The Role of Imperfect Financial Markets for Social Redistribution

Jenny Simon[1]

Introduction

The capacity to tax is one of the main pillars of government in modern developed societies. In the Western world, the institutions necessary for tax collection and compliance enforcement can nowadays largely be taken for granted. Consequently, the theory of optimal taxation is not a theory of institutional design. Instead, the choice of how much to tax and how to best spend the revenue is thought to be mainly constrained by asymmetric information and incentive effects.[2] In this article, I showcase to the contrary that the government's ability to redistribute through income taxation may very well depend on the specific characteristics of institutions that are, even in the developed world, still subject to new regulation; they depend namely on financial markets and their functioning.

Because optimal taxation of income is constrained by private information concerns, the government needs to be able to credibly promise not to misuse this information once it is revealed. Even a purely benevolent government needs a commitment device to be able to efficiently redistribute. I show that the existence of a financial market that allows people to take out loans and enter into longer-term consumption commitments may explain why a government is able to commit to keeping its promises. Interestingly, only financial markets in which individual agents have to bear a cost when defaulting on their loans have this favorable effect. In that sense, a real world friction – market incompleteness – can alleviate the credibility constraint of the government.

[1] Stockholm Institute of Transition Economics and CESifo.

[2] This argument does obviously not hold for most developing countries. The literature on taxation and development thus does not take these institutions for granted and instead focuses on how they emerge. For an overview see Besley and Persson (2013).

Income taxation – a theory of information constraints

Ever since the seminal contribution of Mirrlees (1971), it is widely recognized that the problem of income taxation is one of eliciting private information. Underlying this point of view is the assumption that people differ in their ability to generate income. Studies in the theory of income taxation make different assumptions as to whether this ability level is entirely innate or at least partly a personal choice (for example, through the choice of education and training), or whether it is fixed for life or subject to random shocks such as sickness – but they have in common that the heterogeneity in ability is the main motivation for a benevolent government to redistribute.

Each person's ability type, however, is assumed to be private information, that is it is unobservable to the government and cannot be used as a direct determinant of the personal income tax schedule. In other words, because the government cannot observe how productive each individual potentially could be, people cannot be forced to work a specific amount of hours or to produce a specific level of output for a compensation that the government decides based on its goal to redistribute alone. Instead, the optimal tax system needs to provide incentives for agents to work and save according to their true ability, while contributing to whatever level of social redistribution society deems appropriate.

The main complication in designing such an income tax schedule optimally is to prevent high ability types from adversely selecting into the tax and transfer brackets meant for lower types. With overly generous redistribution schemes, high ability types might find it individually optimal to pretend that they are also lower types, to work less and claim transfers to substitute their income. Since the government has no a priori way of telling people apart, this problem limits how much redistribution can be provided without destroying incentives to work. The classic Mirrlees insight is that the government needs to achieve a trade-off between efficiency (i.e., making the best use of the population's productivity) and equity (the degree of redistribution).[3]

[3] For other early contributions see also Dasgupta, Hammond and Maskin (1979), Harris and Townsend (1981), and Holmström and Myerson (1983).

The government's commitment problem

When incorporating the Mirrleesian model into dynamic settings, it turns out that these incentives are best spread over time. Golosov, Tsyvinsky and Werning (2006) provide an extensive overview of the New Dynamic Public Finance literature that has established this and many related results. An individual who produces more and pays higher taxes today should not only be rewarded today. The government can also promise such individuals that they will be better off tomorrow, regardless of their future contributions, and in return grant less of an advantage today. Compared to a scenario where incentives are paid only in the present period, spreading the incentive payments into the future reduces inequality at any given point in time and thus better serves the redistributive goal of the government. However, in order to achieve such a compromise in the inherent efficiency-equity trade-off, the government needs to be able to *commit* not to renege on promised incentive payments in the future.

A lack of such commitment is generally expected to lead to extremely inefficient outcomes. When people cannot trust the government to stick to its promises, it becomes much harder to convince them to work according to their true ability type and only to claim the transfers they are truly entitled to. The reason for this is that, as time passes, the choices made by each agent (i.e., how much to work and to produce, and which transfers to claim) reveal his/her ability type to the government. After this information has been revealed, however, a benevolent government is tempted to use it to implement extreme levels of redistribution. It could now directly force those who are highly productive to work a lot, and to pay more taxes in order to maintain a much larger welfare state. Since agents anticipate such ex-post policy changes, they will not find it optimal to reveal their type truthfully in the first place, unless they are compensated right away. Consequently, a government without commitment cannot generally achieve the same level of redistribution and efficiency in the economy as one with a commitment device.

A growing body of literature characterizes optimal Mirrleesian taxes in setups without commitment to establish how severe the consequences of commitment problems are. Brett and Weymark (2011) consider a two-period setup with savings and show that the government without commitment will always find it optimal to distort savings. Berliant and Ledyard (2005) consider optimal dynamic income taxes in a setup where income *cannot* be transferred between periods (i.e., no financial market exists), in which they demonstrate an equivalence of dynamic and static optimal taxes. Both papers find that some, but a rather limited separation of types (and thus limited provision of incentives), is possible under some circumstances, even when the government has no commitment. Yet, there are also circumstances under which it would be entirely impossible for a government without commitment to implement any redistribution at all. This kind of ratchet effect in income redistribution was firstly demonstrated by Roberts (1984) and more recently extended to a fully dynamic setting by Golosov, Tsyvinsky and Werning (2006). Examples in Bisin and Rampini (2006) and Simon (2012) show that higher inequality in terms of ability makes the commitment problem more severe – necessary incentive payments can quickly become so large that the government without commitment chooses not to provide any social redistribution. A lack of commitment on the government's part to honor promises in the future thus generally leads to extremely inefficient outcomes.

It is important to note that this problem occurs despite the government being fully benevolent. It is not due to the self-interest of politicians, nor to an unexpected change in the Pareto weights that the government associates with different parts of the population. Any government that cares about social redistribution might, in principle, come up against this problem. Yet, in reality, governments in developed countries are very able to redistribute through income taxation. There is, however, little reason to believe that these governments possess some exogenous commitment device. Instead, commitment must stem from the economic and political environment that the government operates in. The question is therefore: which characteristics of the economy, the evolution of agents' skills, or the nature of interaction between agents and the government enable such effective commitment? This article takes a look at one possible explanation and argues that the institutional design of the market economy may play a crucial role in commitment.

Individual involvement in financial markets

In Simon (2012), I demonstrate that agents' involvement in financial markets can alleviate the government's commitment problem and so facilitate social redistribution. For this mechanism to work, some specific characteristics of the financial market are important. Markets need to be functional and, in principle, accessible to everyone. Individual contracts need to be enforceable.

Those are institutional details that are well established in developed market economies. Today's regulatory efforts are aimed at eliminating market frictions, trying to get closer to the theoretical ideal of perfect, complete markets. I show, however, that financial markets have a favorable effect in terms of the described commitment problem of the government only when they are imperfect. This is a case where the details of the institutional design of markets may matter greatly to the government's ability to redistribute.

The argument is simple: in market economies, individuals do not typically constrain their consumption to equal net-of-tax income every period. Instead, they use financial markets to allocate their resources over time. For instance, a mortgage contract enables agents to live in a house that reflects their life-time income rather than in a rental unit that reflects their present disposable income every period. The financial markets that people use in reality, however, are typically imperfect in the sense that adjustments to individual contracts are costly. If at any point in time an agent cannot afford his mortgage payments any longer, he needs to refinance, sell or even default – none of which are costless options. Consequently, by using markets, agents enter *individual commitments.*

Optimal redistributive policy takes agents' involvement in such markets into account. At any point in time, when the benevolent government considers changing the promised tax schedule, it also considers people's contractual positions. If an agent ends up with less net-income than promised, he will have to adjust his consumption plan downward and possibly adjust his financial contracts. The costs of such adjustment (or "default") can deter the government from reneging on past promises. This is not assuming that banks can force the government to bail out all individuals who cannot or do not want to afford their mortgage payments any longer. On the contrary, I show that even although these consumption commitments are enforceable only at the individual level, the imminent default costs for each individual agent add up to an effective commitment device for the government.

A favorable market imperfection

The ability for agents to enter into such contracts starkly distinguishes a developed market economy from a developing economy. Without the existence of a functioning financial market or a reliable enforcement system, people are forced to consume what they earn in the present. They cannot make long-term consumption plans. In the worst case, when no markets exist, people can at most rely on very inefficient savings methods or personal risk sharing arrangements if they want to be anything but hand-to-mouth consumers. In the developed world, on the other hand, nearly all individuals use contracts in private markets to plan their consumption over long periods of time. Mortgage financing of housing is ubiquitous. However, energy supply contracts, insurances or fixed-term savings vehicles also count in this category. One important characteristic that these arrangements share is that they cannot be changed at any given point in time without costs arising. Instead, people pre-commit significant amounts of their income in private contracts: Chetty and Szeidl (2007) report that nearly 65 percent of the average US household's budget is allocated to such consumption commitments.

Theoretically, this description of market imperfection maps into the concept of market incompleteness in the classical sense: there are no complete resale markets for financial claims at every point in time. It is not easily conceivable what perfectly complete markets would look like in reality. In terms of the mortgage example, a complete market would have to allow for selling the usage rights to a house by the minute and the square foot. Someone who cannot afford his mortgage at some point in time could then seamlessly adjust his ownership, without incurring any extra costs of refinancing, selling or moving.

Although such perfectly complete markets are inconceivable, the degree of incompleteness still varies, and depends very much on how market institutions are regulated. Indeed, defaulting on a private loan has very different consequences in different countries. These consequences range from simply handing over the collateral and walking away in the US to personal bankruptcy regulation that gives creditors a claim to future earnings in Germany. Such differences can be summarized simply as differences in the costs faced by an individual when defaulting on a private contract.

From the point of view of redistributive income taxation, these individual default costs, and so the degree of market incompleteness, are linked to the level of incentive payments the government can effectively commit to. When agents have pledged their promised net-income in financial contracts that cannot costlessly be changed, then reneging on promised incentive payments leads to costs for the benevolent government as well. Extreme levels of redistribution may not be desirable any longer;

the ex-post gain from redistribution must be weighed against the loss incurred from default. Theoretically, the optimal income tax schedule will be such that the marginal benefit from additional redistribution toward the low end of the type distribution is exactly offset by the marginal cost due to additional default. In such cases agents correctly anticipate that the government will not find it profitable to renege on its promise ex-post.

Limited commitment and the optimal tax schedule

As long as the default costs are strictly positive, the government gains a new degree of freedom in designing its tax policy. Naturally, the larger the default costs, the better for the government's commitment problem. When pushed to the limit, if default costs were so high that agents stood to lose all of their net-income even if they had to adjust their contract only a little bit, the government would effectively gain full commitment. Even although theoretically possible, this mechanism arguably may not be strong enough in reality to provide full commitment. The main result of Simon (2012) shows, however, that even a small market imperfection leads to a limited degree of effective commitment and so weakly improves welfare compared to an economy where people do not have access to financial markets.

Moreover, the larger initial inequality in the population (in terms of ability types), the more helpful the commitment stemming from people's involvement in an imperfect financial market. In particular, whenever ex-ante inequality is so high that a government without commitment power would not find it possible to implement any social redistribution (the worst case scenario of the ratchet effect), then even a small default cost and a small degree of effective commitment as a result have a big impact on the optimal tax schedule: as the government gains the ability to implement at least some redistribution. It will optimally collect only a limited amount of information, so that the ex-post temptation to misuse this information is kept in check by the default costs. That means the optimal tax schedule partially pools some agents of the type distribution. Depending on the specific characteristics of the underlying type distribution and the structure of default costs, the schedule could be designed in income brackets, or in the form of a cap beyond which income need not be precisely reported. Indeed, many real world tax codes have features of such pooling. For example both Germany and the US have an income cap beyond which no additional social security contributions are paid.

The specifics of market design matter

The effect of agents being able to use financial markets to allocate their resources on optimal taxation has received considerable attention before. Many authors have considered environments in which agents cannot only contract with a principal, but also in *anonymous* outside markets that make it harder to extract information from the agents truthfully. See, for example, Hammond (1987) for a general treatment or Golosov and Tsyvinsky (2007) for a more recent example from the dynamic public finance literature. The general conclusion is that when the government has an *exogenous* commitment device, letting agents use markets to allocate resources decreases the set of policy instruments available to the government. Some of the incentive structures the government would like to implement can simply be undone by agents trading in markets. The literature therefore concludes that the presence of markets hinders redistribution. The main argument presented here is that this conclusion does not necessarily hold when the government has *no* commitment. In that case, letting agents use financial markets can be beneficial, if these markets are imperfect. While it remains true that agents can undo some of the government's provision by using the market, it is their involvement in the market that enables the government to provide incentives in the first place, so that the net benefit of having markets is positive.

Yet, even in the no-commitment environment, the way in which the presence of markets influences optimal taxation depends on institutional details. Bisin and Rampini (2006) study a no-commitment setup similar to the one considered here, but again focus on the allocative role of *anonymous* markets. They find that allowing agents access to financial markets that act as "tax havens" is also beneficial in a world where the government has no commitment. It allows agents to allocate their resources over time without revealing any information, thereby increasing efficiency. However, the government's commitment problem is unchanged; no social redistribution can be implemented. In order for the commitment problem to be alleviated (as in Simon 2012), contracts need to be observable. The government must be able to use agents' contractual positions as determinants of the tax schedule. In reality, this can be achieved through a variety of regulations. For example, a government could mandate that banks make all information about personal loans available. In Sweden, for example, the tax authority is automatically informed about new mortgages directly through the lending bank. Another possibility is to directly ask about personal debt at the tax filing

stage. In many tax systems individuals must report their personal loans on their tax return and can deduct at least part of the payments connected to these loans from their taxable income.

There are potentially many more ways in which the presence and functioning of markets influences the government's ability to implement redistributive policy. Scheuer (2010), for example, explores the impact of incomplete credit markets on optimal entrepreneurial taxation. He finds that a market friction that gives rise to cross-subsidization between different types of potential entrepreneurs may induce inefficient entry at both ends of the skill distribution, which, in turn, promotes an additional corrective role for type-differential, redistributive taxation, even when the government originally has no redistributive objective.

Commitment through other institutions

Beside the presence and degree of imperfection of financial markets, there are other mechanisms that might potentially provide the government with effective commitment. Acemoglu, Golosov and Tsyvinsky (2008, 2010) consider self-interested politicians who cannot commit not to misuse information *and* can appropriate resources for their own benefit. They show that, in an infinite horizon setup, such governments can effectively commit on the equilibrium path, essentially because they want to maintain their rents agreed upon in the social contract. Such equilibrium can only exist when it is supported by the threat of agents reverting to the worst outcome after a government deviates from promised policy (either by not producing anything, or by replacing the government). In that sense, their findings are parallel to reputation mechanisms – a channel completely abstracted from in this article.

Many constitutions also explicitly provide commitment mechanisms preventing the extreme levels of redistribution that go along with expropriation. When such a constitution is meaningfully enforced by an institution outside the government's reach, it probably helps to boost the government's credibility in making promises for the future. Yet, such constitutions only provide against extreme cases of lack of commitment. Governments in developed countries do have considerable scope for tax reform. Tax schedules are subject to frequent changes, often leaving some people worse off than they anticipated. This is evidence of the fact that commitment does not stem from one mechanism alone. Exactly how these different mechanisms – political reputation, laws, and the market environment – influence each other remains a subject for future research.

Conclusion

The economic environment a government operates in plays a critical role in how much redistribution can be achieved. When agents are privately informed about their ability to generate income, the government's capacity to implement social redistribution depends crucially on its power to commit to future policy. Such commitment does not exist exogenously for any government. Instead it results from political, constitutional and market institutions that influence the policy space for the government.

This article argues that one such commitment providing institution is an imperfect financial market. Access to markets that allow agents to pledge their life-time income in contracts that cannot costlessly be adjusted changes the government's ex-post temptation to deviate from past promises, and thus enhances its credibility. In that sense, income taxation and redistributive capacity are also a function of the institutional design of the market economy. This is not to say that financial markets need not be regulated. Importantly, this mechanism relies on the fact that banks do not over-lend. How to implement the necessary safeguard mechanisms against excessive risk-taking in the financial market, as well as the potential advantages of more complete markets have not been a part of the discussion offered here. In that sense, this article paints only one side of the financial market regulation picture and should not necessarily be understood as arguing for more imperfection. Instead, it highlights the role that existing frictions in financial markets play for redistributive policy in a social market economy and sheds light on a type of interrelation between markets and government policy that has previously been unexplored.

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