



THE DISTRIBUTION OF TAX BURDENS: A COMPREHENSIVE REVIEW OF MODERN TAX INCIDENCE ANALYSIS

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Abstract

Tax incidence is the study of who pays for a tax. It is not about who writes the check to the government. Tax incidence looks at how people change their behavior when a tax is applied and how that affects the prices of things. This article looks at the developments in the field of public finance over the past fifty years. We start with Arnold Harbergers 1962 paper, which began the study of tax incidence. We then look at how the field has changed over time including the development of models and methods for analyzing tax incidence.

Keywords: Tax Incidence, Annual Income, Lifetime Income, Income Mobility, Tax Burden, Income Distribution, Fiscal Policy, Tax Equity.

SOLIQ YUKINING TAQSIMLANISHI: ZAMONAVIY SOLIQ INSIDENSIYASI TAHLILINING KENG QAMROVLI SHARHI

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Annotatsiya

Soliq insidensiyasi soliqning haqiqiy yukini kim ko'tarishini o'rganadi. Bu hukumatga soliqni kim to'lashi yoki chekni kim yozishi haqida emas. Soliq insidensiyasi soliq joriy etilganda odamlarning o'z xatti-harakatlarini qanday o'zgartirishi va buning narxlarga hamda iqtisodiy natijalarga qanday ta'sir ko'rsatishini tahlil qiladi. Mazkur maqola so'nggi ellik yil davomida davlat moliyasi sohasida yuz bergan rivojlanishlarni ko'rib chiqadi. Tahlil Arnold Harbergerning 1962-yildagi, soliq insidensiyasi nazariyasiga asos solgan ilmiy ishidan boshlanadi. Shuningdek, maqolada soliq insidensiyasini tahlil qilish uchun ishlab chiqilgan yangi modellar va metodlarning shakllanishi hamda ushbu yo'nalishning vaqt davomida qanday rivojlanganligi yoritiladi.

Kalit so'zlar: Soliq insidensiyasi, Yillik daromad, Umrbod daromad, Daromad mobilligi, Soliq yuki, Daromad taqsimoti, Fiskal siyosat, Soliq adolatililigi.

1. Introduction and Core Tax Concepts

Public finance is about how governments raise and spend money. Tax incidence is a part of this because it helps us understand who really bears the burden of a tax. There are two kinds of tax incidence: economic.

Statutory incidence is about who's legally required to pay a tax. For example the federal payroll tax in the United States is split between employers and employees. Economic incidence on the hand is about who really pays for a tax. This can be different from incidence because people and businesses can change their behavior in response to a tax. For example employers might reduce wages to offset the cost of the payroll tax.



The main reason for the difference between economic incidence is that people and businesses change their behavior when a tax is applied. When a tax is applied to a transaction buyers and sellers adjust their choices. This can lead to changes in prices and the distribution of welfare.

Taxpayer Taxonomy. Economists use methods to categorize taxpayers and assess the distributional effects of taxes. These methods include:

- Consumers versus producers: This looks at the demand and supply sides of a market.
- Factors of production: This groups taxpayers by the inputs they supply to production, such as labor, capital and land.
- Socioeconomic well-being: This partitions taxpayers into groups based on their resources, such as income deciles.
- geographical incidence: This analyzes how tax burdens vary across different regions.
- incidence: This looks at how taxes affect different generations, such as the current generation versus future generations.

2. Analytical Frameworks: Partial vs. General Equilibrium

Economists use two frameworks to analyze tax incidence: partial equilibrium and general equilibrium. Partial equilibrium looks at the impact of a tax on a market holding all other prices and market interactions constant. This framework is useful for understanding the principles of tax incidence but it has limitations. For example it cannot analyze the effects of a tax on markets or the economy as a whole. General equilibrium on the hand looks at the economy as a whole. It analyzes how a tax



affects markets and the interactions between them. This framework is more comprehensive than equilibrium but it is also more complex.

3. Early Incidence Theory and Quantitative Empirical Calculations

Arnold Harbergers 1962 paper is a milestone in the development of tax incidence theory. Harbergers model showed how a tax on capital could affect the economy as a whole. He found that the tax burden could be borne by capital owners than just corporate shareholders. Other economists have built on Harbergers work, developing models and methods for analyzing tax incidence. For example Charles McLure developed an exposition of the Harberger model, which made it easier to understand and apply.

In the 1970s economists began using datasets to study tax incidence. These studies combined household-level data with assumptions, about how taxes shift. One notable study was conducted by Joseph Pechman and Benjamin Okner who developed a metric of "economic income" that included cash wages, transfers and other forms of income. They used this metric to compute tax rates across different scenarios, including personal income taxes, payroll taxes and corporate income taxes.

Table 1. Distribution of Tax Burdens Across Income Groups by Tax Type and Effective Tax Rate Profile

Income Group	Sales and Excise Taxes	Corporate and Property Taxes	Overall Effective Tax Rate Profile
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Lowest Deciles (Poor Households)	Highly regressive, as lower-income households spend a larger share of their income on consumption subject to indirect taxation.	Limited direct impact, as poor households generally own little property or corporate equity.	Relatively high effective tax burden due to heavy reliance on consumption taxes.
Middle Eight Deciles (Middle-Income Households)	Tax burden broadly proportional to consumption expenditures.	Moderate exposure through pension funds, home ownership, and indirect ownership of corporate assets.	Generally stable and relatively flat effective tax rate across income groups.
Top Deciles (High-Income Households)	Lower relative burden, as a smaller share of income is devoted to taxable consumption.	Significant burden through ownership of businesses, financial assets, and property.	Effective tax rate remains substantial due to higher exposure to income, corporate, and wealth-related taxes.

The lowest income households have a tough time with sales and excise taxes. This is because they spend most of their money on the basics like food and housing so they end up paying a lot of taxes on the things they need. On the hand corporate and property taxes do not affect them as much because they do not have a lot of



money invested in things like stocks or real estate. As a result the tax rate for income households can be very high which is not fair considering they do not have a lot of money to begin with.

For households that have an income the tax burden is spread out more evenly. They still pay a lot of taxes because they buy a lot of things but they also pay some corporate and property taxes because they might own a house or have some money saved up. So the overall tax rate for middle income households tends to be pretty stable. This means that the tax burden is even across most of the income groups.

Things are different for households, with incomes. Even though they do not spend much of their money on basics they still have to pay a lot of taxes. This is because they own businesses, real estate and other investments that are taxed. Also they have to pay income taxes because they make more money. So while they might not pay much in sales taxes they pay more in other types of taxes.

The main point is that different taxes affect people in ways. Sales taxes are not fair to lower income households because they have to spend a part of their money on them. On the hand corporate, property and income taxes are paid more by wealthier people. How these taxes work together determines how much each group pays and whether the tax system is fair.

Pechman and Okner did a study. Found out that the tax system in the United States is pretty fair for the middle class. The tax system is not very fair for the poor because they have to pay a lot of taxes on the things they buy and it is not very fair for the rich because they have to pay a lot of income taxes. Richard Musgrave, Karl Case and Herman Leonard did a study and found out the same thing. They also found out that if you include taxes in the calculation you have to include all the income



from companies to get a fair result. They also looked at how the government spends its money and found out that it helps the people more than the rich people.

Edgar Browning did not agree with this idea. He said that the tax system in the United States is actually very fair and helps the people. He said that when the government raises taxes on things people buy it also raises the amount of money it gives to people so they do not get hurt by the taxes. This means that the taxes on things people buy actually hurt the people more than the poor people.

4. Extensions of General Equilibrium and Computable Models

Some economists made the models more realistic by adding details. They made it possible to calculate the effect of taxes on the economy without using math. They also looked at how taxes affect industries and how they interact with each other.

Some economists made the models simpler so they could be used for changes in taxes. They also looked at how taxes affect the economy when there are already taxes in place. Other economists used these models to challenge the ideas about how taxes affect the economy.

Feldstein's Land Rent Reversal (1977): Martin Feldstein found out that taxing land actually helps workers because it makes companies invest in things, which creates more jobs and raises wages. Bradford's Global Capital Dispersion (1978): David Bradford found out that when a country raises taxes on companies it actually hurts companies over the world not just in that country.

As computers got better economists started using them to simulate the economy. They could look at how taxes affect industries and how they interact with



each other. John Shoven made a model that looked at how corporate taxes affect industries. He found out that the results were similar to the models.

5. Tax Incidence Under Imperfect Competition

Some economists looked at how taxes affect industries that do not have competition. They found out that the type of tax used can make a difference. Robert Bishop found out that taxes that are based on the price of a product are better than taxes that are based on the quantity of a product. Some economists looked at how taxes affect industries that have a big companies. They found out that the effect of taxes can be different depending on the type of market. John Kay and Michael Keen found out that taxes can actually help consumers by making companies compete more. Michael Katz and Harvey Rosen found out that the effect of taxes on companies can be different depending on the type of market.

6. Property Taxation: The Three Competing Views

There are three views on how property taxes affect the economy. The old view is that property taxes are like a tax on the things people buy. The new view is that property taxes are like a tax on the profits of companies. The benefit view is that property taxes are like a fee, for the services that the government provides. The table shows the views and how they affect different people. Housing consumers are affected by property taxes in proportion to their budgets nationwide based on property value capitalization.

1. The Old View. The old view, associated with Herbert Simon and Francis Edgeworth treats property tax as an excise tax on housing services. This means that housing expenditures are a part of lower-income budgets so the property tax is seen



as regressive. Landlords are thought to pass the tax on to tenants through rents, which hurts housing consumers.

2. The New View. The new view, pioneered by Harry Gunnison Brown and Peter Mieszkowski looks at the burden of property tax in a way. Mieszkowski split the property tax rate into two parts: the average rate and the local deviation from that average. He argued that the national average part acts like a tax on capital, which affects capital owners across the country. Since capital ownership is mostly in the hands of households this part of the tax is seen as progressive.

The local part of the tax on the hand can lead to capital moving away which passes the excess tax on to housing consumers or local workers and landowners. This means that whether the property tax is progressive or regressive depends on the policy change being looked at. A nationwide change in property taxes affects capital income. Is seen as progressive while a local change raises housing costs and is seen as regressive.

3. The Benefit View. The benefit view, introduced by Bruce Hamilton suggests that consumers choose communities where local public services match the property taxes paid. If property taxes are seen as a payment for local public goods like schools then the tax is not really a tax at all but a user fee. From this perspective the property tax does not have an impact on distribution because capitalization evens out local differences in taxes and services.

Hamilton noted that this sorting mechanism needs land-use controls like zoning to work. Without zoning low-income households could build homes in wealthy areas and enjoy high-quality services while paying lower property taxes. To prevent this



communities use zoning to restrict low-value housing, which makes the impact of property taxes depend on politics and regulations.

7. Dynamic Macroeconomic Models

Static models do not take into account how taxes affect saving and investment over time. To address this public finance economists use models with intertemporal optimization. In these models the run impact of taxes is driven by how capital income taxes change the ratio of capital to labor which in turn changes factor prices over time.

Neoclassical Growth Models. Martin Feldstein developed a growth framework to evaluate capital taxation over the long run. Feldstein showed that taxing capital income reduces the return to saving, which lowers the steady-state capital accumulation and reduces the economy- capital-labor ratio. With capital per worker productivity declines, which shifts the long-run tax burden onto workers through lower real wages.

However it takes a time to transition between steady states and the impact on welfare during this transition can be very different from the final steady state. Measuring the burden requires calculating the present discounted value of changes in wage income over time. Feldsteins early dynamic approach had some limitations, such as a determined discount rate and a lack of dynamic measures of welfare changes.

Life-Cycle and Overlapping Generations Models, To resolve these limitations economists use life-cycle frameworks where savings rates are derived from utility maximization. Lawrence Summers incorporated capital income taxes into a life-



cycle framework showing that traditional models significantly underestimated the interest elasticity of savings.

Alan Auerbach, Laurence Kotlikoff and Jonathan Skinner built a -cohort Overlapping Generations computable general equilibrium model with perfect foresight. Their model simulated how representative agents in age cohorts adjust savings behavior in response to tax changes.

Table 2. Dynamic Tax Incidence Models and Their Analytical Focus

Model	Core Driver	Main Mechanism	Tax Incidence Focus
Neoclassical Growth Model	Adjustment of the steady-state capital–labor ratio	Taxes affect capital accumulation, altering productivity and factor returns over time	Long-run distribution of tax burdens between capital owners and workers through changes in wages and returns to capital
Life-Cycle / Overlapping Generations (OLG) Models	Utility maximization across different age cohorts	Individuals make saving and consumption decisions over their lifetime	Intergenerational tax shifting and welfare effects across young, working-age, and retired households
Infinite-Life / Perfect Foresight Models	Forward-looking optimization under perfect expectations	Economic agents anticipate future policy changes and	Anticipatory responses to taxation and the dynamic effects of policy



		adjust behavior accordingly	announcements before implementation
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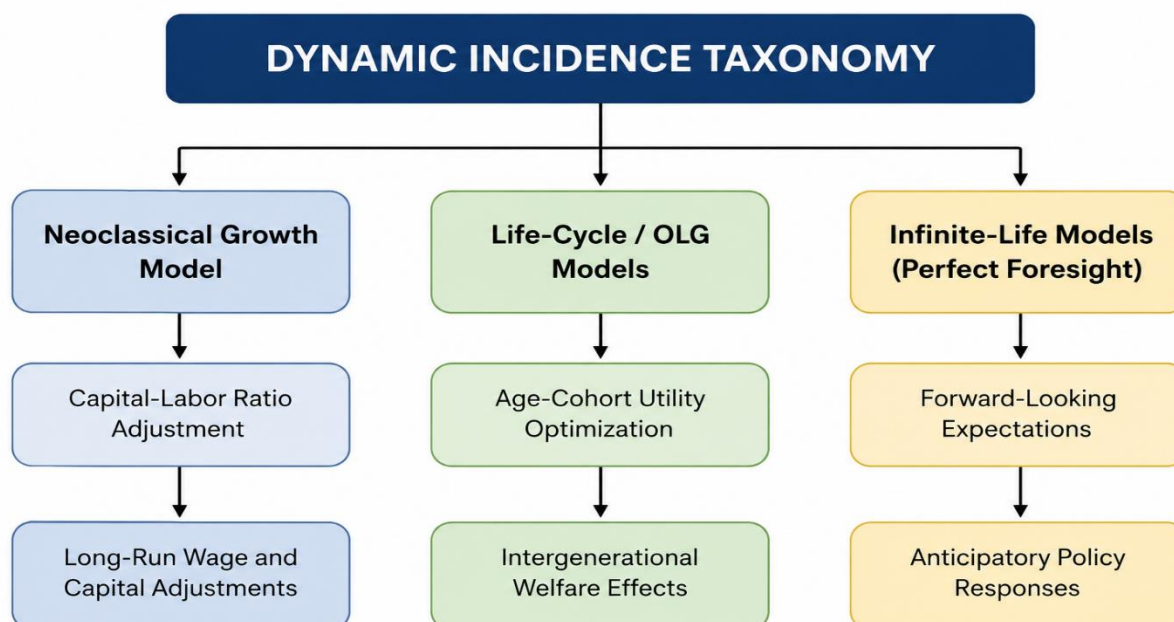


Figure 1. Dynamic Tax Incidence Taxonomy

Infinite-Life and Asset Price Revaluation Models. If a lifecycle model assumes individuals derive utility from the well-being of their descendants it becomes an infinite-life dynastic model. Kenneth Judd used an infinite-life framework with foresight to analyze how market anticipations affect capital accumulation. Judd demonstrated that if the government announces a surtax on capital income to begin in the future forward-looking investors adjust their savings behavior immediately upon the announcement well before the tax policy takes effect.

Lawrence Summers introduced investment adjustment costs into an asset-price framework. Because physical capital cannot be instantly reallocated in the run capital supply is inelastic during sudden policy shifts. Consequently changes in capital taxation cause adjustments in the market value of existing capital assets



shifting the short-run burden onto current asset holders through capital gains or losses.

8. Lifetime Tax Incidence

A major innovation in public finance is the shift from annual income metrics to lifetime incidence analysis.

The Structural Limitation of Annual Income income metrics do not capture the full impact of taxes on individuals and households. Lifetime incidence analysis on the hand takes into account the entire lifetime of an individual or household including their savings, investments and consumption patterns. This approach provides a comprehensive understanding of how taxes affect economic behavior and welfare.

The property tax, housing consumers and capital owners are all affected by the way taxes are structured and implemented. Understanding the impact of taxes on these groups requires an analysis of the different views and models of tax incidence. By considering the perspectives and approaches policymakers can create more effective and equitable tax policies that promote economic growth and welfare.

Property taxes, housing consumers and capital owners are connected in ways. Property taxes can affect housing consumers by increasing their costs while capital owners may see their wealth and income affected by changes in property tax rates. The benefit view suggests that property taxes can be seen as a user fee for public goods which can affect housing consumers and capital owners in different ways.



Overall the study of tax incidence is crucial for understanding how taxes affect groups and individuals. By analyzing the views and models of tax incidence researchers and policymakers can gain a deeper understanding of the complex relationships between taxes, housing consumers and capital owners. Property taxes, housing consumers and capital owners are all components of the economy and understanding their interactions is essential, for creating effective and equitable tax policies.

Economists have found that using one year of income to classify households is not a good idea. This is because a persons income can change a lot over their lifetime. For example someone who is just starting their career might not be earning a lot of money. They will likely earn more as they get older. On the hand someone who is retired might have a lower income but they have probably earned a lot of money in the past.

There are four groups of people whose income can be misleading if you just look at one year. These are:

1. People who have income that goes up and down a lot and who might have just had a year.
2. Young professionals who are just starting their careers and will probably earn money as they get older.
3. Retirees who are living off their savings and do not need to earn much money.
4. People who are poor all the time and do not have money.

Because these groups are different looking at tax data from one year can give you the wrong idea about who is paying taxes and who is not. To get an idea you need to look at peoples income over their whole lifetime. This is called lifetime



income. It takes into account all the money someone earns from their job and from any inheritance they might receive.

Some economists like James Davies, France St-Hilaire and John Whalley have studied how taxes affect people over their lifetime. They found that when you look at taxes over a lifetime it can change how progressive they seem. Progressive taxes are those that take a percentage of income from people who earn more money. When you look at taxes over a lifetime it seems like they are less progressive. This is because people who earn a lot of money in some years but not in others will pay less in taxes

On the hand taxes on things like sales and excise taxes seem less regressive when you look at them over a lifetime. Regressive taxes are those that take a percentage of income from people who earn less money. This is because people who earn money might not buy as many things that are subject to sales tax so they will pay less in taxes overall.

When you add up all the taxes that people pay it seems like the tax system is pretty fair. This is what Pechman and Okner found in their research. They looked at how taxes affect people over their lifetime. Found that the tax system is not as unfair as it seems when you just look at one year of income.

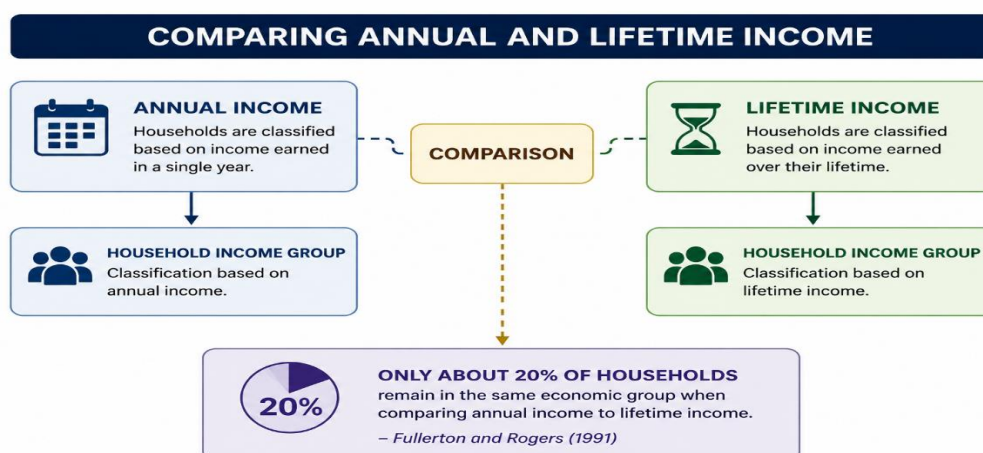




Figure 2. Comparing Annual and Lifetime Income Classifications

Because it is hard to get data on peoples lifetime income researchers have to use methods to estimate it. One way to do this is to look at how much people spend, than how much they earn. James Poterba used this method to study excise taxes in the United States. He found that excise taxes are not as unfair as they seem when you look at one year of income.

Gilbert Metcalf used a method to study sales taxes. He found that when you look at sales taxes over a lifetime they seem fair than when you look at just one year of income. This is because states often do not tax items like food and medicine so people who earn less money are not affected as much. To get an understanding of how taxes affect people researchers have developed complex models that take into account many factors. Don Fullerton and Diane Lim Rogers built a model that looks at how taxes affect people over their lifetime. They found that looking at taxes over a lifetime gives you a different picture than looking at just one year of income.

Nowadays researchers use models that take into account many factors, like how people behave and how the economy works. These models can simulate how different tax policies will affect people and the economy. For example researchers can use these models to see how a tax on income would affect people compared to a tax on consumption.

Looking at taxes over a lifetime is important because it gives you an accurate picture of who is paying taxes and who is not. This is an idea in public finance, which is the study of how governments raise and spend money. Whether you are looking at taxes on income, sales or property it is important to consider how they will affect people over their lifetime.



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