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China's value-added tax reform, capital accumulation, and welfare implications ☆

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Abstract

This paper analyzes the effects of China's upcoming value-added tax (VAT) reform of removing investment from the tax base on capital accumulation and the welfare of the rich and the poor. Three alternative methods to make up for the loss of tax revenue are considered. The VAT reform with consumption tax being endogenous increases capital accumulation and the utility of both the rich and the poor. The VAT reform with the labor income tax rate being endogenous increases capital accumulation; and it decreases the utility of the rich and increases the utility of the poor (increases the utility of both the rich and the poor) if the rich has a higher rate or the same rate of time preference (if the rich has a lower rate of time preference). The VAT reform, accompanied by a cut in transfers to the poor, has no effect on capital accumulation if the rich and the poor have the same rate of time preference; it decreases (increases) capital accumulation if the rich has a higher (lower) rate of time preference; and it increases the utility of the rich and decreases the utility of the poor.

JEL classification: P35; H25; F41
Keywords: Value-added tax; Tax reforms; Capital accumulation; Welfare implications; China

1. Introduction

Value-added tax (VAT) is the most important tax collected in China, generating much more revenues than any other tax. The Chinese government is preparing to reform China's VAT by excluding investment from the tax base. Experiments of such a tax reform have begun in the three northeast provinces of China and a large-scale reform will soon follow. This fundamental tax reform will have a significant impact on the Chinese economy. However, there has

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no rigorous analysis on the effects of the tax reform. This paper will examine the effects of China's VAT reforms of removing investment from the value-added tax base on capital accumulation and the welfare of the rich and the poor.

There are various types of VATs. According to tax base, VAT can be classified as GDP-type VAT (i.e., the tax base is GDP), income-type VAT (i.e., the tax base is income or savings plus consumption), and consumption-type (the tax base is consumption with investment being excluded). China's current VAT is of the GDP-type. A reform of removing investment from the tax base may result in a large decline in tax revenues, and the government has to make up the loss of tax revenues by increasing other taxes or reducing its outlay. The way to make up for the loss of tax revenues is important in determining the effect of the VAT reform. This paper will analyze the effect of VAT tax reforms by taking into consideration three alternatives for making up for the loss of tax revenues: an increase in consumption tax, an increase in labor income tax, or a decrease in the transfers to the poor people. An equilibrium model of overlapping generations will be developed in which individuals are different in both endowment of effective labor and time preference.[1]

This study is related to several branches of literatures on tax reforms. One branch is concerned with the tax reform of replacing the income tax system with a consumption tax system. Fullerton, Shoven and Whalley (1983), Seidman (1989), Toder (1995), Hall (1996), and Hall and Rabushka (1996) showed that an increase in consumption taxation along with a decrease in income taxes will lower the interest rate and increase capital accumulation. However, Pechman (1987) argued that a consumption tax might create efficiency losses by distorting individuals' decisions. Moreover, Feldstein (1995) showed that a shift from an income tax to a consumption tax is more likely to raise the interest rate than to lower it. The present study examines the consequences of a change in consumption tax following an investment tax cut, instead of an income tax cut.

Another branch of the literature is concerned with capital tax reform. Diamond (1970) demonstrated that, with the tax revenue being rebated to individuals who pay the tax, an increase in the capital tax rate (tax rate on interest income) will decrease the real wage rate and lower the representative individual's utility if the after-tax interest rate is greater than the growth rate. Summers (1981) showed that a shift from capital taxation to consumption taxation would increase welfare substantially. With the tax revenue being refunded to tax payers in a lump sum manner, Chamley (1981, 1986) and Judd (1985) showed that the welfare-maximizing capital income tax should be zero in the steady state. Lucas (1990) argued that capital should not be taxed at all.[2] This paper studies the effects of a decrease in the tax rate on investment with three alternative methods to make up for the loss of tax revenue. The paper also allows individuals to have different rates of time preference and different levels of income.

The major results of the paper are as follows. With consumption tax being endogenous, a value-added tax reform removing investment from the tax base increases the capital- and output-labor ratios and increases the utility of both the rich and the poor. With the labor income tax rate being endogenous, the value-added tax reform increases the capital- and output-labor ratios, and increases the utility of both the rich and the poor (increases the utility of both the rich and the poor) if the rich has a higher rate of time preference than the poor or has the same rate of time preference as the poor (if the rich has a lower rate of time preference). With the transfers to the poor being endogenous, the value-added tax reform has no effect on the capital- and output-labor ratios if the rich and the poor have the same rate of time preference. However, it decreases (increases) the capital- and output-labor ratios if the rich has a higher (lower) rate of time preference than the poor. The value-added tax reform, accompanied by a cut in transfers to the poor, increases the utility of the rich while decreasing the utility of the poor regardless of the rate of time preference of the rich and the poor. These results should be useful to China and other countries in designing and reforming their tax systems.

The paper is organized as follows. Section 2 discusses the VAT system in China. Section 3 develops an overlapping generations model with the GDP-type VAT. Section 4 shows analytical and simulation results concerning the effects of VAT reforms with alternative ways to make up for the loss of tax revenue. Section 5 concludes the paper.

[1] The overlapping generations model has been widely used in many areas, particularly in the analysis of government tax policies. See, for example, Buiter (1981); Diamond (1965, 1970), Auerbach and Laurence (1987), Buiter and Kletzer (1993), and Altig, Auerbach, Kotlikoff, Smetters, and Wallser (2001).

[2] Gordon (1990), Gordon and Bovenberg (1996); Frenkel, Razin, and Sadka (1991), and Mintz (1992) argue that, in theory, capital taxes might not be sustainable in an open economy with perfect capital mobility. Sibert (1990) showed that if a country has a current account deficit which is sufficiently large, an increased investment tax may actually increase both wages and welfare in the long run.