the consumption tax combined with a pre-announced cut in the labor income tax as a revenue-neutral way to stimulate the economy by inducing individuals to bring forward their purchases of, say, durable goods.

A shift from labor income taxation to consumption taxation can also be a way to increase a country's international competitiveness, in the form of what is sometimes referred to as fiscal devaluation (Farhi et al., 2013). For example, by lowering payroll taxes and raising VAT, the wage costs of exporting firms are lowered, while at the same time the higher VAT does not affect firms that mainly export goods, since exports are exempt from VAT. It is important to note, however, that the effects of a fiscal devaluation are only temporary, as wages and prices adjust to the new situation. In addition, a fiscal devaluation may trigger reactions from other countries.

4. Arguments for a Uniform Consumption Tax

Orthogonal to the overall level of consumption taxation is the question of whether and how consumption taxes should be differentiated across goods (and services). We begin by discussing the arguments in favor of uniform taxation. In particular, based on the seminal theoretical results of Atkinson and Stiglitz (1976) and Diamond and Mirrlees (1971), we argue that differential taxation of consumption creates distortions in consumption and production without generally improving the feasibility of redistribution. We also argue that uniform taxes can limit wasteful lobbying efforts, strengthen horizontal tax equity, and reduce delineation problems.

4.1. Undistorted Consumption Decisions

The most straightforward argument in favor of a uniform tax rate on all consumption goods and services is that differential taxation leads to efficiency losses because individuals do not purchase the goods and services they most prefer, but also take taxes into account. In particular, distortions in consumption decisions are caused not only by consumption taxes such as differentiated VAT or sales taxes, but also by excise taxes on, for example, alcohol and to-

bacco. For differential taxation to be socially desirable, the gains from the differentiated tax structure must exceed the distortions in consumption choices.

Provided that the government has access to progressive (nonlinear) income taxation and can direct transfers to households, differential taxation distorts consumption profiles without generally improving the feasibility of redistribution. Differential consumption taxation should then be avoided, as shown in the seminal contribution of Atkinson and Stiglitz (1976). Specifically, the authors show that when people have identical preferences and in the absence of externalities and internalities, *all goods and services should be taxed at the same rate* if there is no connection between labor supply and the goods and services that individuals consume.[23] Several comments are in order. First, in the model of Atkinson and Stiglitz, uniform taxation of consumption is equivalent to not taxing consumption at all (and adjusting income taxes accordingly).[24] Second, Atkinson and Stiglitz analyze consumption taxes that are allowed to be nonlinear. However, the main result is unchanged when attention is restricted to linear consumption taxes (see, for example, Edwards et al., 1994; Jacobs and Boadway, 2014). Third, Atkinson and Stiglitz assume that the tax on labor income is nonlinear. Deaton (1979) shows a closely related result in a model with linear income taxes under the additional constraint of linear Engel curves for consumption.[25] Of course, there are many applications that violate the assumptions of the Atkinson-Stiglitz theorem (which will be discussed in Section 5 below). Nevertheless, the central message is that uniform taxation should be the natural starting point when discussing the design of consumption taxes.

Importantly, under the assumptions of the theorem, it does not matter how price elastic different goods and services are. This result is very different from the influential Ramsey rule (Ramsey, 1927) that dominated thinking on consumption taxation prior to the 1970s. According to the Ramsey rule, commodity taxes should induce equal (approximate) percentage changes in compensated demand for each good relative to the no-tax equilibrium. When cross-price effects on demand are zero, this result amounts to the simple inverse elasticity rule, which states that commodity tax rates should be inversely proportional to the price elasticity of demand for the goods on which they are levied. However, the Ramsey rule is based on a number of restrictive assumptions. In particular, it only considers linear tax instruments with a zero inter-

23 Formally, this assumption is satisfied if the utility function exhibits weak separability between consumption and labor supply.

24 Boadway et al. (1994) show that a similar result occurs when the optimal commodity tax is positive due to income tax evasion.

25 See also Boadway and Cuff (2022), who generalizes this result to any arbitrary piecewise linear income tax system, while also allowing for labor non-participation and differences in preferences for leisure.

cept. As Atkinson and Stiglitz (1976) and subsequent studies show, the implications change fundamentally once the government can raise positive amounts of tax revenue from non-linear income taxation. Another important limitation of the Ramsey model is the assumption of a representative agent. Diamond (1975) extends the Ramsey model to include income differences between individuals and shows that in this case the (approximate) percentage changes in compensated demand induced by commodity taxation should not be equalized across commodities. Instead, changes in compensated demand should be inversely related to the correlation between the social marginal utility of income and individual demand for the good. In short, the equity concerns reflected in social marginal utilities call for lower tax rates on goods consumed by individuals with high social marginal utilities.[26]

Summing up, based on the Atkinson-Stiglitz result, consumption taxes should not be used to achieve distributional goals because it is more efficient to redistribute through the income tax system.[27] An important qualification, however, is that the government must be able to freely adjust the income tax paid (or transfer received) at each income level. In reality, practical and political considerations may limit the extent to which the income tax can be adjusted and thus the extent to which the distributional effects of a consumption tax reform can be neutralized.

4.2. Undistorted Production Decisions

The second argument for a uniform tax on goods and services is production efficiency. Differential taxation can distort firms' production decisions. Before the widespread adoption of value-added taxation, it was common to have sales taxes that applied to all sales, regardless of whether the sales were to firms or to final consumers.[28] In such a situation, differential taxation of goods and services distorts not only consumption decisions, but also firms' decisions about the mix of inputs to use in their production. In addition, cascading effects occur when goods are produced in multiple stages by different firms and the

26 In fact, social marginal utilities combine the social benefits of individual consumption and the marginal propensity to pay taxes out of income, so they do not represent pure equity concerns. For a more detailed interpretation of the multi-person Ramsey rule, see Myles (1995).

27 The result can be understood on the principle that the fundamental constraint on tax policy is information. The government would like to redistribute from individuals with high ability to individuals with low ability, but cannot observe these abilities and must rely on information about income and consumption. Under the given assumptions, the consumption choices of individuals do not reveal anything about their ability. This means that differentiated consumption taxation only introduces distortions in the economy without improving redistribution.

28 Note that tax arbitrage limits the ability to condition sales taxes on the type of purchaser.

tax is levied at each stage of production, a process that can lead to inefficient tax-driven decisions to produce in-house in order to eliminate intermediate stages of production.

Modern consumption taxes are often designed so that they do not affect transactions between firms. In the case of value-added tax (VAT), firms pay a proportional tax on their sales, but are compensated for the VAT they pay on their inputs. The VAT is therefore not a formal cost to their business, and the tax is passed on to the final consumer (although the burden of the tax may of course be partially borne by firms, depending on the incidence of the tax, i.e. how prices adjust to the tax). The VAT has the advantage that businesses do not have to keep track of whether they are selling to businesses or consumers.[29]

While in theory modern implementations of excise taxes need not affect business decisions, in practice they do. In the case of VAT, a major reason are the extensive VAT exemptions that exist in many European countries. How do these exemptions work? Firms in exempt sectors do not charge VAT on their sales, but they are treated as final consumers when they purchase inputs from firms that are subject to VAT.[30] Thus, with a VAT of 20%, all input purchases become 20% more expensive. The VAT becomes a cost in business that is passed on in the form of higher prices, something known as *hidden VAT*. Hidden VAT makes goods and services produced by firms in exempt sectors less attractive to firms subject to VAT because the hidden VAT cannot be deducted from the output VAT. This distorts firms' production decisions and may induce firms to produce inputs themselves in order to avoid VAT on those inputs.[31]

The seminal paper discussing production efficiency in the context of taxation is by Diamond and Mirrlees (1971). They show that uniform taxes (or no taxes at all) are the most efficient approach to taxing production inputs. Their result is based on the observation that differential taxes on inputs not only

29 In contrast, the U.S. sales tax, while directed at consumer sales, does not have the property of being production neutral. It is not production neutral because it is imposed at the local level on retail sales to final consumers. This means that sales made along the supply chain to parties other than the final consumer are generally not taxed, which can influence business decisions about production. In addition, sales of intangibles and real estate are generally not taxed. This selective application also creates distortions. Ring (1999) estimates that up to 40 percent of the retail sales tax in the US is actually borne by businesses.

30 The situation is further complicated by the fact that some firms operate in both exempt and non-exempt sectors. There are also sectors that have a so-called qualified exemption, which means that they charge 0% VAT on their sales but are still entitled to compensation for the VAT paid on inputs (e.g. the pharmaceutical industry).

31 Businesses that benefit from VAT exemptions are typically those that sell directly to consumers. These exemptions allow them to offer their goods and services at lower prices. Conversely, VAT exemptions can be detrimental to firms in the middle of production chains. Such firms are not able to charge VAT on their outputs, but may still be required to pay VAT on their inputs. This not only distorts their production decisions, but also affects consumer prices, leading to further distortions in consumption patterns.

distort firms' production decisions, but also change consumer prices and thus distort consumption. Imposing uniform taxes on production factors and differentiating taxes on consumption goods can produce the same consumer prices and achieve a Pareto improvement because the distortions are limited to consumption choices.

The Diamond-Mirrlees result depends on two important assumptions. The first assumption is that pure profits (economic rents) of firms can be fully taxed. The second is that all goods and services sold to consumers can be taxed. Both of these assumptions are restrictive in practice. Regarding the first assumption, Dasgupta and Stiglitz (1972) show that inputs in sectors characterized by imperfect competition or sectors where prices exceed long-run marginal costs (as in the case of natural monopolies) should be taxed at higher rates to extract economic rents. Gasoline is an example of such a good. Taxing gasoline distorts production, but it can be a way to tax monopoly rents in the oil industry. Regarding the second assumption, it is obvious that some consumption goods cannot be taxed for practical reasons or due to legal constraints. In these cases, taxes on input factors can serve as a substitute for taxes on final goods and services. In this case, the reduced distortions in consumption decisions must be weighed against the distortions introduced in production. An important example is financial services. In the context of VAT, it is difficult to define the value added associated with financial services. If value-added taxation is difficult, a sector-specific payroll tax may be an alternative. Such a tax would raise the price of financial services and thus contribute to a more uniform consumption tax (an efficiency gain). At the same time, too few people would be hired in the financial sector, which is an efficiency loss.[32]

Lower consumption taxes are sometimes proposed for certain sectors that employ young or less-educated workers (e.g., restaurants and hotels). Naito (1999) studies an economy in which low-skilled and high-skilled workers are combined to produce goods in different sectors of production. If the taxation of goods favors sectors of the economy that rely more on low-skilled labor, and the two types of labor are imperfect substitutes in production, the wages of low-skilled workers will rise relative to the wages of high-skilled workers. This general equilibrium effect produces redistribution through the wage distribution rather than through the tax system, thus contributing to distributional goals at a low efficiency cost.[33]

32 Relatedly, financial firms may replace domestic personnel with personnel hired abroad.

33 Note that Diamond and Mirrlees (1971) require that all transactions between firms and households be taxed, not just the outputs sold to consumers, but also the inputs provided to firms. Naito (1999) deals with the case where not all different inputs (in this case high-skilled and low-skilled labor) can be taxed differently.

At first glance, it may seem desirable to subsidize low-skill sectors through the tax system if the subsidies reduce long-term unemployment or provide other benefits that result from a higher employment rate. However, it is not obvious that preferential consumption taxation should be used, as there are other policy measures that directly address the source of the unemployment problem. For example, if unemployment is due to a difference between the productivity of individuals and the wage costs faced by firms, a more direct measure would be to reduce wage costs (for example, through reduced payroll taxes) or to increase the productivity of individuals through education and training. These sector-neutral approaches to employment avoid the consumption inefficiencies created by differential consumption taxation.

The overall conclusion is that differential taxes on factors of production should generally be avoided because they distort both production and consumption decisions. To the extent that consumption goods can serve as production inputs, this reasoning suggests that uniform consumption taxes are advisable. In special cases, differential taxes on consumption goods or factors of production may be justified when economic rents are difficult to tax.

4.3. The Political Economy of Consumption Taxation

The third argument in favor of a uniform consumption tax concerns the political economy of taxation. Uniform taxes make the tax system less vulnerable to pressure from special interest groups. Due to inefficiencies in production and consumption, the economic costs of such pressure can be substantial if interest groups succeed in carving out preferential tax rates for special sectors. Moreover, the time and resources spent by interest groups and politicians to create and manage such pressure are a waste from a societal point of view.

However, despite this popular argument, empirical experience tells us that uniform consumption taxation is difficult to maintain. In Sweden, for example, one of the objectives of the major tax reform of 1991 (also known as the "tax reform of the century", which introduced dual income taxation) was to promote uniform consumption taxation. However, it did not take many years for several deviations from uniformity to occur; see Agell et al. (1995). A possible explanation for this phenomenon is provided by de la Feria and Walpole (2020), who argue that uniform taxation may be difficult to maintain because it can be viewed as regressive (neglecting that it is ultimately the progressivity of the overall tax system that matters). This misconception may allow special interest groups to obtain tax privileges that claim to increase the amount of redistribution in the economy. Moreover, tax cuts that initially benefit large groups of voters tend to gain political support easily if voters neglect the necessary adjustments in government spending or other taxes. Relatedly, consumption tax cuts may be more salient and easier to understand than, say,

income tax changes, especially for young voters with less experience with the tax system.

4.4. Avoiding Arbitrary Redistribution

The fourth argument against differential consumption taxation is that it leads to arbitrary and hard-to-measure redistribution across individuals in society. In particular, differential consumption taxes redistribute across individuals with identical incomes but different consumption preferences, violating the principle that ability to pay should guide the design of the tax system. In the standard optimal tax framework, workers earn their marginal product, workers are perfect substitutes, and there is perfect competition so that firms make zero profits. This implies that consumption taxes have no general equilibrium effects. In reality, consumption taxes affect wages (and other input prices) throughout the production chain via pass-through effects (see also the discussion in section 4.2). This means that differential consumption taxes create indirect gains for workers and stakeholders in some sectors at the expense of others. Individuals who benefit do so because they happen to work in the right sectors, not because they truly deserve a lower tax.

4.5. Administrative Simplicity

Another argument is that differential consumption taxation leads to costly definitional problems. For example, if a reduced rate is applied to recreational services, the question arises as to what should be considered a recreational service. In most countries with differential rates, one can compile a long list of court cases analyzing the delineation involved in applying the rates. The resources that society devotes to classifying different consumption goods for tax purposes are a waste that can be avoided by adopting a uniform consumption tax. Moreover, in some cases, the boundaries between categories have to be drawn in a way that may cause disagreement among economic agents, potentially leading to frustration and ultimately to a reduction in the perceived legitimacy of the tax system.

5. Arguments for Differentiated Consumption Taxation

Most countries tax at least some goods and services at different rates through excise taxes and/or differentiated VAT or sales taxes, and there are sometimes strong economic arguments for doing so. This section discusses the main arguments in favor of differential consumption taxation.

A widespread justification for tax differentiation exists for goods and services associated with externalities or internalities. Here, differential taxes can

improve economic efficiency by incorporating neglected costs and benefits into consumer prices, thereby steering consumers away from choices that harm others or their "future selves." A compelling case for differential taxes can also be made for work-related goods such as education, professional expenses, child care, and other household services.

At least in theory, tax differentiation is also justified when consumption preferences are related to the consumer's ability to earn income or when status goods affect the well-being of other consumers. However, the existing empirical evidence in these areas seems too limited to guide actual policy decisions.

5.1. Externalities

The most obvious reason to deviate from a uniform consumption tax is when certain goods generate positive or negative externalities. We discuss the case of externalities only briefly because they are fairly well understood reasons for differential consumption taxes. We focus our discussion on environmental externalities and status concerns.

In the absence of government intervention, the prices of goods and services faced by consumers reflect only the direct costs of production, not the external social costs that result from their production and consumption. If the external costs are positive, consumption will be inefficiently high unless the government corrects the choices through taxation (or regulation). To restore efficiency, Pigou (1920) shows that the optimal tax on the consumption of a good that produces a negative externality should be equal to the marginal social damage of one additional unit produced and consumed.[34] Such a tax raises the prices *post-tax* that consumers face and sets them at a level that reflects not only the private cost of an additional unit, but also the social cost.

5.1.1. Environmental Taxation and the Double Dividend Hypothesis

One limitation of the classical Pigouvian analysis is that it abstracts from taxes that are necessary for reasons other than externalities. In particular, it does not take into account distortionary taxes needed to raise funds for public spending and/or income redistribution. Sandmo (1975) extends the analysis of externalities to cases where the government uses other, linear taxes to meet a revenue requirement. He shows that the marginal social harm affects only the tax formulas for the externality producing good, but not for other goods. This is an important result because it shows that the Pigouvian principle extends to

34 For example, if the production of one liter of fuel and its combustion in the engine of a car emits 3 kilograms of carbon dioxide, and the marginal social damage of carbon dioxide emissions is 30 EUR per ton, then according to the Pigouvian principle the tax on fuel should be 9 cents per liter.

second-best settings with distortionary taxation. In particular, it suggests that the design of environmental taxation can be separated from the design of other areas of taxation.

However, Sandmo (1975) considers only proportional taxes on goods and services and abstracts from the possibility of nonlinear income taxes. Subsequent studies with nonlinear income taxes confirm the general principle that externality-based terms are present only in the tax formulas for goods that generate those externalities. However, these studies also find that the entire tax system is shaped by considerations related to the design of the income tax (see Pirttilä and Tuomala, 1997, for example). Therefore, the Pigouvian principle of taxing goods in proportion to their marginal social harm must be generalized beyond the direct mechanical effect of externalities. For example, externalities may support redistributive policies (e.g., when pollution reduces the value of leisure), and then more lenient taxation of externalities would be advisable. In other words, the design of environmental taxes and the design of income taxes are generally inseparable.

Despite the subtle interactions between environmental taxation and income and consumption taxation, the policy debate is often dominated by a stylized link between the different tax instruments: the double dividend hypothesis (Pearce, 1991; Oates, 1991). According to this hypothesis, the taxation of polluting activities yields a direct dividend in the form of environmental benefits and an indirect dividend in the form of increased efficiency of the tax system. The argument for the second dividend is based on a *green tax swap*, in which tax revenues from environmental taxes are used to reduce other distortionary taxes, such as taxes on labor. This form of revenue recycling is indeed preferable to a lump-sum revenue rebate – a finding often referred to as the weak double dividend (Schöb, 2005; Phaneuf and Requate, 2016). However, even with revenue recycling, the overall efficiency of the tax system tends to suffer from the introduction of environmental taxes. Therefore, a strong double dividend, where environmental taxes generate non-environmental benefits, is generally not realized (Bovenberg and de Mooij, 1994; Parry, 1995).[35] In particular, environmental taxes should not be increased beyond the level motivated by purely environmental considerations. Intuitively, environmental taxes, like most taxes, discourage labor supply. Thus, the combined effect of a green tax swap undermines the incentive to work and the overall efficiency of the tax system is reduced.[36]

35 The discussion of the double dividend hypothesis typically focuses on representative agent models. Jacobs and de Mooij (2015) revisit this issue in a Mirrleesian framework.

36 Another caveat is that environmental tax changes often have undesirable distributional consequences. While the burden of income taxes is broadly distributed across the working population, environmental taxes fall most heavily on those individuals who find it hardest to

Another constraint on the government's ability to implement green tax changes is the risk that environmentally harmful activities will move abroad. In particular, firms may relocate production to countries with lower or even zero taxes on emissions. This "extensive margin" threatens to increase global emissions and impose additional idiosyncratic costs on the domestic country in the form of reduced employment and lost tax revenues. Since environmental taxes are often targeted at firms, they are subject to tax competition between countries, just like corporate income taxes. Successful environmental tax reform therefore requires coordination between countries.[37]

5.1.2. Relative Consumption Concerns

It is well established in the academic literature that individuals care not only about their own absolute level of consumption, but also about how their consumption relates to the consumption of others (see e.g. Alpizar et al., 2005). This implies that the consumption of certain goods (or consumption in general) may have negative externalities – as an individual increases her own consumption, she decreases the relative consumption of others.

In general, it is difficult to assess whether relative consumption concerns motivate differential consumption taxation because it is difficult to identify the goods that are subject to the most intense status comparisons. Another aspect is that the goods used in status races may change over time, and taxing a good that is considered positional today may cause other goods to become positional tomorrow. There are other problems as well. A well-known example is the luxury tax on yachts in the United States in the 1990s, which eliminated many jobs in the domestic yacht industry and was repealed in 1993.[38]

For these reasons, it is common to view status concerns as an argument for progressive income taxation or progressive consumption taxation (see section 3.6) rather than for high tax rates on specific status goods or luxuries. This will also be the ideal policy response if consumers care mainly about how their total income or total consumption compares to the income or consumption of relevant reference persons.[39]

adjust their consumption in an environmentally friendly way (e.g., individuals living in rural areas who are dependent on their cars).

37 As an alternative, border adjustments, which tax imports and exempt exports, may be used to mitigate the negative impact on domestic competitiveness.

38 See Salpukas (1992).

39 How status concerns affect the optimal design of income taxation is studied by Persson (1995) and Aronsson and Johansson-Stenman (2008), among others.

5.2. Internalities

Internalities refer to situations in which individuals make decisions that do not maximize their own welfare. In a sense, an internality is an externality that an individual imposes on himself. The empirical evidence for internalities is ubiquitous. Many studies in behavioral economics document that individuals tend to overconsume certain goods and services due to problems of self-control or misperceptions of the utility of different types of consumption (e.g., due to information frictions).

Thus, internalities seem to motivate differentiated consumption taxation for similar reasons as in the case of externalities. However, differentiated consumption taxation is controversial in this context because it is based on the idea that the government understands individual welfare better than the individuals themselves. This can be seen as paternalistic and a violation of the right of individuals to make their own decisions. Another question is whether government intervention is really necessary or whether private markets can come up with solutions on their own to combat internalities. For example, thousands of mobile apps have been developed in recent years to help individuals deal with various self-control problems.[40] Thus, internalities are a weaker argument for differential consumption taxation than externalities. One reason is certainly that individuals are better informed about the consequences of their behavior on their own well-being than they are informed about the consequences on the well-being of others.

One area that has been much discussed in recent years is the consumption of sugary products such as candy and soft drinks. An internality arises when individuals do not fully consider how their current sugar consumption will affect their future health.[41] Several countries have introduced or plan to introduce regulations and taxes to reduce sugar consumption. A particular focus has been on sugar-sweetened beverages, which are subject to specific taxes in more than 40 countries (Global Food Research Program, 2020). Energy-efficient household appliances, such as low-energy refrigerators, are another example of goods with internalities. These goods tend to be underconsumed because they are expensive up front, but they result in lower electricity bills, creating individual economic benefits that add up in the long run (beyond their environmental benefits). Another important area where internalities appear to be large is the case of lotteries (Lockwood et al., 2021).

40 For example, there are many widely used apps designed to help individuals reduce smartphone use, quit smoking, lose weight, exercise more regularly, and so on.

41 Children are frequent consumers of these products and may have particular difficulty in assessing the long-term harms of their consumption. Therefore, taxation of sugary products may be motivated by the need to protect the well-being of young people.

Interestingly, consumption that is characterized by internalities often generates externalities for society. For example, sugar consumption imposes costs not only on the individual but also on society in the form of tax-financed health care bills.[42] Similarly, energy-efficient products not only reduce individual electricity bills, but also lead to reduced carbon dioxide emissions (see e.g. Allcott et al., 2014). Thus, there is often a dual rationale for using fiscal instruments to correct for internalities.

As with externalities, when taxes are used to address internalities, there are unintended distributive effects that can be difficult to neutralize. For example, goods with high sugar content (which the government would like to tax for internalities) tend to be consumed more by low-income households. Similarly, goods that are energy efficient (which the government would like to subsidize for internality reasons) tend to be consumed more by high-income individuals. Therefore, internality-induced taxes and subsidies are often regressive. An important insight, however, is that if the behavioral distortions are greater for low-income households, then the corrective benefits of these interventions will accrue to a greater extent to low-income households.

Allcott et al. (2019) develop a theoretical and empirical framework for studying the design of sugar taxes (and other taxes in settings with internalities) and highlight that the optimal design of a sugar tax depends on the following factors:[43] 1.) the variation of the tax burden by household income, 2.) the sensitivity of the demand for sugar in different income groups, 3.) the size of the health gains from behavioral changes in different income groups, 4.) the extent to which tax revenues can be used to mitigate the regressive distribution of the tax burden, and 5.) the external effects of sugar consumption on society as a whole, for example, in terms of additional health care costs.

In summary, we conclude that there are good reasons for taxes on unhealthy foods such as sugar, as well as recent research that can guide the design of such taxes. An important caveat is that this research typically abstracts from the difficulties associated with cross-border shopping. Depending on the costs of cross-border trade, corrective taxation may require coordination with neigh-

42 When health care is publicly financed, as it is in many countries, unhealthy consumption choices have consequences for public spending. Therefore, taxes on unhealthy foods are easier to motivate in countries where health care is publicly financed than in countries where individuals must pay for their own health care. Taxes on goods with adverse health effects can thus be seen as additional insurance premiums that must be paid to compensate the government for increased expected future health care costs.

43 Based on their calculations, Allcott et al. (2019) find that sugar taxes between 30 and 60 percent of the price of sugary drinks are optimal. The authors report that low-income American households consume about 100 liters of sugary drinks per year, while high-income households consume only 50 liters per year.

boring countries/states.[44] Another caveat is that irrational individuals may not take taxes fully into account. As a result, taxes may end up distorting rational individuals without sufficiently affecting irrational individuals (Chetty et al., 2014).

5.3. Subsidizing Work-Related Consumption Can Increase Labor Supply

Apart from externalities and internalities, the strongest argument for differentiated consumption taxation is the link between the supply of labor and the consumption of certain goods and services. If some consumption goods affect the value of working, the assumptions of the Atkinson-Stiglitz theorem are not satisfied (see section 4.1), and uniform taxation is typically suboptimal. Based on this reasoning, Christiansen (1984) shows that subsidizing goods that are in higher demand among individuals who work more hours and taxing goods that are in higher demand among individuals with more leisure time can reduce the distortions associated with (nonlinear) taxation of labor income and thereby facilitate redistribution. More specifically, the thought experiment compares individuals with identical incomes but different hours of work and argues that if individuals with more leisure time substitute from good A to good B, then good B should be taxed more heavily than good A. This result is reminiscent of the classic result of Corlett and Hague (1953), who argued that goods that are complementary to leisure should bear higher tax rates than other goods, although the underlying logic is somewhat different.[45]

This reasoning suggests that leisure equipment such as golf clubs or fishing tackle should be taxed at higher rates because they are complementary to leisure. However, empirical evidence on the relationship between specific goods or services and leisure is still scarce and sometimes surprising. For example, Crawford et al. (2010) find that leisure services are complementary to work because they increase the effectiveness of leisure time. They also find that leisure goods have a relatively weak association with hours worked. It is therefore not surprising that this type of tax differentiation is not widespread in practice. However, there are many practical examples where goods that are *complements of labor supply* are subsidized. These will be discussed next.

44 The Norwegian experience illustrates this. Following a sharp increase in taxes on sugary products in 2018, cross-border shopping to Sweden increased significantly. The taxes were reduced to their previous level in 2020.

45 The Corlett-Hague result builds on the representative agent framework of linear taxation developed by Ramsey (1927), while Christiansen (1984) analyzes optimal taxation in a framework of optimal commodity and nonlinear income taxation following Mirrlees (1971) and Atkinson and Stiglitz (1976). Christiansen (1984) discusses the relationship between the "new" results and the classical result of Corlett and Hague (1953).

5.3.1. Child Care and Elderly Care

The most prominent example of a good or service that is positively related to work is child care, which is a precondition for the labor supply of parents with young children. When child care is subsidized and the subsidies are financed by tax revenues, the increase in labor supply not only raises parents' incomes but also allows families to benefit more from a subsidized service (and implicitly recoup some of the taxes paid). This double benefit encourages the labor supply of individuals who are subject to progressive income taxation. Thus, the policy helps to reduce the adverse effects of taxes on labor supply and thus facilitates redistribution.[46]

A number of recent studies have attempted to quantify the welfare gains from subsidized child care. These studies show that the optimal type of subsidy depends on the information that the government can observe at a reasonable cost. Because it is difficult for the government to monitor the exact number of hours a child spends in child care (because it can lead parents or child care centers to misreport hours), it is most common to subsidize child care in terms of associated expenditures rather than hours. It is important to note that child care expenditures can be subsidized in many different ways, such as through a tax deduction, a tax credit, or reduced rates for publicly provided care.

Bastani et al. (2020) study how to subsidize child care when the government is simultaneously optimizing a nonlinear income tax.[47] They point out that those who work more hours and demand more child care do not necessarily have higher child care expenditures than those who work fewer hours. For example, well-educated parents with high wages may choose to work part-time while consuming high-quality child care at an expensive hourly rate.[48] The authors argue that the gains from subsidized child care are likely to be greatest in markets where the quality of child care is relatively homogeneous and price variation is not large. In addition, publicly provided care with standardized quality may be a particularly efficient way to subsidize child care.[49]

46 The major review of the tax system in the United Kingdom, led by James Mirrlees (Mirrlees et al., 2011), recommended that goods and services be taxed uniformly – with the exception of child care services, which should be subsidized relative to other goods.

47 Bastani et al. (2019) analyze the subsidization of child care under less sophisticated tax systems, such as linear and piece-wise linear tax systems.

48 One reason for this pattern may be that educated parents place a higher value on the human capital formation of the child.

49 Parents who are dissatisfied with the quality of public child care can choose another facility, but are then forced to pay some or all of the costs themselves. For public provision schemes to be effective, the quality must be perceived as satisfactory so that the majority of the population does not opt out – otherwise individuals would have to pay twice for these services (once through income tax and again through private purchase), with adverse effects on labor supply.

There is also a debate about the extent to which childcare subsidies should be means-tested. Note that the way subsidies are provided can affect households very differently depending on their income: publicly provided services at low prices generate identical cost savings for all families using those services, whereas subsidies in the form of tax deductions or tax credits have a value that depends on family income. Ho and Pavoni (2020) examine the income-dependent design of child care subsidies for single mothers and find that a large degree of means testing is optimal. In particular, they argue that subsidy rates should be very high for earners at the bottom of the income distribution and should decline rapidly with income. The reason is that child care subsidies discourage household child care activities, which reduces labor supply distortions. Since, for a given level of productivity, the higher the labor income, the less time is available for household child care, there is less need to discourage household child care (and subsidize formal child care) at higher income levels.

A similar argument can be made for subsidizing elderly care as for child care. Elderly care services may be important to facilitate the labor supply of middle-aged workers (typically 50 and older) with elderly dependents in need of care.[50] So far, the labor supply effects of elderly care and the benefits of subsidized care have received relatively little attention in the academic literature.[51]

5.3.2. Household Services, Maintenance and Repairs

Non-care household services such as cleaning, gardening, home repairs and maintenance are another important example of services related to labor supply. Similar to child care and elderly care, these services can either be produced by the household or purchased on the market. When individuals work in their own households, they do not earn formal income and do not pay income taxes. However, if they work in a regular job and outsource some household tasks to a professional provider, their income (and that of the provider) is taxable. Thus, income taxation discourages formal work and hinders specialization in the tasks for which individuals are best qualified. A subsidy for domestic services can counteract these problems. Thus, similar to the care services discussed above, subsidies for domestic services reduce the distortions caused by income taxation and allow redistribution at a lower efficiency cost.

50 Although long-term care policies are often studied in models with asymmetric information, the informational frictions are typically quite different from the Mirrleesian approach to nonlinear income taxation (Mirrlees, 1971). See Jousten et al. (2005), Cremer and Roeder (2013) and Cremer and Pestieau (2014).

51 See Lilly et al. (2007) for an overview and Løken et al. (2017) for a more recent contribution.

Although household services may not be as closely related to labor supply as child care, they are relevant to a much larger group of individuals (not just families with young children). Koehne and Sachs (2022) quantify the benefits of subsidizing household services based on empirical evidence for the United States. They find that optimal subsidy rates typically increase with income. They also show how optimal subsidies can be implemented through an income tax system that allows nonlinear deductions for expenditures on household services.[52]

Sometimes subsidies for household services are justified on the grounds that they reduce the size of the informal economy and reduce long-term unemployment by increasing the number of formal low-skilled jobs. While these seem relevant goals, it is not obvious that consumption taxes should be used to achieve them, as there may be better, more direct instruments to achieve these goals. Subsidies for household services still distort individual consumption choices and can lead to arbitrary redistribution between groups (for example, based on where individuals live or how much they value a clean home rather than their ability to pay taxes). Another side effect is that subsidies for household services subsidize not only the consumers but also the producers of those services. Sometimes subsidies for household services are criticized on the grounds that they mainly benefit high-income households. However, this is not a relevant criticism because distributional concerns can be addressed by adjusting the income tax system accordingly (see Koehne and Sachs, 2022).

5.4. Heterogeneous Consumption Preferences

The Atkinson and Stiglitz (1976) result discussed in section 4.1 assumes that all individuals have the same consumption preferences and that earning capacity is the only dimension on which agents differ. If this assumption is relaxed, the Atkinson-Stiglitz result generally breaks down.[53] In settings where individuals differ not only in their ability to earn but also in their consumption preferences (and there is some relationship between them), differential consumption taxation typically increases social welfare in two ways. First, it allows the government to increase the total amount of redistribution in the economy. Second, it allows the government to reduce the distortions associated with the progressive (nonlinear) labor income tax.

52 Earlier studies of optimal taxation with household production include Anderberg and Balestrino (2000), Kleven et al. (2000), Cremer and Gahvari (2015), and Olovsson (2015).

53 The implications of heterogeneous consumption preferences for optimal taxation have been explored in a number of papers, see Saez (2002), Blomquist and Christiansen (2008), Kaplow (2008), Golosov et al. (2013), Gordon and Kopczuk (2014), Pirttilä and Suoniemi (2014), Spiritus (2024), among others. See also Gauthier and Henriet (2018) and Allcott et al. (2019) for approaches that build on the many-person Ramsey rule of Diamond (1975).

To see that the amount of redistribution can be increased, consider two individuals with different earning abilities who have the same labor income (but different labor supplies). In this situation, the income tax cannot differentiate between these two individuals. However, a differentiated consumption tax can, provided that the individuals consume different goods, which will generally be the case if there is a relationship between ability to earn and consumption preferences. By taxing goods that are preferred by high-ability individuals, the government achieves redistribution conditional on labor income, thereby increasing the overall redistribution of the tax system.[54]

To understand how differentiated consumption taxes can reduce the distortions of income taxation, imagine that high-ability individuals have a much stronger preference for some goods, say lobster and champagne, than low-ability individuals (even conditional on income). If the tax system shifts some of the tax burden from income taxes to taxes on the consumption of lobster and champagne, the welfare of low-ability individuals is largely unaffected, but it becomes significantly less attractive for high-ability individuals to have low incomes, since their lifestyle based on lobster and champagne has become more expensive to maintain. This change strengthens the incentives for high-ability individuals to earn a high labor income, creating an efficiency gain.

Note that differential consumption taxation can increase redistribution even if, conditional on labor income, consumption patterns are unrelated to ability. This can happen if consumption patterns are correlated with other factors that affect the value the government places on individuals in the social objective, such as needs. This was suggested by Saez (2002) and has also received attention in subsequent work such as Kaplow (2008). A recent formal analysis is provided by Spiritus (2024), who considers an illustrative example where households differ in their physiological need to consume a particular good, manifested in terms of the weight of a particular good in the utility function. He shows that that households with greater needs have a higher marginal utility of ordinary consumption conditional on income, implying a force to subsidize that good in the optimal tax system.[55]

54 These results bear some resemblance to the many-person Ramsey rule by Diamond (1975). However, instead of recommending that goods consumed disproportionately by high-*income* individuals should be taxed, the recommendation is to tax goods that are consumed disproportionately by high-*ability* individuals.

55 Empirically, it is difficult to distinguish whether needs arise from preferences or constraints. As an alternative operationalization of needs, Bastani et al. (2019) consider a model where the economy consists of nonparents and parents, where the latter group must purchase child care in order to work (reducing the resources that can be spent on other goods once the cost of child care has been paid). In this case, subsidizing child care allows for a socially valuable redistribution between needy parents and non-needy non-parents, conditional on labor income, even if the ability distributions for parents and nonparents are identical. See

Despite the theoretical justifications above, heterogeneity in preferences is not a strong argument for differentiated consumption taxation because empirical knowledge of the relationship between ability and consumption choices is very limited. The main empirical difficulty is to disentangle the effect of having a high income from the effect of having a high ability.[56] Moreover, Kaplow (2008) and Gauthier and Laroque (2009) argue that if it is possible to identify differences in consumption patterns that depend on ability, and if at the same time it is possible to relate these differences to verifiable personal attributes (such as age), then it is better to base the income tax system directly on these attributes instead.[57] In this way, distortions in individual consumption decisions can be avoided. Finally, given that consumption preferences are likely to have a low correlation with ability, differentiated consumption taxes will lead to arbitrary redistribution across individuals.[58] In sum, given the existing (lack of) empirical evidence, differences in consumption preferences across individuals are not a compelling reason for differentiated consumption taxes.

5.5. Wealth Differences

A subtle case for differential consumption taxation arises when there are differences in disposable income between individuals with the same pre-tax labor income and these differences are related to earning capacity. Such a pattern can arise, for example, if, among individuals with the same labor income, those with high earning capacity are more likely to have inherited wealth or to receive transfers from a partner or other family members. In such situations, holding labor income constant, high-skilled individuals will have more resources available for consumption compared to low-skilled individuals. If Engel curves are nonlinear, then among individuals earning the same labor income, high-skilled individuals will demand goods and services in dif-

also the discussion in section 5.5 for further implications of this need constraint for the tax structure.

56 Bastani andWaldenström (2021) address this problem by studying an empirical setting with a kinked budget set, where individuals with different earning abilities are pooled at the same income level (at the kink point of the labor income tax in Sweden). They show that individuals who bunch not only have higher ability, as measured by military enlistment scores in young adulthood, but also have higher capital income. This suggests that taxing capital income is desirable from the perspective of taxing ability, and can lead to efficiency gains along the same principle as in the text.

57 Typically, income taxes can be tied to the identity of individuals and thus can be related to such attributes, whereas consumption taxes are usually assumed to be anonymous and thus cannot be tied to individual attributes.

58 There is a small literature on the fairness of taxing goods when preferences differ, based on the premise that individuals should not be taxed based on their preferences for, say, chocolate or strawberry ice cream, even if those preferences are correlated with their abilities. See, for example, Fleurbaey (2006).

ferent proportions compared to low-skilled individuals, and therefore, similar to the previous subsection, differential consumption taxation may discourage high-skilled individuals from reducing their labor income in response to progressive taxation of labor income.

More specifically, it will be optimal to impose higher tax rates on goods that are disproportionately favored by individuals with high disposable income.[59] In other words, income elasticities of demand become relevant to the determination of optimal consumption tax rates even though the government has access to nonlinear labor income taxation. This mechanism was first explored by Cremer et al. (2001, 2003). A similar result was presented by Bastani et al. (2014) in the context of childcare services. Highly skilled individuals who work fewer hours to reduce their taxable income (to lower their tax burden) need to purchase fewer hours of child care and will therefore have higher disposable income than low-skilled individuals earning the same labor income (provided that individuals with high skills and low labor supply do not purchase substantially higher quality; see Bastani et al. 2020). Taxing goods with high income elasticities makes it less attractive for high-skilled individuals to engage in such reductions in working hours, thereby improving the efficiency of the tax system.

An important observation is that the differences in consumption patterns described above are due to differences in wealth, not differences in preferences. In contrast to preferences, wealth is taxable. Therefore, it would be more efficient to tax wealth itself, which is the source of the difference in consumption patterns, than to differentiate consumption taxes, which distorts individuals' consumption choices. However, there are usually strong practical and political obstacles to taxing wealth.[60]

5.6. Education

Education is often thought of as an investment in human capital. By engaging in education, individuals can increase their labor market productivity and earnings in the future in exchange for a loss of earnings and costly educational effort today. Sometimes education is seen not only as a way to increase human capital, but also as a way to signal existing productivity to potential employ-

59 The result depends on how the incentive problems look with respect to the two-dimensional distribution of ability and wealth. The simplest case is that of a perfect correlation between ability and wealth.

60 The practical and political arguments commonly made against wealth taxation do not fully apply to inheritance taxes, since the tax authority is only required to assess wealth once – at the time of death – and there tends to be greater political support for this form of taxation (Bastani and Waldenström 2021).

ers. However, education can also be viewed as consumption, which is why we discuss it in this paper.

Education belongs to a category of consumer goods sometimes referred to as *merit goods*, which refers to goods and services that the government subsidizes because they are thought to have positive internalities or externalities for society. Merit goods can also refer to goods and services that society believes all individuals should have access to (such as emergency health care), according to a principle sometimes referred to as *commodity egalitarianism*.

How education should be subsidized is a complex issue that cannot be fully addressed here. Recent studies of education subsidies have emphasized in particular the role of risk, life-cycle patterns, and borrowing constraints; see Bohacek and Kapicka (2008), Findeisen and Sachs (2016), Stantcheva (2017), Kapicka and Neira (2019), Colas et al. (2021). Based on the static approach to taxation that we largely follow in this paper, two key observations can be made: (i) to the extent that education can be treated as a consumption good, education subsidies affect individual consumption patterns and therefore entail distortions (one possibility is certainly that individuals overconsume education relative to other goods), and (ii) there are reasons to subsidize education to counteract the distortions associated with progressive income taxation, since such taxation reduces the incentive to invest in education (see Bovenberg and Jacobs, 2005).[61]

5.7. Housing

The largest consumption good for most people is housing. The taxation of housing is one of the most complex areas of tax research because housing serves as both an investment and a consumption good. Moreover, the flow of consumption from housing – as from other durable goods – is dynamic and affected by mechanisms that are quite different from those for nondurable goods (e.g., adjustment frictions from housing transactions).

There is a small literature on optimal housing taxation in the Mirrleesian framework. Cremer and Gahvari (1998) provide an early contribution in this regard, focusing on the possibility of nonlinear taxation created by the observability of housing. They argue that differential taxation of housing is justified by the assumption that high-ability individuals have a higher preference for high-quality housing. Subsequent papers have incorporated additional features of the housing market. For example, Koehne (2018) explores the durability aspect of housing. While durability invalidates the uniform taxation of Atkinson and Stiglitz (1976), the implied direction of tax differentiation is not straight-

61 At the same time, it is possible that the progressive income tax system, in combination with the social transfer system, encourages riskier investments in human capital.

forward and depends on the details of individual preferences and the nature of adjustment costs.[62] Bastani et al. (2023) study housing taxation with a production process that distinguishes between structures and scarce urban land, where structures require maintenance that may be correlated with labor supply. They show that housing taxes are justified by the existence of land rent, and that maintenance subsidies are generally optimal to achieve efficient time allocation and mitigate income tax distortions.[63] The desirability of taxing housing differently from other goods due to the presence of land rents is also highlighted by the recent contributions of Bonnet et al. (2021) and Schwerhoff et al. (2022). Alternatively, tax differentiation between housing and other forms of consumption can be justified by the role of housing as a capital good (e.g. Eerola and Määttänen, 2013; Nakajima, 2020; Borri and Reichlin, 2021) or by complementarities between housing and leisure/labor. However, whether housing is a complement to labor or leisure is an open question, especially in light of the increasing trend towards remote work (working from home).

It is sometimes claimed that those who own their homes take better care of them and are more likely to contribute positively to the residential area in which they live, which is an externality argument for taxing housing less than other goods (see e.g. Rossi-Hansberg and Sarte, 2012). However, in light of the previous considerations for taxing housing more than other consumption goods, the externality argument cannot justify the large tax privileges for housing found in many countries.[64] Assessing the benefits and costs of tax differentiation for housing remains a challenging issue and requires advances in the theoretical modeling of consumption, investment, labor supply, and the housing market.

62 Intuitively, when adjustment costs are low, durables are similar to financial assets and should be taxed on the same grounds as other forms of capital. When adjustment costs are high, this similarity weakens, and the incentive properties of durable investment also depend on its non-separability from other consumption goods. See also Parodi (2023), who studies the taxation of durable goods with a focus on non-housing consumption.

63 In their paper, individual preferences are represented by a utility function that is separable between all consumption goods (including housing) and leisure. Interactions between structures and labor supply arise from the assumption that structures require maintenance.

64 Of course, housing is also subject to several taxes, such as transaction taxes and recurrent property taxes. To measure the effective tax burden, these taxes must be weighed against various subsidies, such as mortgage interest relief and transfers and other deductions for homeowners. See Millar-Powell et al. (2022) for a recent review of the effective tax burden on housing.

6. Conclusion

In this paper, we have discussed the determinants of the optimal level of consumption taxation and the orthogonal question of whether and how consumption taxes should be differentiated across goods and services.

With respect to the appropriate level of taxation, we have shown that consumption taxes share many similarities with income taxes. However, we have shown that consumption taxes differ from the latter by imposing an additional tax burden on wealth, on excess returns to capital, and on unreported income. Moreover, consumption taxes limit the gains from tax planning attempts when individuals shift income between different tax bases. In our view, these mechanisms motivate a substantial role for consumption taxes in the overall tax mix. Exactly how much reliance should be placed on consumption taxes, however, remains an important open question. Although the current state of the literature is not close to a definitive answer, the existing results point to several key mechanisms that quantitative approaches should take into account.[65]

Regarding the degree of tax differentiation, we have argued that, based on seminal theoretical results and a number of practical considerations, uniform tax rates are generally advisable. However, differential taxes are justified when goods or services generate externalities (or internalities) or when their demand is closely related to individual labor supply. We have also summarized some additional theoretical justifications for tax differentiation, such as ability-based taxation, non-homothetic preferences, or relative consumption concerns. However, in our view, these cases do not provide a strong argument because the existing empirical evidence is too limited or because alternative tax instruments appear to be more targeted.

Education and housing are two important goods whose consumption aspect represents only part of their value. Therefore, these goods are usually analyzed in special models tailored to their specific characteristics. Tax incentives for education can be justified on similar principles as for other goods and services related to labor supply. The case of housing is more complicated because housing is both a durable consumption good and an asset, has externalities to neighbors, and is traded in a market characterized by risky prices and adjustment frictions.

We would like to highlight a few broad areas where we think more research would be particularly valuable. While there is already a rich literature

65 In the macroeconomic literature, numerous contributions have examined the welfare implications of replacing the income tax system with consumption taxation, see for example Krusell et al. (1996), Altig et al. (2001), and Conesa et al. (2020). However, the question of the appropriate balance between income and consumption taxation, taking into account issues such as the taxation of excess returns, income shifting between tax bases, and undeclared income, is largely unexplored.

quantifying optimal education subsidies, the literature on optimal housing taxation is currently in its infancy. This is certainly an area where future research seems warranted. Another important task for future research is to quantify optimal externality-based or work-based tax incentives for specific consumption goods.[66] An important aspect that we have only touched on is the role of consumption taxes in developing countries with a large informal sector.[67] Finally, the labor market is changing rapidly, and technological advances in the form of automation and AI may have profound implications for the design of the optimal tax system. This literature is growing rapidly, but has mostly focused on the taxation of labor versus capital, while the implications for consumption taxation have been virtually unexplored.[68]

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66 While the basic idea of corrective taxes in the context of externalities is well established, dating back at least to Pigou (1920), state-of-the-art simulations of corrective taxes that account for the complex distributional effects of taxation remain scarce. Allcott et al. (2019) conduct a rich quantitative analysis of optimal soda taxes. Their framework could serve as a starting point for approaches to other forms of corrective taxation. A similar gap between theory and quantification exists in the case of work-related tax preferences, see Koehne and Sachs (2022) for a first attempt to quantify tax deductions for household services.

67 Here, important empirical studies are being conducted (see, for example, Bachas et al. (2022) on the distributional incidence of consumption taxes in developing countries), but theoretical studies guiding the design of consumption taxes in developing countries remain scarce.

68 See Bastani and Waldenström (2024) for a recent survey of this literature.

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