

Transportation Project Finance – 1

Public Finance: Taxes and Bonds

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Outline

Objectives and Structure of the Lectures

Principles of Taxation

- Characteristics of Taxes

- Types of Taxes

- Uses of Tax Revenues

The Transportation Finance System in the US

- The Federal-Aid Highway System

- Road User Charges and the Trust Fund

- Municipal Bonds

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Money Isn't Everything But...

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- ▶ It sure helps implement, maintain and operate transportation facilities and services
- ▶ The availability of finance practically and legally constrains what can be done
- ▶ There are different ways of leveraging available financial resources, with different impacts

My Objectives for This Lecture and the Next

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- ▶ Familiarize you with the main ideas, principal methods and current issues
- ▶ Talk about general principles, but also get into some real-world details
- ▶ Use the US as an example, but not too much I hope
- ▶ Focus on roads

Today: Public Transportation Financing

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In this lecture I will cover:

- ▶ Principles of taxation, applied to transportation
- ▶ The transportation finance system in the US
 - ▶ Road user charges and the Trust Fund
 - ▶ Municipal bonds

Next Time: Public-Private Partnerships

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In the next lecture I will cover

- ▶ What are PPPs
- ▶ Reasons for public sector to pursue PPPs
- ▶ Reasons for private sector to pursue PPPs
- ▶ Policy issues
- ▶ PPP implementation details

Why You Should Know About This Stuff

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- ▶ Transportation financing issues are more acute than at any time in the past 50 years
- ▶ Current financing approaches are broken
- ▶ Lots of new approaches being discussed and tried
- ▶ High level of interest by government, planning and engineering firms, Wall Street, etc.
- ▶ Familiarity with financing issues and approaches is a good qual to have when looking for a job

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Purposes of Taxation

The "Four R's"

Revenue Raise money for government use

Redistribution Transfer wealth from one segment of society to another

Repricing Change market prices to reflect externalities or promote policies

Representation Engage citizens in government

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Efficiency How much does a tax distort the efficient allocation of resources by society?

- ▶ (Pareto) efficient allocation: can't make someone better off without making someone else worse off
- ▶ In a perfect market, efficient allocation maximizes sum of consumer + producer surplus ("welfare")
- ▶ Tax impact on welfare can be measured via deadweight loss

Tax System Attributes – 2

Equity How fair do we consider the tax to be, in terms of its impacts on different groups?

(Groups = individuals/HHs or businesses; social, modal or industry interests; geographic areas)

- ▶ Market equity: bring prices in line with costs imposed and/or benefits received
- ▶ Opportunity equity: treat different groups equally
- ▶ Outcome equity: redistribute resources to produce equal outcomes
- ▶ Horizontal equity: groups with similar ability to pay taxes should pay similar amounts
- ▶ Vertical equity: groups with greater ability to pay taxes should pay more

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Tax System Attributes – 3

Administration cost How easy is it for government to collect the tax? High cost results in lower net revenue generation for the tax

- ▶ Large/small number of taxpayers
- ▶ Difficult/easy verification of compliance

Compliance cost How easy is it for taxpayer to calculate tax and pay it?

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Direct Taxes

Levied directly on the person or entity that is the object of the tax

Poll tax

Personal income tax

Corporate income tax Generally based on *net* income
(difference between gross income and various expenses and write-offs such as depreciation)

Estate or inheritance tax, etc.

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Indirect Tax

Levied on a good or service rather than a person or entity

Sales or value added tax Based on the transacted value of a good, service or asset

Excise tax Based on the transacted quantity of a good, service or asset

User charge Based on the use of and benefit from a specific facility or service

Toll Tax or fee charged to use a specific road, bridge, tunnel, etc.

All of these indirect tax types have been used for transportation finance

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Uses of Tax Revenues – 1

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General revenue Can be used for any purpose

- ▶ Maximizes budgeting flexibility
- ▶ Does not protect particular accounts against funding variability

Dedicated ("trust") fund Can only be used for specific purpose(s)

- ▶ Suitable for user charges
- ▶ Constrains budgeting flexibility
- ▶ Tends to stabilize funding of particular accounts
- ▶ A target for raiding if gets too rich!

Uses of Tax Revenues – 2

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How are the collected tax revenues distributed to projects and programs (groups of related projects)?

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The National Highway System – 1

Approx. 160,000 miles of roads

- ▶ Interstate Highways
- ▶ Other principal arterials – highways in rural and urban areas that provide mobility
- ▶ Strategic Highway Network (STRAHNET) – important to strategic defense
- ▶ Major Strategic Highway Network connectors – provide access between major military installations
- ▶ Intermodal connectors – provide access between major intermodal facilities and the other four NHS subsystems

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The National Highway System – 2

Other factoids about the National Highway System

- ▶ About 98% of NHS roads have been built
- ▶ Most are two-lane facilities
- ▶ About 4% of roadway length in the US, but carries 40% of all traffic and 75% of heavy truck traffic
- ▶ Created by 1995 National Highway System Designation Act
- ▶ Defined in a long process between USDOT, states, local governments and MPOs

This is a large part of the so-called Federal Aid Highway System, which is eligible to receive money from Federal government for construction, improvement and maintenance

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- ▶ The Highway Trust Fund is a dedicated fund of the federal government, created in 1956 by the Highway Revenue Act in large part to finance the construction of the Interstate Highway System
- ▶ It is funded by a variety of road user charges and is mostly used for a variety of highway- and transit-related purposes

The Highway Trust Fund – Sources of Funds

User Charge	Tax Rate (2007)
Gasoline	18.4 cents/gallon
Diesel	24.4 cents/gallon
Gasohol	18.4 cents/gallon
Other fuels	various
Tire Excise Tax	9.45 cents per 10 lbs of rated load over 3,500 lbs
Truck/Trailer Sales Tax	12% of retailer's sales price
Heavy Vehicle Use Tax	\$100 plus \$22 per 1,000 lbs GVW over 55,000; max \$550; paid annually

Fuel tax collected from around 8,000 refineries, importers
– very low administration costs!

The gasoline tax rate has not changed since 1996!

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The Highway Trust Fund – Uses of Funds – 1

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- ▶ The HTF was originally dedicated for exclusive use for highways
- ▶ In 1983, the Trust Fund was separated into a Highway and a Transit Account
- ▶ A (relatively small) portion of the fuel excise taxes goes to the Transit Account
- ▶ The remainder of the fuel taxes and all the truck-related charges go to the Highway Account
- ▶ I'll focus on the Highway Account here

The Highway Trust Fund – Uses of Funds – 2

- ▶ SAFETEA-LU (Safe Efficient Transportation Equity Act – A Legacy for Users) (?!?) *authorized* federal highway and transit budgets for FY2005–2009
- ▶ SAFETEA-LU recognizes a number of FHWA programs under which it *apportions* funds to states; each program has a specific purpose
- ▶ State apportionments are based on formulas set by law: each state gets something
- ▶ Many programs require a local match: FHWA typically provides 80–90% of program total, but states must provide remainder from their own funds
- ▶ Around 85% of HTF funds are distributed to the states by apportionment
- ▶ Remaining money may be *allocated*, i.e. distributed to states based on qualifying projects, not formulas

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The Highway Trust Fund – Uses of Funds – 3

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Top 5 FHWA Programs (per SAFETEA-LU Authorization)

Program	Purpose	FY05-09
Interstate Maintenance	Interstate System 4R	\$25.2 B
National Highway System	Improvements to NHS roads and transit	\$30.5 B
Highway Bridges	Bridge replacement, rehabilitation and PM	\$21.6 B
Surface Transportation	Flexible funding	\$32.5 B
Equity Bonus	Based on state's contributions to HTF	\$40.9 B

State and Local Transportation Finance

- ▶ Money needed for local match and local projects
- ▶ Primary source of state transportation revenue is usually the state fuel tax
- ▶ Local government transportation funding comes from local fuel taxes, proceeds from other vehicle-related taxes, and (increasingly) dedicated sales taxes, e.g. Georgia's SPLOST
- ▶ Use of federal funds (appropriations, allocations, etc.) plus annual local tax proceeds only is called "pay as you go" or "pay-go" financing
- ▶ But many transportation projects have large up-front capital requirements, which pay-go may not meet
- ▶ Need a way to convert the time stream of local transportation revenues into up-front amount

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Municipal Bonds – 1

A *municipal bond* is a debt instrument issued by a state, county, municipality or other government entity to finance its capital requirements

- ▶ The bond investor loans money to the issuing entity at a specified interest rate (*coupon*)
- ▶ The issuing entity promises to make regular interest payments and to repay the *face* or *par* value of the loan after an agreed term (*maturity date*)
- ▶ Interest payments are typically exempt from federal income taxes and from most state and local taxes, esp. if the investor is a resident of the state in which the bond is issued
- ▶ Many investors are attracted by the tax-exempt status of bond interest payments, the effective value of which increases with the investor's income tax rate

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Municipal bonds can be characterized by the source of funds used to secure the interest and principal payments

General obligation bonds are secured by the taxing authority of the issuing entity: they are backed by the "full faith and credit" of the government

Revenue bonds are secured by the revenue generated by a particular non-tax source

Double-barrel bonds Hybrid of revenue and GO bonds

GARVEEs (grant anticipation revenue vehicles) are a special type of revenue bond, secured by anticipated future federal appropriations

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- ▶ General obligation (GO) bonds are typically used to finance non-revenue-generating capital investments, such as "free" roads
- ▶ Revenue bonds are typically used to finance revenue-producing facilities such as airports and toll roads, bridges and tunnels
- ▶ State and local statutes may impose restrictions on the size and structure of revenue bonds
- ▶ Some states don't consider GARVEEs because they pre-empt use of federal funds in the future; others view them favorably

Fear and greed

- ▶ Investors contemplating the purchase of a municipal bond consider the possibility (risk) that the issuing agency will not make the required payments
- ▶ The greater the perceived risk of non-payment, the higher the interest payments (reward) that must be promised to entice investors: the *risk premium*
- ▶ Higher interest payments translate directly into higher financing costs for the issuing agency – meaning lower net proceeds from the bond issuance
- ▶ Bond rating agencies (Moody's, Standard & Poor's, Fitch) assess and characterize the creditworthiness of issuing agencies

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The Bond Issuing Process – 1

- ▶ Issuers work with municipal bond dealers to market and sell the bonds to investors
- ▶ Dealers purchase the bonds from the issuer and re-sell them to investors
- ▶ Issuers pay fees to bond dealers for their services
- ▶ Traditionally, dealers have been investment or commercial banks
- ▶ Revenue bond issuance also requires the issuer to involve other finance and project professionals:
 - ▶ To assist with legal and financial issues
 - ▶ To estimate the time stream of future revenues that will be used to secure the bond
 - ▶ For toll facilities, this is called a *traffic and revenue (T&R)* study

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The Bond Issuing Process – 2

Credit enhancement

- ▶ Issuers often strengthen the perceived creditworthiness of a security by purchasing credit enhancement:
 - ▶ Bond insurance
 - ▶ Letters of credit
 - ▶ Lines of credit
- ▶ The same groups who issue municipal bond credit enhancement were heavily exposed in the sub-prime mortgage crisis
- ▶ The availability of bond credit enhancement facilities is currently very limited

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Features of Municipal Bonds – 1

Financing Plan The bond *indenture* (official issuance document, considered equivalent to a contract) includes *covenants* (terms) that describe the authority and constraints under which the bond is issued

- ▶ Statutory requirements imposed on bond issuance
- ▶ Bond issuance must engage the authority of the issuer through ordinance or formal resolution
- ▶ Amount of debt issued may be limited by bond covenants to prevent over-pledging of revenues

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Features of Municipal Bonds – 2

Security Structure includes the par value (the principal amount paid to the investor when the bond matures), the interest rate and payment period, and the term (time to maturity)

- ▶ Short-term: by definition, <13 months, called municipal "notes" or "paper"
- ▶ Long-term: typically 25–30 years, rarely >40 years

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Features of Municipal Bonds – 3

Risk Characteristics associated with the revenue stream that backs the bond

- ▶ GO bonds are generally considered lower risk than revenue bonds
- ▶ Revenue bonds for an existing facility having an established revenue history (*brownfield* project) are generally considered lower risk than those for a new facility with no revenue history (*greenfield* project)
- ▶ Issuer includes a "safety factor" (*debt service coverage ratio* or *DSCR*) on expected revenues when calculating size of bond issue
- ▶ Example: a DSCR of 150% means that expected revenues > 150% of bond principal and interest payments on a present value basis

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Features of Municipal Bonds – 4

Credit Enhancement is another way to reduce perceived risk and lower interest costs to the issuer

- ▶ Bond insurance, lines of credit and letters of credit can be purchased
- ▶ These guarantee that bond investors will receive timely interest and principal payments, and so reduce the risk premium that investors demand in form of higher interest rates
- ▶ Issuers may create a *debt service reserve fund* to be used to make bond interest and principal payments in the event of financial hardship
- ▶ The reserve fund is separate from other issuer accounts, and may be invested in "safe" securities with approx. the same term as the bond but with liquidation flexibility

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Features of Municipal Bonds – 5

Tax Exemption is a unique feature of municipal bonds compared to other capital market securities

- ▶ Most (but not all) municipal bonds are exempt from federal income tax
- ▶ State and local tax status of municipal bonds varies, and depends on where the bond was issued
- ▶ 5% tax-free = 7.25% in the 31% tax bracket
- ▶ 5% tax-free = 8.28% in the 39% tax bracket
- ▶ More attractive to people and institutions in high tax brackets

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