Corporate Tax Incidence with Excess Profits

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Abstract

Most analysis of corporate tax incidence assumes that incidence will fall only on all owners of capital labor in the long run. In short run, corporate shareholders will bear the burden, until forces of supply and demand push the burden to the factors of production—capital via the return to owners and labor through wages. However, the presence of excess profits—those above the normal return on investment—in the long run could result in some share falling on corporate shareholders in the long run as well. Recently the Department of the Treasury adjusted their incidence assumptions to assume that 60 percent of profits are supra normal and thus that share of the burden falls on corporate shareholders, while the remaining 40 percent is split evenly between all owners of capital and labor. They based their assumption on two sources of estimates of excess profits. This paper provides new estimates of the share of profits that may be attributed to excess profits and that would therefore fall on corporate shareholders. The methodology uses data on intangible assets to allocate profits to investment sources and isolate potential excess profits. This study finds that estimates range widely according to data and specifications, but suggests that the share of corporate profits that are supra normal is modest and likely less than 20 percent.

*The views expressed in this paper are the author's and should not be interpreted as GAO's

I. Introduction

In a closed economy, as suggested by Harberber (1962), under reasonable assumptions about factor and product substitution elasticities, the burden of the corporate tax, while falling on shareholders in the short run, eventually spreads to all capital, with none of the burden falling on labor. As the United States moved to a far more open economy, it became clear that this outcome could be different. If a higher corporate tax caused capital to migrate abroad some of the burden could fall on labor as labor in the United States became more abundant compared to capital. The possibility that the corporate tax could fall in part (or substantially on labor) is important to the policy debate surrounding the corporate income tax and its distributional effects.

General equilibrium models similar to the Harberger model that consider and open economy suggest that around 40 percent of the burden is likely to fall on capital through this international mobility.[1] These models, however, did not account for a number of other effects that might alter the burden of the corporate tax and cause less of the burden to fall on labor. One is the extent to which corporate income includes excess profits or rents above the return required to attract capital. Taxing these rents would not affect investment and the burden would be expected to fall on shareholders even in the long run.[2] For distributional analysis, this possibility is more significant in an open economy (since it may switch part of the burden from labor to shareholders) than in a closed economy (where the burden switches from capital owners in general to owners of corporate equity). The presence of rents has had a significant effect on the distributional analysis by the U.S. Department of Treasury.

II. Excess Profits and Intangibles

Excess profits and intangible assets are two interrelated concepts but are not synonymous. Intangible assets represent assets that are simply not physically identifiable. These assets can range from the patented intellectual products such as a variety of methods to produce products to the value of advertising and branding.

Intangible assets can vary in the method with which they were created as well as how their value is maintained. Unlike current tangible assets, whose created timing is certain and its stream of return is generally known, current intangible assets can yield both an uncertain and unknown future return as well as represent the return from undetermined past investment. The ability to align current intangible assets with past investment varies among types of intangible assets and types of investment, and is one of the key difficulties in measuring the return on intangible assets.

Unlike tangible assets, which typically yield a normal return under competitive markets, intangible assets have the potential to yield returns above a normal market return to the investment made to

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[1]Gravelle, Jennifer (2013) "Corporate Tax Incidence: Review of General Equilibrium Estimates and Analysis," National Tax Journal, V.66 No.1, pp: 185-214 provides a detailed review of the corporate tax incidence estimates under an open economy.

[2]Auerbach, Alan J. (2005) "Who Bears the Corporate Tax? A Review of What We Know." Tax Policy and the Economy, vol. 20, James M. Poterba, Ed. National Bureau of Economic Research. Cambridge, MA: MIT Press provides a review of the various effects on corporate tax incidence.

create the asset. Some of the supposed excess return could be the result of misaligned measures of investment timing, risk, and the inability to account for losers over time. For example, returns on patented intellectual products may be more directly linked with past research and development expenses prior to patent registration. However, other types of intangible assets, such as brand names were likely created and maintained by years of advertisingand these types of intangible assets may not be closely linked to the stream of investments used to maintain them. Years of advertising,or even getting there first, may succeed to creating "household name" products whose recognition and contribution to profits far exceeds the current or recent expenses in advertising (think Coke). Indeed, the value of that intangible asset could even greatly exceed the cumulative stream of all past advertising investment if that investment created a self-sustaining valuation, such as some brand names that become the common generic name.

Additionally, some product creation cannot be guaranteed by any level of research and development and thus the discovery and its contribution to profits far exceed the investment to develop it. In these cases, even if the investment in the intangible asset was properly accounted for there would still be some excess profit to firm investment. Measuring the true value of these excess profits is significantly limited due to the inability to account for the investment of losers, where firms may disappear from the market.

Other forms of intangible assets are even more mercurial. For example, managerial superiority can add to firm profits but detecting the additional labor and other expenses to retain particularly skilled managers or a dynamic firm structure is likely unfeasible. Goodwill or monopoly power could add to firm profits with little to no measurable form of investment or expense.

Profits that exceed an estimated "normal" return to investment may reflect the return from past investment on long-living intangible assets (in the case of pharmaceutical developments) or some other form of excess return that is unrelated to real investment (natural monopoly power). In the strictest sense, true excess profits are those that exist when all investment in labor, capital, and intangible capital are accounted for. Thus for many scenarios, intangible assets and excess profits may be almost identical. Although some return to intangible assets could be viewed as an excess return—advertising that creates self-sustaining household name brand—allocatingthose returns between normal, delayed, and excess is particularly intractable.

Despite the theoretical complexities of identifying and measuring excess profits, a few estimates have been made. Section III identifies some of the more notable measures of excess profits and intangible assets and discusses their usefulness. Section IV presents new estimates of excess profits. Section V discusses the implications the presence excess profits have for tax incidence.

III. Existing Estimates Excess profits

Little work has been done to directly measure the share of firm profits that are in excess or the normal return to investment. While there has been some research related to quantifying the return on the

stock of intangibles, the few estimates of excess profits or measures of intangible assets have some drawbacks.

Risk

Some studies have relied on market return relative to a risk free rate of return as a proxy for the excess return that firms make. However, this gap does not reflect the excess return that is beyond normal market return needed to reward investors. A study by Gentry and Hubbard often cited for this measure estimates that about 60 percent of the return is in excess of the riskless rate.[3] However, that estimate is the difference between the gross return on equity compared to a default-risk-free bond of 10 percent. In addition to reflecting potential supra normal returns, it also reflects normal market risk. Thus this 60 percent share overstates the share of excess profits.

Tax policy proxies

There has been a repeated suggestion that a comparison between tax certain tax policies could be used to isolate excess profits—namely the comparison between an income tax and a consumption tax. It is noted that while an income tax will tax income from all sources (capital and labor), a consumption tax will not tax the returns to investment.

However, if excess profits exist, a consumption tax could theoretically tax excess profits and thus comparing it to an income tax would isolate the value of excess profits. While theoretically possible this approach is empirically flawed. One estimate that has been circulated suggests that excess profits account for over 65 percent of corporate return.[4] That estimate is based on comparing a switch from the current income tax system to a consumption tax system, in which investments are expensed and the normal return is not taxed. However, the problem with this approach is that all a snapshot comparison does is isolate the difference between the return on all capital and current investment.[5] Thus, even in a world with no excess profits this method would result in a positive estimate. This concern for realizing the limitations of snapshot tax policy choices has been noted by others.[6]

Accounting methods:

There is a lack of estimates that directly attempt to measure excess profits. The following are estimates of the valuation of intangibles. While not directly relevant to obtaining a measure of excess profits, they illustrate the importance of accounting for intangible assets in the process of obtaining a measure of excess profits.

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[3] Gentry, William M. and R. Glenn Hubbard, "Distributional Implications of Introducing a Broad-Based Consumption Tax," *Tax Policy and the Economy*, Vol 11 (1997) pp: 1-47

[4]Toder, Eric and Kim Reuben.(2007)"Should We Eliminate Taxation of Capital Income,"" in Taxing Capital Income, eds. Henry J. Aaron, Leonard Burman, and C. Eugene Steuerle, Washington, D.C:The Urban Institute Press, pp:89-141

[5] See Appendix for a mathematical derivation showing that this tax policy adjustment isolates the growth rate.

[6] Slemrod, Joel. (2007) "Does the United States Tax Capital Income" in Taxing Capital Income, eds. Henry J. Aaron, Leonard Burman, and C. Eugene Steuerle, Washington, D.C.: The Urban Institute Press, pp:3-30.

A number of estimates center of amortizing/capitalizing R&D expenses as a method of valuing intangible assets and including them in the asset base. One study estimated return on R&D by capitalizing R&D investment.[7] That study found that accounting for R&D investment reduced the overall return on equity and return on capital by about 5 percentage points. That reduction was higher when capitalizing investments in brand name and lower when capitalizing human capital expenses. Those reductions suggest that the return on investment in intangible assets was actually less than that for tangible assets. Similarly, focusing of differences in price to earnings ratios showed a 6 percentage point reduction from capitalizing R&D.[8] Another study that adjusts assets for the value of intangibles, found that adding the value of intangibles to financial accounts increased total assets by 57 percent.[9] They also find that the difference between a conventional measure of the return on equity and one that accounts for the value of intangibles can be as high as 14 percentage points.

Studies that adjust the accounting of assets for intangibles illustrate the importance of accounting of the return from investment in intangibles. However, because these studies generally focus on capitalizing R&D, and are limited to individual or small groups of firms the results aren't easily generalizable to a broad measure of the share of corporate profits that are excess profits.

Additionally, R&D is capitalized if produced externally—the company paid for another firm to conduct research on their behalf—but expensed when produced in house. Simply capitalizing the expense doesn't adequately reflect what the final intangible asset will become. Consider a pharmaceutical firm, where only a small percentage of initial drug creations make it to the market place. That final intangible asset (successful drug discovery) is therefore not guaranteed by a given amount of investment—presumably investment is made based on the expected value. Thus, the investment in intangible assets could lead to projects that generate super-normal returns far exceeding the value of the original investment given the risk. Consequently, investment expenses will likely undervalue the value of the intangible asset.

One study compiled measures of three categories of intangibles using a variety of data sources and focused particularly on determining how much intangibles account for income and estimatedthat the roughly $1billion of investment in intangibles accounted for 37% of all capital investment, and 15% of income.[10] However, the design of that study forced income to be allocated entirely between labor, capital, and intangibles, thus not allowing for excess profits.

Comparing the return to equity prior to and after capitalization of R&D and other intangible generating expenses can help to illustrate if the investment in intangible asset earns excess returns. However,

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[7]Damodara, Aswath(2009) "Valuing Companies with Intangible Assets," New York University, Stern School of Business, available at SSRN: http://ssrn.com/abstract=1609799

[8] Nakamura, Leonard. (1999). "Intangibles: What Put the New in New Economy?" Business Review, Federal Reserve Bank of Philadelphia

[9]Hulten, Charles R. and Xiaohui Hao. (2008) "What is a Company Really Worth? Intangible Capital and The 'Market to Book Value' Puzzle," NBER Working Paper 14548, National Bureau of Economic Research.

[10]Corrado, Carol, Charles Hulten and Daniel Sichel.(2009). "Intangible Capital and U.S. Economic Growth," Review of Income and Wealth, Vol 55, no.3.

intangible assets are, by nature, speculative and therefore so are their valuation. Furthermore, intangible assets may not retain the same value if purchased by another.

More general regression methods have also been used to estimate the effect of intangibles of profits. Regression estimates of investment in intellectual property (R&D and advertising) and organizational capital (IT) on intangibles found no intangible return to IP investment but a 70% return of organizational capital.[11] Another study employed the same technique, but focused on firms in toys, distilled beverages, cosmetics, and pharmaceutical industries.[12] That study found that the biggest effect of intangibles on profits occurred in the pharmaceutical industry. However, even after accounting for intangible assets the most profitable firms earned double the average return on capital. On the other hand, for industries where the only intangible capital is advertising the differences in returns on assets with and without intangible assets were trivial. Here, differences in profit rates cannot be solved merely by adjusting firm accounting and there exists significant differences across firms on returns to intangible capital. The generalization of the results of these studies to an estimate of overall corporate excess profits is also limited, because they focus on intangible heavy industries.

IV. New Estimates of Excess profits

The estimates that have been made have focused generally on capitalizing intangible assets generally for purposes of better valuing a firm's assets. None have focused on identifying excess returns that are beyond a return on real investment. Real past investment may have yielded assets that either don't depreciate or actually appreciate. For example, the cola advertising wars yielded one more prominent victor, Coca Cola™ whose name became such a household name for cola products in general that it demanded specificity in ordering at restaurants to ensure consumers received their product and not a rival's product. The advertising expenses created the intangible asset of a brand name that could be viewed as having appreciated by the household name that likely requires much less investment to maintain.[13]

Methodology and Data:

I estimate a simple model defining sources of profits as arriving from two forms of assets: tangible and intangible assets. Any remaining profit in excess of the return to assets represents excess profits.

I use BEA data, and allocate debt using IRS filings. I average over 6 years to help illustrate long-run excess profits. The main estimate equation is:

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[11] Cummins, Jason (2003) "A New Approach to the Valuation of Intangible Capital," NBER working paper 9924, National Bureau of Economic Research.

[12] Megna, Pamela and Dennis C. Mueller. (1991) "Profit Rates and Intangible Capital" The Review of Economics and Statistics, vol 73, no.4

[13] Other examples have been Kleenex, a brand name that became synonymous with facial tissue.

- $\pi = c + \alpha TA + \beta IA$

where π is corporate profits, TA is the stock of tangible assets, and IA is stock of intangible assets. The share of excess profits is will be determined by $c/avg\pi$.

As noted earlier, I initially assume that intangible assets will yield a normal return. However, I allow for the possibility that some intangible assets could, in and of themselves, yield excess returns such as in the case where the good becomes a household name that perpetuates its own value with no further investment. Thus, in the event that $\beta > \alpha$, a second model allows for the excess, $\beta - \alpha$, to be assumed as an excess return attributable to intangible assets, and added to the estimate of excess profits. In this case, the share of excess profits will be given by $[c+(\beta-\alpha)*AVGIA]/AVG\pi$.

All data are from BEA. Corporate profits are before tax (table 6.17D). Assets are Current-Cost Net Capital Stock of Private Nonresidential Fixed Assets which now includes an estimate of some intangible assets. The data cover years 2005-2010 at the minor industry level.

Because the stock of assets could have been funded out of debt and excluding debt payments would underestimate the profits related to the funding of those assets, I add debt, by minor industry, back to corporate profits using Net Interest Payments from IRS corporate file sources

Results

One complication with trying to estimate overall excess profits are the presence of significant outliers. For example the industry for the Federal Reserve showed a return on assets of over 200 percent and was excluded from all analysis. Manually addressing outliers by different measures led to a range of results, suggesting estimates of excess profits as low as 16 percent to as high as 70 percent. Allowing for intangible assets to generate excess returns in addition to overall industry excess profits, increased the potential share to upwards of 90 percent.

Table 1: Excess Profit Estimates under Selective Exclusions

		Model 1	Model 2
	Basic	0.1741	0.884416
Exclude	Miscellaneous Professional	0.418644	NA
	Miscellaneous professional, Broadcasting, Oil and gas, Real estate	0.69781	0.78226
	Industries with return to tangible assets over 75%	0.15782	0.892966
	Industries with return on tangible assets over 50%	0.210368	0.922555
	Industries with return on intangible assets over 1000%	0.207556	NA

The wide range of returns on assets is a great concern. Some industries showed negative returns on tangible assets and other industries had returns on intangible assets over 20,000%. The coefficients on the systems excluding miscellaneous were also not generally statistically significant. Removing outliers increased the fit of the model, although the coefficient on tangible assets was not significant at normal levels for any of the outlier specifications. This volatility illustrates the serious difficulties with empirically measuring excess profits. To better address the wide range of returns and outliers, Table 2 provides the results using Robust Regression, which iterates for weights that will weight outliers less than observations that are more clustered.

Table 2: Estimates of the Share of Profits are Excess using Robust Regression

	All Years	Exclude Recession
Model 1	0.08339324	0.08656
Model 2	0.10566828	0.109523

These results are much less volatile and yielded coefficients that were statically significant at the 95% level. Controlling for extreme outliers suggests that an economy wide estimate of the corporate excess profits is around 10 percent.

There are, of course, a number of limitations to these preliminary estimates. First, accounting for a normal return to intangible assets is essential to isolating excess profit and BEA has only just started measuring the stock of some intangible assets. Thus those stock valuations are likely not very precise and may easily exclude a number of investments that would more reasonably be added to a stock measure of intangible assets. The potential undervaluing of intangible assets suggests that these rates could be higher than if more comprehensive estimates of intangible assets were available. Second, even if all intangible assets were accounted for, at any given point only winners are present. Losers (those whose gambles or searches forced them to give up) and their negative returns are not included and these omissions will likely overestimate the profits relative to stock of investment that created those assets. Third, the higher measures of returns on intangible assets, suggests either the measurement of intangible assets is poor (likely), or some assets can actually produce supra-normal returns (possible).

V. Implications for Corporate tax Incidence

What do these results imply for the allocation of corporate tax incidence? Even with an accurate measure of excess profits, determining the allocation of taxes on those excess profits for purposes of corporate tax incidence is not as simple as theory would suggest. However, determining the burden of corporate tax related to excess profits that were generated from investment in intangible assets could depend on way in which the assets was created. For example, if entrepreneurial insight of the labor force created an intangible asset that generated excess profits that return would more properly be reflected by some excess productivity to labor. In competitive markets, that any tax on excess profit

derived from labor inputs would not necessarily fall on corporate equity, but might would likely fall on labor through the demand for entrepreneurial skill. Taxes on the excess profits from other forms of intangible assets that have little clear link to investment or factors of production, such as goodwill, household name, and monopoly power are more clearly allocated to corporate equity. Taxes on profits arising from intangible assets created by research and development would likely fall somewhere between corporate equity and factors of production.

Ignore these complications, and assume that excess profits are measured correctly. Why does the consideration of excess profits matter at all? In a closed economy, repeatedly, the consensus has found that corporate tax incidence falls on capital—if not exactly 100%, approximately. However, in an open economy that assumption ceases to hold with certainty. The ability to export capital allows owners of capital to escape the tax, pushing more of the burden onto labor. Thus, within a closed economy setting, the presence of excess profits would only alter the burden on corporate tax between owners of all capital and owners of corporate equity. However, in an open economy the potential alteration is not just between owners of capital and corporate equity but also how much labor will bear the burden of the corporate tax—a far more disparate comparison. While it is generally assumed that any excess profits would fall of shareholders of corporate equity, being in excess of the income needed to pay for factors of production, there are potential exceptions under the presence of unions. Union contracts that bargain for excess profits between the firm and labor, would also share in the tax burden attributed to those excess profits. This scenario, however, is unlikely to be a major factor in the United States. First, the United States has a small union presence compared to other countries. [14] Second, the types of firms or industries that tend to be unionized are not those with large excess profits.

The extent to which the corporate tax falls on all capital versus labor is compounded by the extent to which it may first fall on corporate equity. Consider the various assumptions for the allocation of the corporate tax burden between capital and labor and share of excess profits in Table 3:

Share falling of Corporate Equity	Share falling on all capital:		Share falling on labor	
Share of Excess Profits	50%	75%	50%	25%
60%	20%	30%	20%	10%
10%	45%	67.5%	45%	22.5%

Treasury recently reported new assumptions for distributing the incidence of the corporate tax.[15] They now assume that 60 percent of the profits are in the form of excess profits and thus that share of the tax falls on corporate equity in the long run. They allocate the remaining share of the burden equally between owners of capital and labor. Those assumptions yield a corporate tax incidence share of 20 percent falling on labor. However, based on the analysis presented in this paper, it is more likely that the share of profits that are excess or supranormal is much less, closer to 10 percent. Under an equal

[14] Gravelle, Jane "Corporate Tax Reform: Issues for Congress," Congressional Research Service, RL34229 reports an estimate of only 7 percent of workers are unionized in the United States.

[15] Cronin, Julie Ann et. al. (2013) "Distributing the Corporate Income Tax: Revised U.S. Treasury Methodology," National Tax Journal, vol. 66, no.1.

distribution of burden between capital owners and labor, the resulting share falling on labor would rise to 45 percent; suggesting the corporate income tax is far less progressive than previously thought.

General equilibrium models suggest that the distribution of corporate tax incidence between capital owners and labor, using parameters in the central range of empirical estimates, is closer to 60 percent falling on capital and 40 percent falling on labor. Even so, those estimates ignore international complications and the preference for debt, both of which would increase the share of the tax falling on capital, conceivably upwards of 75 percent.[16] Indeed, some have shown that under certain circumstances accounting for the tax preference for debt could result in an inflow of capital from an increase in the corporate tax, which would result in more than 100 percent of the burden falling on capital.[17] Following these results lowers the share of the corporate tax burden falling on labor to about 22 percent. Clearly, the more likely it is for large firms to have excess profits the more capital will bear the burden of the corporate tax.

All of these questions on incidence stem, again, from an open economy. The open economy presents additional complications. While others have noted the ability of the corporate tax burden to be shifted abroad though changes in real investment, corporate taxes on excess profits that fall on shareholders may not fall solely on U.S. shareholders but foreign shareholders as well providing yet another mechanism through which the corporate tax could be exported.[18] Not only is there increased ability to shift capital across borders—a key factor for the incidence allocation between capital labor—but we have also seen extensive evidence to suggest firms' engage in strategic allocation of profits. Thus, even more challenging is accounting for firms' ability to shift profits, particularly those related to intangible assets and other forms on intellectual property abroad thus avoiding corporate taxes altogether. Evidence suggests that firms are more able to shift profits related to intellectual property and if those profits are more likely to consist of excess profits than shareholders will bear even less burden. For example, if half of the profits held abroad are supranormal, than that would suggest that the total share of profits of U.S. firms that are excess profits are closer to 60 percent. However, if those profits escape the U.S. corporate tax, then corporate shareholders bear no tax. The ability to shift profits abroad would reduce the tax burden on excess profits and thus the burden that would fall on shareholders. This method of avoiding corporate taxes could be particularly important when using financial measures of worldwide income to estimated excess profits. Those measures could significantly overestimate the amount of excess profits that would be subject to tax and thus have an effect of the incidence of the U.S. corporate tax.

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[16]See Gravelle, Jennifer (2013) "Corporate Tax Incidence: Review of General Equilibrium Estimates and Analysis," National Tax Journal, V.66 No.1, pp: 185-214 for a detailed review of the corporate tax incidence estimates under an open economy.

[17]Grubert, Harry and John Mutti. (1994). "International Aspects of Corporate Tax Integration: The Role of Debt and Equity Flows." National Tax Journal, vo. 47, no. 1: 111–133.

[18]Gravelle, Jane G. and Kent A. Smetters. (2006). "Does the Open Economy Assumption Really Mean That Labor Bears the Burden of a Capital Income Tax?" Advances in Economic Analysis and Policy, vol. 6 no. 1, article 3 included estimates of the corporate tax burden shifted abroad.

International reactions to changes in U.S. corporate tax policy can also alter the incidence of a corporate tax change. All of these concerns, however, are only related to a source-based corporate tax. A corporate tax on residence won't affect firm's use of factors as they would be taxed regardless of where they invest. In some way we sit with a stone staring at two birds: profit shifting incentives and uncertain tax incidence. A residence based world-wide tax would settle both questions—removing the incentive to shift profits and settling the question of who bears the burden of the corporate tax.

Appendix: Excess Profit under Income and Consumption Taxes

To examine the timing disconnect between the taxation of return on capital under and income and a consumption tax, consider a simple two year life cycle model:

Under an income tax system,

$Cy = w(1-t) - (1+g)K$ and $Co = (1+g)K * (1+R(1-t))$

Where w is the wage, t is the individual tax rate, g is the growth rate in investment, and R is the normal return on capital, K is the current capital stock, Cy is the consumption of the young, and Co is the consumption of the young when old.

The present value of lifetime consumption is:

PVC = $w(1-t) - (1+g)K + \frac{(1+g)(1+R)K - tR(1+g)K}{1+R} = w(1-t) - t\frac{R(1+g)K}{1+R}$

Present value of the tax base = w + $\frac{R(1+g)K}{1+R}$

Under a consumption tax system,

Cy = [w-(1+g)K](1-t) and Co = (1+R)(1-t)(1+g)K

The present value of lifetime consumption is:

PVC = $[w-(1+g)K](1-t) + \frac{(1+R)(1-t)(1+g)}{1+R}$

Present value of the tax base = w

As expected, theoretically a consumption tax does not tax the return to capital. However, this hypothesis only works only under a lifetime present value concept.

Return to the income tax and consider a current year snapshot:

At any given point in time, Co = (1+R)K and Cy = w-(1+g)K

Under an income tax, Co = [1+R(1-t)]K and Cy = w(1-t) – (1+g)K. Combining the two cohorts measured at any given time, yield C = w(1-t) + R(1-t)K – gK, resulting in a current year tax base of w+RK.

Under a consumption tax, Co = (1+R)(1-t)K and Cy = (w-(1+g)K)(1-t). Combing the two cohorts measured at any given time yields C = w(1-t) + (R-g)K(1-t), resulting in a current year tax base of w + (R-g)K.

The only difference between these two measures is g, the growth rate, times K, or investment.

It has been suggested that in the presence of excess profits, comparing the tax collections under an income tax and those under a consumption tax would isolate the share of profits that are excess, relying on the above idea that a consumption tax does not tax normal return.

Suppose the above R is a total return comprising of r, normal return, and Rx an (unexpected) excess return or supranormal return.

Under an income tax system, considering the consumption of the young, Cy, and their consumption when old, Co

$Cy = w(1-t) - (1+g)K$ and

$Co = (1+g)K * (1+(r+Rx)(1-t)) = (1+g)(1+R)K + (1+g)Rx - t(r+Rx)K$

The present value of lifetime consumption is:

PVC = $w(1-t) - (1+g)K + \frac{(1+g)(1+r)K+(1+g)Rx-t(r+Rx)K}{1+R} = w(1-t) + \frac{(1+g)Rx}{(1+r)} - \frac{t(r+Rx)K}{(1+r)}$

Present value of the tax base = w + $\frac{(r+Rx)(1+g)K}{1+R}$

Under a consumption tax system,

Cy = [w-(1+g)K](1-t) and Co = (1+r+Rx)(1-t)(1+g)K = (1+r)(1-t)(1+g)K + Rx(1-t)(1+g)K

The present value of lifetime consumption is:

PVC = $[w + \frac{(Rx)(1-t)(1+g)K}{1+R}$

Present value of the tax base = w + $\frac{Rx(1+g)K}{(1+r)}$

As expected, theoretically a consumption tax does not tax the return to capital, but does effectively tax the excess return. Again, this hypothesis only works only under a lifetime present value concept.

Return to the income tax and consider the current year snapshot:

At any given point in time, Co = (1+(r+Rx))K and Cy = w-(1+g)K

Under an income tax, Co = [1+(r+Rx)(1-t)]K and Cy = w(1-t) – (1+g)K. Combining the two cohorts measured at any given time, yield C = w(1-t) + (r+Rx)(1-t)K – gK, resulting in current year tax base of w+(r+Rx)K.

Under a consumption tax, Co = (1+(r+Rx))(1-t)K and Cy = (w-(1+g)K)(1-t). Combing the two cohorts measured at any given time yields C = w(1-t) + (r+Rx-g)K(1-t), resulting in a current year tax base of w + (r+Rx-g)K.

Again, the only difference between these two measures is g, the growth rate, times the capital stock, or investment. Thus, while conceptually a consumption tax will not tax the normal rate of return, relying on that concept to capture the value of excess profits under a tax collections comparison yields no insight into the share of profits that are supranormal. Rather that comparison only identifies the growth rate in investment captured through expensing in a consumption tax.