

Financial Repression and Optimal Taxation*

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December, 1999

Abstract

Financial repression entails an implicit taxation on savings. When effective income-tax rates are very uneven, as common in developing countries, raising some government revenue through mild financial repression can be more efficient than collecting income tax only.

Keywords: Financial repression; Savings tax; Optimal taxation; Flat tax.

JEL classification: H2, O16, E5, G28

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1. Introduction

There seems to be a consensus that financial repression, which refers to government policies repressing the rates of return to financial assets, hurts economic development (McKinnon, 1973; Shaw, 1973; McKinnon, 1986; and Roubini and Sala-i-Martin, 1995). Financial repression, it is argued, interferes with efficient financial intermediation by reducing people's incentives to hold financial assets. Convincing as the argument is, financial repression of various extent is fairly common in a group of rapidly growing economies including Chile, Japan, South Korea, Taiwan, and China (See Zahid, 1995). In the case of China, up to one third of total government revenue in 1986 through 1994 is estimated to come from seigniorage and financial repression (Bai, Li, Qian, and Wang, 1999). Yet, these economies as a group represent encouraging cases of contemporary economic development.

The existing literature usually refers to a very severe form of financial repression that leads to a negative real interest rate. However, financial repression in the aforementioned economies has been mostly mild in the sense that the real rate of return to financial assets is still positive, although lower than the market rate. In such a case, the negative effect of financial repression on the development of financial institutions may not be very significant. For example, despite of various measures of financial repression, the Chinese economy has experienced dramatic financial deepening over the last two decades. We argue in this note that there may be an efficiency gain from mild financial repression. The central idea is that financial repression offers an alternative to income tax as a means for the government to raise revenue. When effective income tax rates are highly uneven, which is common in developing economies, taxation through mild financial repression can be less costly than income taxation. So the government should not rely solely on income tax for revenues.

2. The Evenness of Taxation: Income Tax vs. Financial Repression

In most developing economies, the effective income-tax rates are very uneven. One reason is the significant variation across different individuals in the government's ability to verify their income.¹ These differences in income verification imply different effective income tax rates. Another reason is corruption, for the ability to access corrupt tax collectors varies among tax payers. Uneven income tax burden is particularly severe in developing and transition economies that do not have a well functioning income reporting system and where corruption is prevalent.

Implicit taxation through financial repression is different. The government can implement a rather even tax similar to the flat tax on savings with financial repression. First of all, when individuals do not have alternative investment opportunities with higher returns such as foreign assets (due to capital control), almost all savings are held in the form of domestic financial assets. Second, all forms of domestic financial assets can be easily taxed. For example, by regulating interest rates on deposits and at the same time taxing or even partially owning banks, the government can tax bank deposits. Taxing firms' proceeds from equity issues, the government can tax equity holders. Third, these forms of taxation are administered at the source of the assets, e.g., the banks and the firms, without dealing with individual asset owners. The reporting problem, which is prevalent with income taxation, is largely avoided. Finally, there is little discretion associated with these forms of taxation so that there is little room for corruption

¹ For example, the income of a restaurant waitress is very difficult to verify, while that of a steel-mill worker is easy to; the income of a plumber is difficult to verify, while that of a high school teacher is easy to.

to affect their incidence. Due to these factors, financial repression effectively taxes the savings of all individuals at similar rates.

3. A Simple Model

Consider an economy with many agents. Assume that all agents live for two periods; they produce only in the first period but consume in both periods. In each period, they consume leisure and another consumption good, c . Also assume that they share the same utility function.

$$U(c_1, c_2, l) = \ln(c_1) + l + \ln(c_2) + L_2,$$

where c_i is the agent's period i consumption, l is his first period consumption of leisure, and L_2 is his endowment of time in the second period. Suppose $l = L - e$, where L is his endowment of time in the first period and e is the amount of time he uses to produce the other consumption good. Since L and L_2 won't affect the analysis, we will leave them out in the remainder of this note and consider

$$U(c_1, c_2, l) = \ln(c_1) - e + \ln(c_2).$$

Further assume that the production function for the other consumption good is $c = e$. Given the tax scheme that we will discuss later, each agent chooses his labor supply e and consumption levels c_1 and c_2 to maximize his utility subject to the budget constraint.

Denote per capita tax collected by the government by T . We will compare income taxation and savings taxation for given T , using the average utility level of all the agents as the yardstick. The quasi-linear utility function we have assumed makes this yardstick a useful one.

4. The Comparison of Two Extreme Cases

4.1 Income tax

Suppose that the income tax rate for an agent is t_1 . Given his labor supply, e , the agent consumes $(1-t_1)e/2$ in each period. He chooses his labor supply to maximize

$$2\ln [(1-t_1)e/2] - e.$$

It is easy to show that the optimal $e^* = 2$. Then the agent's optimal utility level is

$$2\ln (1-t_1) - 2.$$

Suppose some of the agents do not pay any tax but others pay taxes at a high rate. Specifically, assume that the proportion of agents who pay taxes is p . To ensure the per capita tax revenue of the government to be T , the tax rates are,

$$t_1 = \begin{cases} 0 & \text{with probability } 1-p, \\ T/2p & \text{with probability } p. \end{cases}$$

Then the average utility level of the agents is

$$W_1 = 2p\ln (1-T/2p) - 2.$$

4.2 Savings tax

Now consider a savings tax with flat effective rates. Suppose that the savings tax rate for each agent is t_2 . The agent chooses e and s to maximize

$$\ln (e-s) - e + \ln [(1-t_2)s].$$

The first order condition with respect to e gives

$$e - s = 1$$

and the first order condition with respect to s gives

$$e - s = s.$$

Solving these two equations simultaneously, we have $s^* = 1$ and $e^* = 2$. For the government to be able to collect T from the agent, the savings tax rate is $t_2 = T$. The agent's utility level is

$$W_2 = \ln (1-T) - 2.$$

4.3 Comparison

If the income tax rate is also flat, that is, $p=1$, then

$$W_1 = 2\ln(1-T/2) - 2 > W_2 = \ln(1-T) - 2$$

because $f(T) = \ln(1-T)$ is concave in T and $f(0) = 0$. This means that if flat tax is used in both cases, income tax gives the agent a higher level of average utility than savings tax. The reason for this is that income tax does not distort agent's intertemporal consumption decision whereas savings tax does.

However, if p is sufficiently small, in particular, if p is close to $T/2$, then W_1 is very small. In fact, W_1 approaches negative infinity as p approaches $T/2$. In this case, W_1 is lower than W_2 . That is, if income tax is borne only by a small proportion of individuals but savings tax is borne by every agent, then the average utility is much lower under income tax than under savings tax.

Proposition 1: When the proportion of agents who pay income tax, p , is sufficiently small, income tax leads to lower social welfare than savings tax.

The intuition for this result is not hard to see. As the effective tax rates for the agents diverge, those agents having the low effective tax rate gain utility and those with high effective tax rates lose utility. Since marginal utility diminishes, the loss dominates the gain. As the effective tax rates become more and more uneven, the average utility level of the agents become lower and lower. Eventually, the average net loss from the unevenness in the effective income tax rates becomes larger than the loss of utility from the distortion in inter-temporal consumption allocation decisions induced by the savings tax.

5. Optimal Taxation

In the preceding section, we compared pure income tax with pure savings tax. In this section, we consider the combination of these two taxes and show that it can be optimal combine the two types of taxes.

Suppose an agent faces an income tax rate t_1 and a savings tax rate t_2 . Then his utility is

$$U = \ln [(1-t_1)e - s] - e - \ln [(1-t_2)s] = \ln [(1-t_1)e - s] - e - \ln (1-t_2) - \ln (s).$$

Given e , the optimal s is $(1-t_1)e/2$. Then, the utility level at the optimal s is

$$U = 2\ln [(1-t_1)e/2] - e - \ln (1-t_2) = 2\ln (1-t_1) - 2\ln 2 + 2\ln (e) - e - \ln (1-t_2).$$

It is easy to show that the optimal $e^* = 2$. Then the agent's optimal utility level is

$$U = 2\ln (1-t_1) - \ln (1-t_2) - 2$$

and at the optimum, the savings level is

$$s^* = 1 - t_1.$$

Suppose the total revenue from the income tax is T_1 and that from the savings tax is T_2 , with $T_1 + T_2 = T$. Assume again that the proportion of agents paying income tax is p . Then, to be able to raise T_1 , the income tax rates are

$$t_1 = \begin{cases} 0 & \text{with probability } (1-p), \\ T_1/2p & \text{with probability } p, \end{cases}$$

which satisfies $E\{et_1\} = T_1$. The savings tax rate should satisfy

$$t_2E\{s^*\} = t_2E\{1-t_1\} = T_2.$$

Since $E\{t_1\} = T_1/2$, we have

$$t_2 = T_2/(1-T_1/2) = 2T_2/(2-T_1).$$

Then, the average utility level of the agents is

$$\begin{aligned}
W(T_1) &= 2p \ln[1-T_1/(2p)] - \ln[1-2T_2/(2-T_1)] - 2 \\
&= 2p \ln \frac{2p-T_1}{2p} - \ln \frac{2+T_1-2T}{2-T_1} - 2
\end{aligned}$$

because $T_2 = T - T_1$. Differentiate $W(T_1)$ with respect to T_1 , we have

$$\begin{aligned}
W'(T_1) &= \frac{1}{T_1+2-2T} + \frac{1}{2-T_1} - \frac{2p}{2p-T_1} \\
&= \frac{(2-T_1)(2p-T_1) + (T_1+2-2T)(2p-T_1) - 2p(T_1+2-2T)(2-T_1)}{(T_1+2-2T)(2-T_1)(2p-T_1)} \\
&= \frac{2pT_1^2 - (4-2T+4pT)T_1 + 4pT}{(T_1+2-2T)(2-T_1)(2p-T_1)}
\end{aligned}$$

The constraints that $t_1 < 1$ and $t_2 < 1$ imply that $T_1 < 2p$ and $2T < 2+T_1$. Therefore, the denominator $D = (T_1+2-2T)(2-T_1)(2p-T_1)$ is positive. Then, at $T_1 = 0$,

$$W'(T_1) > 0.$$

Therefore, the optimal T_1 is positive. That is, there should be some income taxation. At $T_1 = T$,

$$W'(T) = 2T(2-T)(p-1)/D < 0$$

for $p < 1$. Therefore, for $p < 1$, the optimal $T_1 < T$. That is there should be some savings tax.

For $p = 1$, $W'(T_1) = (T_1 - T)(2T_1 - 4) > 0$ for $T_1 < T$. Therefore, in this case, the optimal $T_1 = T$.

In summary, we have shown that,

Proposition 2: If the effective income tax rates are uneven ($p < 1$), the average utility level of the agents is maximized when both income tax and savings tax are used. If the effective income tax rates are even (i.e., $p = 1$), the average utility of the agents is maximized when income tax alone is used.

6. Extension

The simple model above did not consider variation in the agents' income. If the effective income tax rates are highly correlated to the agents' income levels, income taxation is expected to yield higher average utility level than savings taxation. However, if the effective income tax rate an agent faces is independent of his income level, our main results remain valid. In particular, savings taxation yields a higher level of average utility than income taxation when the effective income tax rates are sufficiently uneven.

To show this, we assume that the production function of the agent is $c = e + \theta$, where θ is a random variable that is realized after the agent chooses his labor input.

If the agent faces an income tax rate t_1 , he should choose his labor supply to maximize

$$2E_\theta \ln [(1-t_1)(e+\theta)/2] - e = 2E_\theta \ln (e+\theta) - e + 2\ln [(1-t_1)/2].$$

Denote the optimal level of labor supply by e_1^* . Assume again that only proportion p of agents pay taxes. To ensure the per capita tax revenue to be T , the tax rates are

$$t_1 = \begin{cases} 0 & \text{with probability } 1-p, \\ T/e_1^* p & \text{with probability } p. \end{cases}$$

Then the average utility of the agents is

$$W_1' = 2p \ln \left(1 - \frac{T}{pe_1^*} \right) + E_\theta \ln \left(\frac{e_1^* + \theta}{2} \right) - e_1^*,$$

which goes to negative infinity as p approaches T/e_1^* .

Given a savings tax rate t_2 , his labor supply e , and the realization of θ , the agent chooses s to maximize

$$\ln (e + \theta s) - e + \ln [(1-t_2)s].$$

The solution is $s = (e + \theta)/2$. The agent's labor supply e should be chosen to maximize

$$2E_\theta \ln (e + \theta) - e - 2\ln 2 + \ln (1-t_2).$$

Denote the solution by e_2^* . Then the average utility of the agent under savings taxation is

$$W_2^* = 2E_\theta \ln(e_2^* + \theta) - e_2^* - 2\ln 2 + \ln(1-t_2).$$

It is easy to see that, as p is sufficiently small, $W_1^* < W_2^*$; that is, the average utility level under income taxation is lower than that under savings taxation.

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