

Banks, development, and tax



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ABSTRACT

The modern agenda for tax reform in developing countries prescribes a broader tax base, with increased reliance on income taxes. To be feasible, governments must be able to broadly monitor receipts of income, a challenge in countries with opaque financial systems. The present work considers the financial sector – specifically the banking sector – as a boon for tax revenue. Historically we find that larger banking sectors are associated with more tax revenue. To better understand this relationship we set up theoretical models of it, with a role for public good preferences, population size, the tax rate on deposits, the opportunity cost of cash spending, and money velocity. In these models, governments can raise more tax by making banking more attractive, via infrastructure that raises deposit velocity or by lowering the marginal tax rate.

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1. Introduction

For the developing world, the souring view of international donors toward foreign aid has increased the importance of tax revenue as a source of development funds. But the crudeness of technology and financial systems in the poorest countries creates a real bottleneck in the flow of information needed to broadly tax income. Improvements, by way of better information on income flows, are key to the modern agenda for tax reform in developing countries.

A reference point is the recent proposal by the IMF, OECD, UN, and World Bank on the development of more effective tax systems,¹ with the following call to action: “Identify key capacity constraints faced by developing countries in their tax systems and make recommendations on capacity building to (i) improve efficiency and transparency of tax administrations and (ii) strengthen tax policies to broaden the tax base and combat tax avoidance and evasion.”² In many developing countries, a weak or opaque financial system is a serious capacity constraint for tax collection, leading to inefficiency, a narrow tax base, and routine tax avoidance.

Consider a developing country with a sparsely used banking system, where most tax revenues are extracted from relatively few visible “targets” – mostly corporations and foreigners. A key tenet of tax reform prescribes a broader tax base, with increased reliance on income taxes.³ To be feasible, the governments must be able to broadly monitor receipts of income. But efficient income tax collection of the populous is an enormous undertaking even in advanced economies, and seemingly impossible if income is frequently received and spent as cash. This problem is widely recognized, and discussed at length by Zolt and Bird (2008).

If instead a country has a robust, transparent, and widely used banking system, the government has an easier time taxing either income or purchases. To formalize this idea, suppose that households spend income via two means: cash and checks. Cash spending is unobserved by the government and hence not taxed, while check spending is taxed at a rate τ_b (“b” for bank) for each dollar spent.⁴ With n households total, let S_{ib} be household i 's spending via banks (“checks”), in which case total tax raised T is:

$$T = \tau_b \sum_{i=1}^n S_{ib} \quad (1.1)$$

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¹ “Supporting the Development of More Effective Tax Systems: A Report to the G-20 Development Working Group” by the International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, and World Bank (2011).

² Similarly, International Development Committee Tax in Developing Countries: Increasing Resources for Development Fourth Report of Session 2012–13.

³ This tenet of modern tax reform is decades old, see for example Gray (1991).

⁴ The assumption of no tax on cash spending is clearly extreme, but simplifies notation. We can assume more generally that tax is larger on check spending than on cash spending, but this does not alter our conclusions qualitatively.

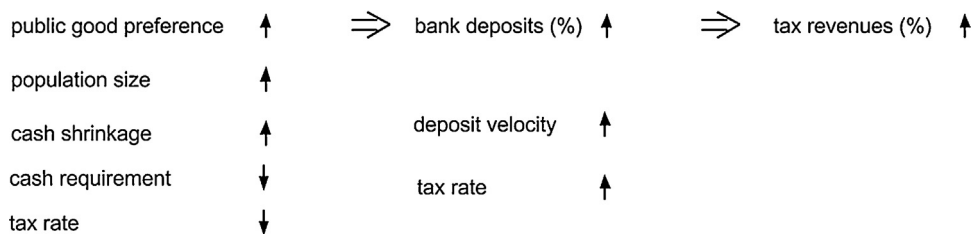


Fig. 1. Theoretical determinants of tax revenue.

Let T be total tax divided by total income, and B be total check spending divided by income. We can then recast the tax Eq. (1.1) as:

$$T = \tau_b B \quad (1.2)$$

As hypotheses go, (1.2) is hampered by the lack of data on spending via banks, but data on bank deposits is available for most countries. Let \mathcal{D} be the ratio of bank deposits to the nation's income – measured by gross domestic product (GDP), and let $\lambda = B/\mathcal{D}$ be the ratio of bank spending to bank deposits, in which case λ is the velocity or turnover rate of deposits. We can then rephrase the tax-bank link (1.2) as follows:

$$T = \tau_b \lambda \mathcal{D} \quad (1.3)$$

We illustrate this relationship in Fig. 1 (middle and right parts): the tax-to-GDP ratio (“tax revenues (%)”) rises when the deposits-to-GDP ratio (“bank deposits (%)”) rises; also, for a given value of deposits-to-GDP, tax-to-GDP rises when deposit velocity or the tax rate rises. We do not intend to say that governments need to tax deposits in order to increase tax revenues, but rather, the increase in bank deposits acts as a source of information to governments.

The present work addresses two development-related questions. First, in a framework where bank transactions are the basis for tax revenue, how should they be harnessed? Second, what is the historical relationship between bank activity and tax collection, worldwide? We are not aware of existing research on the second question. As to the first, Gordon and Li (2009) make the point that the marginal tax rate cannot be set too high without discouraging banking and, ultimately, ruining tax opportunities. The present work builds on this idea considerably, under additional simplifying assumptions.⁵

First, we consider the theoretical relationship between banking and tax, with attention to the effect of the marginal tax rate on bank deposits and tax revenues. In this theory, taxes fund a public good, and rational utility-maximizing households choose amounts of cash and check spending, with tax on checks but not on cash. The deposit-to-gdp ratio \mathcal{D} is then endogenously determined, and an increase in the marginal tax rate τ_b can lower the tax-to-GDP ratio T , rather than raising it. This reversal comes about because an increase in τ_b can make households less willing to use banks, and so lowers \mathcal{D} and, ultimately, T .

Second, we model the historical relationship between banking and tax internationally, via regression of T on \mathcal{D} and suitable controls. Our empirical study suggests a positive and statistically significant relationship between banking and tax, particularly for

⁵ There is a lot research on the development consequences of specific tax policies, and how those consequences change when there are untaxable economic activities – a shadow economy (as in Emran and Stiglitz (2005)). The theory is complicated by production and rents in the shadow and regular economies. The present work focuses just on domestic tax revenues, and their connection to banking activity, in a simple economy with private and public goods. In our model the financial sector consists entirely of banks, with tax skimmed off bank transactions, and assumes away many tax-relevant complexities of financial institutions and markets (see Roubini and Sala-i-Martin (1995) and Gordon and Li (2009)).

developing countries, consistent with (1.3).⁶ The result is robust to the addition of various controls, and we apply the panel econometrics literature to add some robustness to simple forms of error serial correlation. While some form of reverse-causality cannot be ruled out, there is a priori no reason to suspect that an increase in our dependent variable (tax-to-gdp ratio) causes an increase or decrease in our independent variable (bank deposits-to-gdp ratio).⁷

For poor countries looking to their banking sectors as an opportunity to improve tax revenue collection, our findings are food for thought. The empirics are consistent with the idea that greater bank popularity – via more deposits – coincides with more tax revenues. Faced with the problem of untaxable cash transactions, the choice of marginal tax rate τ_b is key to attracting bank deposits. The ideal value of τ_b , call it τ_b^* , is one low enough to entice the public to use banks – yet high enough to achieve the government's role as public good provider. We characterize τ_b^* , in terms of its underlying theoretical determinants, and given the simplicity of our models the analysis is hopefully accessible to both scholars and policy-makers.

For a given amount of bank deposits, one way of getting more tax bang for the deposit buck is to increase deposit velocity. Tax-hungry governments in developing countries should consider the benefits of increasing deposit velocity via laws and infrastructure that support speedy checks and electronic forms of banking. At the least, regular measurement of deposit velocity is worthwhile, and for this a reliable system of bank reporting and data compilation is essential.

The paper is organized as follows: Section 2 develops the economic theory between tax revenues and bank deposits; Section 3 elaborates on the social welfare; other theoretical factors are discussed in Section 4; in Section 5, we use panel data empirical methodology to test the relationship between tax revenues and bank deposits; and, Section 6 concludes.

2. Economic theory

Consider a simple economy with n households and two goods: good # 1 a private good and good #2 a public good – non-rival and non-excludable. Household i 's consumption levels are C_{i1} and C_{i2} for the two goods, and since the second good is a public good the value of C_{i2} is the same for each i , call it C_2 . Households derive utility U from consumption, of Cobb–Douglas form:

$$U_i = C_{i1}^{1-\alpha} C_2^\alpha \quad (2.1)$$

with parameter α in the range $(0, 1)$. To acquire consumption goods, each household i has income Y_i which it spends on the private

⁶ In model (1.3), sample variation in the marginal tax rate τ_b and deposit velocity λ can also impact tax revenues. Our econometric inferences implicitly assume that such variation is either negligible or otherwise unrelated to variation in the deposit-to-gdp ratio \mathcal{D} . Lack of data on τ_b and λ make this assumption hard to test, and we leave this issue to future research.

⁷ In the theory we develop, a government can lower its marginal tax rate τ_b and thereby increase the bank deposit ratio \mathcal{D} and subsequently the tax ratio T , but this is because bank deposits make more tax available.

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