



## SPECIAL REPORT

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# Labor Bears Much of the Cost of the Corporate Tax

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## Key Findings

- Early analysis of the distribution of the corporate income tax relied on theoretical models and thought experiments. These hypothetical models assumed certain quantities of capital, market conditions, and investor behavior. The most important assumption in these models is how open the U.S. economy is to trade and the movement of capital. Open economy models concluded that nearly all the burden of the corporate tax falls on labor.
- Over the last few decades, economists have used empirical studies to estimate the degree to which the corporate tax falls on labor and capital, in part by noting an inverse correlation between corporate taxes and wages and employment. These studies appear to show that labor bears between 50 percent and 100 percent of the burden of the corporate income tax, with 70 percent or higher the most likely outcome.
- More recently, some analysts have suggested that “super-normal” returns due to monopoly rents or successful risk-taking impact the distribution of the corporate tax burden. Activity associated with rents is assumed to be insensitive to tax, limiting the amount of the tax that may be shifted to labor. U.S. Treasury and Tax Policy Center tax models adopt this approach, and assign most of the corporate tax to capital rather than labor (roughly an 80-20 split toward capital).
- There appear to be serious errors in both theory and measurement in the super-normal returns work. Replicating Treasury’s methodology, we find it overstates the amount of super-normal returns being earned by businesses by two or three times. Correcting for the overstatement, and assuming such returns determine incidence, implies a business tax incidence that is roughly split 50-50 between capital and labor, more in line with the empirical literature.

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- More importantly, we take issue with the use of super-normal returns as a guide to incidence. Pure economic (monopoly) rent is unaffected by taxes, but is uncommon. The super-normal methodology also includes returns to business activity outside the monopoly area, such as quasi-rents and other transitory earnings due to imperfect competition or risk premiums. These earnings in non-monopoly sectors of the economy are clearly sensitive to tax, and taxes on returns in these sectors fall heavily on labor, and not, as asserted, only on capital.

## Introduction

President Donald J. Trump (R) and congressional tax writers are working on a major overhaul of the federal tax code. If they adhere to the proposals outlined in the jointly produced Unified “Framework,” one of the central elements of the plan will be a reduction in the federal corporate income tax rate from the current level of 35 percent—the highest<sup>1</sup> federally imposed corporate tax rate in the industrialized world—to 20 percent, which would put the U.S. rate below the global average.

U.S. Treasury Secretary Steven Mnuchin and Kevin Hassett, Chairman of the President’s Council of Economic Advisers, have asserted that cutting the corporate income tax will largely benefit American workers in the form of higher wages and employment. Indeed, Mnuchin has said that as much as 70 percent of the economic cost of the corporate tax is borne by workers. Critics have challenged these statements, arguing that a majority of any corporate tax cut would simply end up being a windfall for shareholders or the owners of capital.

“Who bears the burden of corporate tax?” is therefore a question that will play a large part in the design and acceptance of any tax reform proposal. If the burden of the tax is assumed to be shouldered mainly by rich shareholders, Congress and the public may be disinclined to support a large cut in the tax rate. If the corporate tax is viewed as largely hurting wage growth and employment by denying workers the tools they need, it may be viewed more favorably.

This question of who bears the corporate tax has bedeviled economists for many decades. Early efforts to think the issue through were largely thought experiments, which reached different conclusions based on their assumptions about certain key factors related to the openness of the economy to trade and the movement of capital. Open economy models concluded that nearly all the burden of the corporate tax falls on labor. In recent decades, economists have become more adept at teasing out the real-world consequences of the tax by turning to real-world data. These studies appear to show that labor bears between 50 percent and 100 percent of the burden of the corporate income tax, with 70 percent or higher the most likely outcome.

More recently, some tax analysts have started considering how super-normal returns, or returns from rents or market power of companies, impact the distribution of the corporate income tax. Treasury and Tax Policy Center tax models adopt this approach, and assign most of the corporate tax to capital rather than labor (roughly an 80-20 split toward capital). There appear to be serious errors in both theory and measurement in the super-normal returns work. Measurement issues appear to overstate the amount of super-normal returns by two or three times. Correcting the overstatement implies a business tax incidence split roughly 50-50 between capital and labor, more in line with the empirical literature.

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1 Kari Jahnsen and Kyle Pomerleau, “Corporate Income Tax Rates around the World, 2017,” Tax Foundation, September 7, 2017, <https://taxfoundation.org/corporate-income-tax-rates-around-the-world-2017/>.

More importantly, we reject the whole theory of the use of super-normal returns as a guide to incidence. The method wrongly assumes that taxes on quasi-rents and other transitory earnings due to imperfect competition or risk premiums cannot be shifted to labor. Earnings in these sectors are clearly sensitive to tax. Taxes on returns in these sectors alter output, prices, and wages, and thus fall heavily on labor, and not, as asserted, only on capital. We conclude that the method and the findings based on it should be discarded.

## The Old Thought Experiments: Some History of the Debate

Early analysis to determine the distribution of the corporate income tax relied on theoretical models and thought experiments. These hypothetical models assumed certain quantities of capital, market conditions, and investor behavior. The most important assumption in these models is how open the U.S. economy is. Differing assumptions about the U.S. economy's openness suggested two general outcomes.

These models suggested that labor will bear the bulk of the corporate tax if:

- The economy is “small” and “open,” allowing capital, savings, goods, and services to flow freely across national borders;
- Capital and associated production can easily move abroad;
- Savers are willing to own foreign stocks and bonds to help fund the expatriate capital;
- consumers are willing to buy goods and services from abroad instead of insisting on local output;
- Industries are competitive, lacking monopoly pricing power, and must take world prices for traded goods without the ability to raise prices and pass the tax on to consumers;
- The amount of capital that flows abroad is not large enough to depress rates of return to capital in the world. Even if capital is fixed in quantity (the world total is not depressed by lower returns to saving), these conditions are sufficient to force most of the tax onto labor in the form of lower wages. If saving is responsive to its rate of return, and falls due to the tax, and world capital formation declines, the burden on labor is even greater.

By contrast, capital will bear some of the corporate tax if:

- Domestic capital is fixed in quantity (no reduction in saving due to the tax);
- A sufficient amount is unable or unwilling to move abroad for any of several reasons—such as that savers will not purchase foreign securities, or consumers have a strong preference for domestic goods and services;
- The quantity of capital moving abroad is large enough relative to the world stock that it depresses return on foreign-sited capital;
- The businesses cannot raise prices to pass large amounts of the tax forward to consumers. In these conditions, some of the tax is borne by capital due to lower rates of return.

However, it is not immediately obvious which view is realistic, or the extent to which one or both frameworks apply. Empirical work has helped to better answer these questions. Some of the historical debate leading to these two views of the world is reflected in the papers reviewed below.

The leading modern expert in the tax incidence field is Professor Arnold Harberger. Sixty-five years ago, he noted that the corporate tax could force capital from the corporate sector to the non-corporate sector, reducing returns to noncorporate businesses, which would suffer some of the burden of the corporate tax.<sup>2</sup> He assumed a closed economy, where the capital remained in the country, but shifted sectors.

Harberger subsequently expanded his analysis to include the likelihood that a corporate income tax would drive some U.S. capital out of the country (an open economy model), and that enough capital would leave to boost after-tax returns on remaining U.S. capital to pretax levels.<sup>3</sup> Some firms would choose to shift production abroad for sale to the United States or foreign markets. U.S. workers would have less capital to work with, and labor productivity and wages would decline. The increased availability of capital abroad would increase the wages of foreign workers. Assuming the capital shift is too small to depress worldwide capital earnings, U.S. workers would bear all, or more than all, the burden of the corporate income tax. Why more than all? Because some sectors of the economy could gain from the corporate tax increase. For example, if wages fall, earnings of capital-owners (including land owners) in the no-corporate agricultural sector would increase. Workers would lose more than the net loss to the whole economy.

2 Arnold C. Harberger, "The Incidence of the Corporate Income Tax," *Journal of Political Economy* 70, no. 3 (June 1962), 215-240.

3 The evolution of Harberger's thinking about this issue is laid out in Arnold C. Harberger, "Corporation Tax Incidence: Reflections on What is Known, Unknown and Unknowable," a paper prepared for a conference "Is it Time For Fundamental Tax Reform: The Known, Unknown and Unknowable?" James A. Baker III Institute for Public Policy, Rice University, April 2006. Later published in: John W. Diamond and George R. Zodrow (eds.), *Fundamental Tax Reform: Issues, Choices, and Implications* (Cambridge, MA: MIT Press, 2008).

Harberger noted that if the capital flight were very large, it could depress returns on capital in the rest of the world, meaning that owners of capital abroad, including U.S. capital that had fled, would also lose income. To that extent, and only to that extent, would the tax fall on U.S. capital-owners. In that case, he estimates that labor's share of the tax burden might be reduced to 96 percent of the total, with about 4 percent falling on U.S. capital-owners (including landowners, and after allocation of price increases on consumers to labor and capital).

Harberger and many other thought experimenters do not allow for any reduction in total world saving due to the tax, due to skepticism that savers respond strongly to reductions in the rate of return. They assume that total world capital formation remains constant, and the only effect of the tax is on where the capital is located. More recent work on saving responses suggests that saving would shrink if after-tax returns fall, and total world capital formation could be negatively affected by the tax, at least to some degree.<sup>4</sup> Martin Feldstein has pointed out that the effect of the tax on saving would increase the amount of damage due to taxing capital.<sup>5</sup> A portion of the added damage would fall on labor, including workers' pension funds and retirement savings. If world saving were to shrink enough in response to the U.S. tax and capital flight, such that U.S. capital fleeing abroad replaced foreign capital without adding to the total, global returns on capital and saving would be maintained, and capital-owners would not be injured by the tax. They would earn the same income from the capital abroad as they would have at home before the tax increase.

William Randolph estimates that, in an open economy with mobile capital in fixed supply and immobile labor, domestic labor loses income equal to 74 percent of the corporate tax revenue while domestic capital income falls by 33 percent of the tax (with additional effects on foreign labor and capital).<sup>6</sup> He finds the labor effect would be less as the economy is assumed to be less open, or capital less mobile.

Jane Gravelle and Kent Smetters sought to challenge the open economy results.<sup>7</sup> They calculated a range of hypothetical outcomes, depending on whether the U.S. acts like a small open economy, with limited effect on world returns to capital and global interest rates, and with a high degree of willingness to substitute imports for domestic products and services. If so, Gravelle and Smetters find that labor bears 79 percent of the corporate tax, while capital-owners bear approximately 11 percent, close to the Harberger results.

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4 Michael J. Boskin, "Taxation, Saving, and the Rate of Interest," *Journal of Political Economy* 86, no. 2, pt. 2 (April 1978).

5 Martin Feldstein, "Incidence of a Capital Income Tax in a Growing Economy with Variable Savings Rate," *The Review of Economic Studies* 41, no. 4 (October 1974): 505-513.

6 William C. Randolph, "International Burdens of the Corporate Income Tax," Working Paper Series, Congressional Budget Office, August 2006.

7 Jane G. Gravelle and Kent A. Smetters, "Does the Open Economy Assumption Really Mean That Labor Bears the Burden of a Capital Income Tax?" *The B.E. Journal of Economic Analysis & Policy* 6, issue 1 (December 2006).

However, Gravelle and Smetters raise two concerns. One is that the public may so prefer home-produced goods that it becomes difficult to shift capital and production abroad and then sell the output back to consumers in the home country. The capital that would otherwise migrate abroad would have to remain at home, and bear more of the burden of the tax, to retain the domestic market. Their second objection is that savers may so strongly prefer to hold domestic stocks and bonds that it would be difficult to tap domestic saving to finance capital investment abroad. Again, capital might have to stay home and bear more of the corporate tax. These cases lead to an alternative burden pattern of 25 percent of the corporate tax borne by labor, and 75 percent borne by owners of capital.

Harberger (2006), responding to these concerns, dismisses the reluctance to import, pointing to the increased reliance of global production chains in recent years. For example, since North American Free Trade Agreement (NAFTA), the automobile industry's parts and assembly operations are well-integrated throughout North America. Most vehicles now contain parts and labor input from more than one country. Consumer electronics are another area in which technology, chips, parts, and assembly are multinational.

As for savers' willingness to fund capital abroad, Harberger points out that not every saver need be involved in foreign exchange or trading in global securities to equalize financial returns and borrowing costs around the world. It takes only a few large financial institutions with sufficient resources to transfer large amounts of saving around the globe. The access to global credit is clearly sufficient to make the United States a fully integrated part of the world capital pool.<sup>8</sup> American and foreign firms routinely tap global credit markets at interest rates determined by the creditworthiness of the company, not by national credit market conditions. Recall that, at the height of the credit crisis afflicting Greece, Italy, Spain, Portugal, and Ireland, healthy private sector borrowers obtained credit at lower interest rates than their national governments. Harberger concludes that the larger responses that Gravelle and Smetters calculate for the open economy case are closer to the truth, and not far below his own estimates.

The empirical work cited above suggests that the open economy view of the world, with free movement of capital, goods, and services, is more nearly correct. Wages do appear to be negatively affected by the taxation of capital. Workers do appear to be harmed by the corporate income tax.

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8 William Gentry concurs, writing: "The evidence suggests that capital is quite mobile across countries. Covered interest parity tends to hold across countries suggesting little need for increased capital flows as a way of eliminating arbitrage opportunities. Corporate investment decisions appear quite sensitive to international differences in after-tax rates of return. Thus, the empirical evidence supports the open economy assumption for modeling the incidence of the corporate income tax." See William M. Gentry, "A Review of the Evidence on the Incidence of the Corporate Income Tax," OTA Paper 101, Office of Tax Analysis, Department of the Treasury, December 2007, 30. This paper reviews a wide range of the literature on the topic.

## Recent Empirical Studies Using Real-World Data

While thought experiments create useful frameworks for thinking about the potential distribution of the corporate tax, they do not directly answer the question of how much of the tax is borne by labor and how much is borne by capital. Thus, in recent years, economists have begun to estimate the incidence of the corporate income tax with empirical studies.

Empirical research attempts to estimate the impact of tax changes by using real-world data. The challenge, however, is no data exists that simply tells us that this much of the corporate tax falls on labor and that much falls on capital. Empirical researchers must ask related questions, such as: are there variations in wages across countries or regions with different corporate tax rates and related tax elements, such as depreciation rules? Is there evidence of “sticky” saving behavior that makes returns on capital vary across national borders, suggesting that it is hard to move capital abroad to avoid a tax? Are after-tax returns similar for countries with similar levels of capital per worker and similar risk factors such as adherence to the rule of law and political stability?

Empirical studies conducted over the last several years have shed new light on questions concerning capital mobility and the link between higher corporate taxes and reduced earnings of labor. A literature review on this topic by the Organisation for Economic Co-operation and Development (OECD) discusses these and other papers on the subject, and provides a handy table (below) for summarizing the results and the analytic methods used.<sup>9</sup>

### Cross-country studies.

Some of these studies seek to relate observed differences in taxes on capital to differences in wages across countries. For example, Kevin Hassett and Aparna Mathur, in a study of cross-country data, report: “[O]ur results indicate that corporate taxes are significantly related to wage rates across countries. Our...estimates suggest that a 1 percent increase in corporate tax rates leads to a 0.5 percent decrease in wage rates.”<sup>10</sup> Hassett and Mathur note that the results hold for statutory tax rates, effective marginal tax rates, and average tax rates. They also find that tax rates in other countries affect tax rates in the country in question; higher corporate taxes in a country’s trading partners raise wage rates at home, as there is less advantage to moving capital to the other countries. Wage reductions of the magnitude described by Hassett and Mathur would cost the workforce more money than is raised by the corporate tax, because labor compensation is several times larger than total profits.

<sup>9</sup> Anna Milanez, “Legal tax liability, legal remittance responsibility and tax incidence: Three dimensions of business taxation,” OECD Taxation Working Papers, no. 32, Table 4, September 18, 2017, available at <http://dx.doi.org/10.1787/e7ced3ea-en>. The studies cited here are only a sample of the literature. Many factors influencing the distribution of the tax burden are still being researched. As always in economics, some researchers hold divergent views on the nature of the markets, the mobility of labor and capital, and the resulting estimates of the distribution of the tax. Most of the works cited below have numerous citations of articles worth reading.

<sup>10</sup> Kevin A. Hassett and Aparna Mathur, “A spatial model of corporate tax incidence,” *Applied Economics* 47, no. 13, (January 2, 2015): 1350-1365, <http://dx.doi.org/10.1080/00036846.2014.995367>.

## Within-country studies.

The central group of studies in the table compares differences in wages in different states, provinces, or counties within countries to differences in those regional tax rates on corporations. Such studies have the advantage that, within a single country, there is generally more uniformity in nontax factors such as regulation, political stability, property rights, and rule of law than one sees across countries. The results suggest a range of possible effects of the burden on labor, from roughly a third of the tax to more than the total revenue raised.

Alison Felix reports on a cross-country study of open economies. She states: “The empirical results presented here suggest that the incidence of corporate taxation is more than fully borne by labor. I estimate that a one percentage point increase in the marginal corporate tax rate decreases annual wages by 0.7 percent. The magnitude of the results predicts that the decrease in wages is more than four times the amount of the corporate tax revenue collected.”<sup>11</sup>

**TABLE 1.**

### Empirical Evidence on the Economic Incidence of CIT on Labour

Research Design	Citation	Country	Period	Industry	Economic Incidence on Labour
Exploiting cross-country variation in tax rates	Hasset & Mathur (2010)	65 developed and developing countries	1981-2005	Manufacturing	2,200%
	Desai, Foley & Hines (2007)	50 countries (excluding the U.S.)	1989; 1994; 1999; 2004	Cross-industry	45-75%
	Felix (2007)	19 developed countries	1979-2002	Cross-industry	400%
Exploiting sub-national variation in tax rates	Ebrahimi & Vaillancourt (2016)	Canada (variation across provinces)	1998-2013	Cross-industry	75%
	Suárez Serrato & Zidar (2014)	U.S. (variation across counties)	1980-1990; 1990-2000; 2000-2010	Cross-industry	30-35%
	Liu & Altshuler (2013)	U.S.	1982; 1992; 1997	Cross-industry	40-80%
	Carroll (2009)	U.S. (variation across states)	1970-2007	Cross-industry	250%
	Felix (2009)	U.S. (variation across states)	1977-2005	Cross-industry	360%
Wage bargaining models	Arulampalam, Devereux & Maffini (2012)	9 European countries	1996-2003	Manufacturing	49%
	Felix & Hines (2009)	U.S. (variation across states)	2000	Cross-industry	54%
	Fuest, Peichl & Siegloch (2015)	Germany (variation across municipalities)	1993-2012	Cross-industry	40%

Source: Results from papers cited by the author. See footnote 9.

11 Alison Felix, “Passing the burden: corporate tax incidence in open economies,” Regional Research Working Paper RRWP 07-01, Federal Reserve Bank of Kansas City, October 2007, 21. <https://ideas.repec.org/p/fip/fedkrr/rrwp07-01.html>.

## Wage bargaining models.

Other studies focus on the extent to which labor has sufficient bargaining power to capture some of the returns accruing to capital. This is most common when returns to capital are higher than normal due to some form of pricing power, and when unions are strong. Insofar as the tax lowers returns available to be shared with labor, labor bears some cost of the tax. The lower level of unionization in the United States would make this phenomenon less pronounced here. However, not all profit capture or profit sharing by labor is due to union activity. Significant profit sharing arises in many nonunionized industries, such as the technology sector, and is common in vibrant start-up businesses.

In a working paper at the University of Warwick, Wiji Arulampalam, Michael P. Devereux, and Giorgia Maffini assess the impact of the corporate tax on wages: “Our central estimate is that 61 percent of any additional tax is passed on in lower wages in the short run and around 100 percent in the long run.”<sup>12</sup> In another paper, the same authors investigate the incidence of the corporate tax on “quasi-rents,” which are unusually high returns on capital in protected situations.<sup>13</sup> Arulampalam, Devereux, and Maffini find that even in these circumstances, 49 percent of the tax falls on labor, because labor bargains away about half of the returns in question.

A study by Clemens Fuest, Andreas Peichl, and Sebastian Siegloch, using microeconomic data from 11,500 German municipalities (which impose different local taxes) found that a 1 percent increase in the effective marginal corporate tax rate leads to a 0.18 percent decrease in the wages of current workers, which results in a significant portion of the burden falling on low-income labor.<sup>14</sup> Firms in the sample that are not restricted by collective bargaining agreements display nearly twice this average elasticity. Because total wages in an economy are several times corporate profits, and many times corporate taxes, these elasticities are large enough to place most of the tax burden on labor income.

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12 Wiji Arulampalam, Michael P. Devereux, and Giorgia Maffini, “The Incidence of Corporate Income Taxes on Wages,” Mimeo, University of Warwick, September 2007. Cited in William M. Gentry, “A Review of the Evidence on the Incidence of the Corporate Income Tax.”

13 Wiji Arulampalam, Michael P. Devereux, and Giorgia Maffini, “The direct incidence of corporate income tax on wages,” *European Economic Review* 56, issue 6 (August 2012): 1038.

14 Clemens Fuest, Andreas Peichl, and Sebastian Siegloch, “Which Workers Bear the Burden of Corporate Taxation and Which Firms Can Pass It On? Micro Evidence from Germany,” WP 12/16, Oxford University Centre for Business Taxation, July 2012.

## How Can Labor Bear More Than 100 Percent of the Corporate Tax?

Some empirical studies, and much of the earlier thought experiment analysis, conclude that labor may bear more than 100 percent of the corporate tax. The Council of Economic Advisers (CEA) has just estimated the amount borne by labor at 250 percent of the tax. This may seem perplexing, but it is perfectly possible, even likely.

The burden of a tax on people's income is more than the revenue the government takes in. The burden of a tax includes any additional damage to the economy, in the form of reduced output and income, caused by the tax. The added damage is called the "dead-weight loss" of the tax. Therefore, the tax revenue is only a lower bound on the total cost to the population. For example, a study by Romer and Romer found that, on average, GDP falls by roughly \$3 for every \$1 of tax raised.<sup>15</sup> Labor routinely receives between 60 and 70 percent of the GDP, and would suffer a loss of roughly \$2 in income per dollar of tax revenue. Romer and Romer did not distinguish the type of tax. The damage would be higher for taxes that impede capital formation, such as a corporate tax, than for taxes on consumption.

If a study is measuring the total loss of income from the tax, not just the revenue it collects, the portion of the income lost by labor can easily exceed the total revenue collection. This does not mean that only labor is harmed. There may be some income loss for capital-owners too (although that share may be low if capital is in highly elastic supply—that is, if it withdraws from the market unless it is paid its minimum demanded return). Labor's share of the total loss may not be 100 percent or more, but the amount of its loss may exceed the total revenue from the tax, showing a ratio of 200 percent, 300 percent, or more. How the percentages appear depends on whether the analyst is looking at the size of the loss relative to the tax revenue or the shares of the loss borne by labor versus capital.

A recent blog by Casey B. Mulligan, professor of economics at the University of Chicago, addresses these issues. He reviews the basics of tax revenues and dead-weight losses, with excellent graphics, neatly summarizing standard microeconomic textbook discussions of the concepts.<sup>16</sup> Mulligan confirms the CEA calculations, and rebuts critics of the CEA release who have ignored the additional economic losses from the tax.

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<sup>15</sup> Christina D. Romer and David H. Romer, "The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks," *American Economic Review* 100, no. 3 (June 2010): 763–801  
<http://www.aeaweb.org/articles.php?doi=10.1257/aer.100.3.763>

<sup>16</sup> See <http://caseymulligan.blogspot.com/2017/10/furman-and-summers-revoke-summers.html>.

## Super-Normal Returns and the Incidence of the Corporate Income Tax

A recent approach to describing the incidence of the corporate income tax focuses on “super-normal returns.” The super-normal returns approach is a new thought experiment that involves dividing profits into two categories: normal returns to capital in competitive markets, and super-normal returns in cases where the firm has pricing power and returns greatly exceed the normal.

The theory asserts that only the portion of the corporate tax that falls on normal returns may be shifted in part to labor by reducing output and wages. It assumes that activities generating super-normal returns are largely insensitive to tax; taxing that income is assumed not to discourage investment, productivity, wages, or employment, not to reduce production, and not to result in price increases. Therefore, the portion of the tax that falls on super-normal profits cannot be shifted to labor via lower wages or layoffs, or to consumers via higher prices. The extent of super-normal returns is assumed to place an upper bound on the normal returns on which the tax might be shifted in part to labor.

Both the U.S. Treasury Department and the Tax Policy Center of the Urban Institute and the Brookings Institution (TPC) have used variants of this approach to allocate the burden of the corporate tax. Their method classifies a significant amount of corporate profits as super-normal, and they therefore assert that the bulk of the tax falls on shareholders. Unfortunately, their methods, and their estimates of the extent of the super-normal returns, are faulty.

The “super-normal profits” theory and the TPC method of calculation is discussed in detail in a 2012 TPC paper: “How TPC Distributes the Corporate Income Tax.” It states: “One key finding is that a substantial share of the returns to corporate capital is from “supernormal” returns to successful risk taking, infra-marginal returns, and economic rents in excess of the “normal” return (the riskless return to waiting).”<sup>17</sup> The TPC views 60 percent of profits as super-normal, and 40 percent as normal. The tax on the 60 percent is attributed entirely to capital. The tax on the 40 percent is split equally between labor and capital. The result is assignment of 80 percent of the corporate tax to capital, and 20 percent to labor.

These results are close to those of a 2012 report issued by the U.S. Treasury Department that also relies on a “super-normal returns” theory of tax allocation, and describes how Treasury defines and measures the returns.<sup>18</sup> The Treasury paper finds an even greater share of profits to be super-normal, and allocates 89 percent of the burden of the tax to capital, and only 11 percent to labor.

<sup>17</sup> Jim Nunns, “How TPC Distributes the Corporate Income Tax,” Tax Policy Center, September 13, 2012.

<sup>18</sup> Julie Anne Cronin, Emily Y. Lin, Laura Power, and Michael Cooper, “Distributing the Corporate Income Tax: Revised U.S. Treasury Methodology,” Department of the Treasury, Office of Tax Analysis Technical Paper 5, May 2012. In recent news interviews, Secretary Steven Mnuchin has stated that the Treasury technical paper is no longer the view of the Department. The paper has been withdrawn from the Treasury web site, but can be found on the *National Tax Journal* site at <https://www.ntanet.org/NTJ/66/1/ntj-v66n01p239-62-distributing-corporate-income-tax.pdf>.

These figures are substantially at odds with findings of the empirical studies and predictions of earlier thought experiments.<sup>19</sup> There are several reasons why the approach may overstate the amount of income tax borne by capital. Even if one trusts the concept, measurement errors appear to exaggerate the amount of super-normal returns. If corrected, the method would suggest a 50-50 split of the tax burden between labor and capital. (We describe details of the approach, and associated measurement issues, in the Appendix.)

More importantly, the basic concept is flawed. First, not all super-normal returns are generated by activities that are insensitive to tax; much more tax shifting is possible than the approach assumes, especially in areas involving risk-taking. Second, inframarginal returns have nothing to do with decisions to expand or contract activity at the margin, and do not indicate that taxes do not matter. As a result, the statistics calculated by the super-normal returns approach give no useful information about the relative tax burdens on capital and labor.

## The Concept of Economic Rent and Super-Normal Returns.

Normal returns to an investment are bare bones returns that businesses must earn to compensate investors for the time value of money; that is, the minimum returns necessary to make it worthwhile to delay consumption. They predominate in competitive markets. Super-normal returns are any returns that exceed what are considered normal, and can be the result of either permanent or transitory pricing power. They include economic or monopoly rents, quasi-rents, and other returns resulting from successful risk-taking or other advantages over the competition.

Pure “economic rent” is a higher-than-normal payment for the services of a piece of land with an unusually valuable location. The term “rent” may also be extended to permanent higher-than-normal returns on property other than land, and may be associated with monopoly. Permanent non-land rents are sometimes referred to as quasi-rents, to distinguish them from the land-related returns.

More commonly, however, the term “quasi-rent” is reserved for any above-normal return that is temporary in nature. Quasi-rents arise in situations of imperfect competition, where barriers to entry, such as patents, regulatory hurdles, or other protections of incumbent producers by governments delay production of similar goods and services by other potential suppliers. Above-normal profits may also result from access to scarce or specialized resources, a reputation for quality, or successful risk-taking and innovation that lead to a particularly attractive new design, discovering a new oil field, or being the first to offer a new product, where it takes time for the competition to catch up.

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<sup>19</sup> Although this new approach calculates a statistic based on Treasury tax return data, it remains a thought experiment because it merely asserts, without evidence, that the statistic is related as advertised to the economic behaviors that affect how the corporate tax alters output and labor and capital income.

Firms in these non-monopoly sectors may display transitory pricing power, but it lasts only until the entry of other firms into the market, or even the emergence of potential entrants that the existing firms must try to block with a price reduction. In time, patents expire, other production methods or substitute products or resources are found, or firms take the risks required to find a new design or product that captures the consumer's eye. As the original quasi-rents disappear, new ones are created by innovation or exploration in other areas. Creating new quasi-rents requires new investment and risk-taking.

The key distinction between rents and quasi-rents is in their permanence, whether the conditions that create them are due to location or monopoly power, or due to some transitory factor that vanishes over time or must be constantly renewed. Thus, it is true that all pure economic rents are super-normal returns, but not all super-normal returns are pure economic rents. This distinction is crucial in determining whether the tax on such profits alters the behavior of a business, and whether the burden of the tax falls on capital or labor.

## Pure Rent and Monopoly—Why Some Super-normal Returns Must Bear the Corporate Tax.

The basic observation in the Treasury and TPC papers—that some businesses are insensitive to the corporate tax and do not react in a manner that would shift the tax to labor—could hold for the case of pure economic rent or a natural monopoly. True economic rent is the return to a unique piece of property that is not easily replicated. An acre of land in Manhattan, New York, is going to earn a higher rent than an acre in Manhattan, Kansas, due to its location. The owner is assumed to charge the revenue-maximizing rent, all that the market will bear. The land cannot not flee a high tax rate, and it will remain employed. Its super-normal returns bear the burden of a tax.

Likewise, a natural monopoly, an industry that has large economies of scale and high barriers to entry, will best be served by only one firm, which can produce all that is demanded at the lowest cost. If unregulated, the monopoly will receive a higher-than-competitive return on its assets. Its returns to capital will bear the burden of a tax, because it will not pay for the monopoly to take the steps necessary to shift the tax to labor or consumers.

A monopoly can choose how much to produce, and its decision will affect the market price. The monopoly sets output to maximize net revenue. That amount of output depends entirely on how consumers react to price changes. At higher prices, consumers demand less of the product, but the firm gets more revenue per unit. The monopolist will reduce production and raise prices if the price rise adds more to revenue than is lost due to the decline in unit sales. When the rise in the market price no longer compensates for the cut in sales, due to consumer resistance, it will stop. There is only one level of output that maximizes the revenue.

This revenue-maximizing amount of a monopoly's production is fixed. No matter whether the government takes 10 percent, 35 percent, or 50 percent of the resulting revenue in tax, the after-tax amount left to the firm is always highest at that level of output. The firm will not change its level of investment, output, or prices even if the tax changes, so the tax will not affect labor or consumers.

These examples of monopoly power or pure economic rent due to unique location are the grain of truth in the approach to determining tax incidence by examining super-normal profits. These profits are associated with high returns, unchanging output, and inability to shift a corporate tax to labor or consumers. However, these returns constitute a small portion of the economy, and the tax on this income is a small portion of the total corporate tax. Monopoly rent does not significantly affect the degree of tax shifting economy-wide.<sup>20</sup>

## Not All Super-Normal Returns Should Be Treated as Insensitive to Taxation.

The TPC paper lists two major sources (other than monopoly rents) of super-normal returns: quasi-rents on investments by successful innovators and risk-takers, who have developed a remarkably successful product ahead of the competition, and inframarginal production facilities, which have lower costs than the average for some reason. These sources should not be lumped together with the cases of true economic rent or natural monopoly power. High returns in these two areas do not mean that the firms are insensitive to tax or that imposing or increasing a tax on them is harmless to labor or consumers.

Lumping these types of earnings in with monopoly profits involves a logical fallacy akin to the syllogism: If it is raining, it must be cloudy. Therefore, if it is cloudy, it must be raining. The super-normal returns papers make a similar error: Monopolies, which are insensitive to tax, have super-normal returns. Therefore, all industries that have super-normal returns must act like monopolies and be insensitive to tax. The argument is false.

## Risk-takers Are Sensitive to Tax.

In many cases, quasi-rents are the reward to businesses' incurring costs and taking risks. Risks involve losses as well as gains. Risk premiums in successful ventures are vital compensation for the money-losing efforts, and are clearly sensitive to taxation. The Treasury and TPC papers look only at money-making businesses. Ignoring losers by looking only at tax returns of profitable firms that won the risk lottery is defective analysis.

Treasury argues that taxes on high profits from successful risk-taking do not alter output and fall entirely on the capital. On the contrary, risky sectors of the economy are among the most sensitive to taxation, looking ahead to new activity. It is only looking backward that they appear to be immune. The argument may be true for a firm with a high return on an existing discovery, but not for firms researching future discoveries.

<sup>20</sup> Note that the monopoly argument does not apply in the case of a regulated monopoly, such as a regulated utility. Regulated monopolies are sometimes said to be insensitive to the corporate tax, because they can request a rate hike from the state utilities commission, and pass the tax on to their customers. The rate of return on the company's assets is thereby maintained. But in that case, the tax is passed on to consumers as higher prices. There is room for the price increase because the regulated utility was not permitted to go directly to the revenue-maximizing monopoly price to begin with. Some customers will reduce consumption because of the higher price. They may install solar panels, or utilize heat recycling power generation technology in a factory, or just cut back on heating or cooling in their homes. Output and capacity will be less than in the no-tax case, and employment in the industry will be lower. Consumers will find their income from working or saving does not buy as much power. Labor bears a large portion of the tax as workers or as consumers.

Consider a pharmaceutical firm with a blockbuster drug. It has a patent that gives it a monopoly for a few years, or until a competitor finds a different cure for the same illness,<sup>21</sup> and it is presumably charging what the market will bear. Even if the government increased the corporate tax rate, the firm would continue to produce and sell the drug, because it is in a use-it-or-lose-it situation with a product already developed. Sunk costs are sunk; one cannot go back in time, recover the expenditures, and undiscover the drug. The cost of the discovery has been incurred, and it would be pointless not to produce the product for whatever positive after-tax profit can be had, even if the tax on the income is raised. The tax on the earnings of the existing drug cannot be shifted.<sup>22</sup>

What the papers fail to consider, however, is the effect of the tax on future activity and risk-taking. Super-normal returns do not last. They must be replenished by new discoveries requiring significant investment and risk. These efforts to create future super-normal returns may or may not pay off.

For example, for each successful new medicine, firms spend billions of dollars on hundreds of experimental drugs that never come to market. A successful blockbuster drug may yield super-normal returns to the lucky company. Many other efforts lose money, sometimes for years, with no payoff. Returns to the whole industry are far lower than returns to a successful drug.

In deciding how much to invest, the firms in the industry weigh the probable costs of the failures against the probability of success and the amount of after-tax return that a successful drug is expected to generate. Raising a tax on the firm's earnings not only diminishes the returns to an existing drug, it diminishes the expected payoff from future research. The risk-reward ratio will shift against such efforts, and diminish the amount investors are willing to commit. Less R&D will be undertaken, and fewer new drugs will be developed.

The same principles apply to any industry with risk-related super-normal returns. The two papers wrongly assume that the quantity of super-normal returns in the economy is invariant with respect to the corporate tax. This is an assumption that does not take account of the effort required to maintain the returns. A higher tax rate will reduce investment. Less output and profit will occur in the future. Current labor engaged in developing new products, and future labor and consumers producing and using the new products, will suffer the consequences if the activity is discouraged.

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21 For example, Viagra was followed quickly by Cialis. In fact, the profitability of Viagra acted as a spur to research into substitutes that did not infringe on the Viagra patent. The same pattern can be seen in drugs for cholesterol control, cancer treatment, and hundreds of other medical conditions.

22 If the government has helped to create the monopoly, as with licensing arrangements that give sole rights to build cable services in a county, the imposition of the tax does not reduce the supply of the service or raise the cost to the consumer beyond the original quantity reduction and price increase due to the granting of the license. But the added tax collected by the government due to the abnormal profits derived from the restraint of competition due to the license would not have occurred without the government action in granting the license in the first place. That damage to the consumer is certainly the fault of the government.

## Inframarginal Super-Normal Returns Do Not Mean a Tax Cannot Harm Labor.

Some firms can produce at a lower average cost than others. Perhaps one turnip farm's fields are more fertile, better-watered, or flatter and more rock-free than another's. At a given world price for turnips, the efficient turnip farm will earn more than the less efficient farm. If this advantage were to cover the entire crop, any cutback in turnip production due to higher taxes might be assumed to occur at the less efficient farm, not the more efficient one. Advocates of the super-normal return theory assert that the portion of the industry's returns earned by the more efficient firms can be viewed as "inframarginal," and therefore insensitive to higher taxes, and thus the tax on them must accrue mainly to capital.

This distinction is not relevant to the issue. The harm to labor comes from the reduction in output by the whole industry. It does not matter for the impact on labor which firms cut back the most and which the least. Workers laid off in one corner of an industry become intensified competition for workers in another. The depressing effect on wages occurs regardless where the reductions in hiring began.

Furthermore, it is wrong to assume that the calculation can be done on average cost. Nearly all firms face costs that rise with output. The first units of output are more profitable (more inframarginal) than the last. Each producer will push its output to the point where additional production just covers additional costs. Each entity will proceed with new investment opportunities until it does not pay to do more. In other words, all (non-monopoly) firms have normal returns at the margin. If the tax is raised, each firm will reduce output, not just the less efficient firms. If the tax is raised high enough, the less efficient firms may go out of business entirely, leaving the more efficient firms to carry on, but both types are normally affected by any tax increase, and so is their labor.

Nearly all significant economic decisions are made at the margin. At the margin, the inframarginal return is irrelevant. The assertion that taxes do not affect industries with low average costs is not correct. The inclusion of their profits in a "non-shiftable" monopoly tabulation is a mistake.

## Conclusion

Recent empirical evidence seems to support earlier theoretical analysis that domestic U.S. labor bears the largest portion of the burden of the U.S. corporate income tax. The share of the burden falling on labor is routinely found to be between 50 percent and 100 percent, with 70 percent or higher the most likely outcome. As the tax reduces investment, productivity, and wages, the dollar amount of the cost to labor may exceed the revenue raised by the tax by a wide margin.

This evidence squares with the bulk of the theoretical discussions of earlier decades predicting that capital flight would shift the burden of the corporate income tax to labor. The increasing integration of the world economy in the production of traded goods and services and in the integration of financial markets reinforces the assumptions of these early analysts.

According to the empirical work, capital is a highly mobile and sensitive input; it can be located in the United States or overseas, or it might not be formed at all. Labor is less free to move from one country to another than is capital, and workers have limited freedom to set their own hours, or skip work entirely, if they want to earn income. Capital can and will flee high-tax jurisdictions, leaving labor behind to suffer the consequences. Capital can and will grow in jurisdictions that lower the tax burden, benefiting labor more than any other group.

An alternative Treasury and TPC approach to assigning the tax incidence is based on speculation that most capital income consists of super-normal returns due to pricing power and successful risk-taking, that the underlying economic activities are insensitive to tax, and that taxes on such activities cannot be shifted to labor. This suggests that a huge portion of the corporate tax falls on capital. Their method of calculating super-normal returns drags into the total entire sectors of the economy and large amounts of economic activity that are clearly sensitive to tax, and ought to be excluded. The approach appears to be invalid.

Even if one were to credit the concept behind the super-normal returns limitation on the amount of tax that could fall on labor, it appears that the result is very sensitive to which business costs are allowed as deductions. We tried to replicate their numbers using national income account data, and found a much lower level of “excess” returns. This suggests that even on their own terms, the result should have allowed for a 50-50 split between labor and capital. This would have brought the results more into line with the empirical work, although we still doubt that the resulting statistic measures anything truly related to the question.

## Technical Appendix

### How Treasury and TPC estimate super-normal returns.

Treasury and TPC determine the extent of normal and super-normal profits by comparing tax liabilities based on current law depreciation (gradual write-off of the cost of investment over time) against tax liabilities in alternative regime of immediate expensing (immediate deduction of the full cost of investment in the year the investment is made).

In theory, firms expand until new investment is barely earning enough to cover its cost and generates a normal return reflecting the riskless time value of money. That is, firms keep investing until the current cost of investment and the future returns from investment are equal in present value. In that case, immediately deducting the full expense of investment would reduce the current tax owed by the same present value as the amount of tax that would be collected on the future revenue. In other words, expensing shelters the normal return to investment from tax.

It follows that, under a tax regime that includes expensing, any tax that remains, and only that amount, would be on super-normal profits, which would indicate the existence of some monopoly or other source of pricing power. As described above, there is no incentive to cut output in monopoly situations, and that portion of the tax would not be subject to tax shifting. To the extent that the current income tax imposes a higher tax than would be collected under expensing, the additional tax should theoretically fall on the normal profits, and could be shifted to labor.

For example, suppose a business's pretax revenue is \$100, and using current depreciation rules, its federal income tax is \$30. Suppose, using expensing, the tax would be \$0. That would imply that 100 percent of the firm's income is a bare-bones normal return, and the current tax of \$30 is on a normal profit. Taxes on normal profits may lead a firm to reduce output, which would shift a portion of the tax burden to labor. Alternatively, suppose, using expensing, the firm's tax would fall to \$10. If there is still a tax owed under expensing, it must be on some super-normal element in the profits. In this case, one-third ( $10/30$ ) of the income (or \$33.33) must be super-normal profit, and two-thirds ( $20/30$ ) of the income (or \$66.67) must be normal profit. The \$10 tax on the super-normal profit does not lead to reductions in output, and it falls only on capital.

## Why the Estimation Method May Overstate Super-normal Returns.

The method used by Treasury and Tax Policy Center certainly measures the difference between tax systems with current-law depreciation and expensing, but it is not clear that is the appropriate measure of super-normal profits or how a firm reacts to taxation. Both papers have some serious logical and methodological flaws. The theoretical flaws are discussed above in the body of this paper. Some issues of measurement are reviewed here.

The Treasury and TPC methodology is based on corporate tax returns for firms with positive taxable income. Returns with losses are not included. Beginning with corporate tax returns keeps the focus entirely on the corporate sector. However, it requires reconstructing the gross (pretax) income of the businesses by adding back in depreciation, income and property taxes at the state and local level, interest deductions, and other elements of the tax calculation.<sup>23</sup> This grossing up procedure is difficult and prone to error. Once achieved, the tax is recalculated under the two depreciation systems.

## Recalculating Super-normal Returns.

We have attempted to determine what might be called super-normal returns economy-wide under several methods to show the sensitivity of the results to the underlying assumptions. Given our lack of privileged access to corporate tax returns, and shortcomings in publicly available data on business taxes from the IRS, we use the Federal Reserve Flow of Funds tables as our chief data sources. These incorporate the U.S. Commerce Department's Bureau of Economic Analysis (BEA) National Income and Product Accounts (NIPA) data for GDP, investment, and tax accruals. However, the U.S. Bureau of Labor Statistics (BLS) provides a superior measure of labor compensation, including self-employment income and pass-through data often misclassified in IRS and BEA tax sources.

The combination of sources allows us to capture all investments and business revenues, regardless of a firm's profitability. The data covers the full economy, including businesses in loss situations and earnings of individuals not required to file tax forms. Treasury and TPC omit money-losing firms from the analysis. This can distort the calculation of normal versus super-normal earnings. Even money-losing firms utilize capital in the hope of future profits, which will be taxed. Start-up businesses employ a lot of capital on which they hope to earn money in the future. Older firms temporarily losing money due to a recession or other factors also employ capital, and expect to return to profitability. Both types of firms use loss carry-forwards, which will be impacted by future tax rates. Their current economic decisions are affected by expected taxes on future earnings, and affect current employment and labor income.

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<sup>23</sup> The OECD paper points out that other empirical research shows these other business taxes also appear to be shifted to labor, to much the same degree as the corporate income tax.

We must use the business sector, including noncorporate businesses, because capital returns data does not adequately separate C-corporations from S-corporations and other pass-through entities. Also, some noncorporate businesses may have super-normal returns. With this method, we find a much smaller share of super-normal returns in the economy than the Treasury and Tax Policy Center.

We begin by deriving gross returns to capital from the accounts by subtracting BLS labor compensation from national income. We then compare investment, representing expensing, to the capital returns to see how much of the returns are “sheltered” from tax and are to be considered “normal” and raise the share covered by investment. This gives a “normal” return equal to 60 percent of profits, and a “super-normal” share of 40 percent. This compares to the TPC finding of 40 percent normal returns, 60 percent super-normal. But gross returns is an inappropriate starting point.

These numbers use gross capital income before tax. The Treasury and TPC calculations also appear to be based on gross returns, including state and local taxes and interest expense. It is important to remove other taxes from the gross returns. These mandatory payments reduce net returns, and can throw firms into a money-losing situation. Taxes must be paid, and are not part of the net, after-tax returns to capital. One should also remove the returns to land, which is a non-depreciable asset, and for which there is no difference between expensing and depreciation.

Leaving other taxes in the calculation is equivalent to asserting that the affected businesses are indeed indifferent to taxes, and are acting like monopolies, and presupposes that one will find super-normal returns from the calculation. But that is what the calculation is supposed to be exploring. Assuming the result begets a statistic that ratifies the result. This is a form of circular reasoning. It proves nothing.

NIPA and the Federal Reserve consolidated income accounts show investment (other than in land) which would be immediately deductible under a corporate tax with expensing normally exceeds 55 percent of capital income net of state income taxes and local property taxes. This is the average ratio over the period 1968 through 2007, the last 30 years before the Great Recession distorted the picture.<sup>24</sup> Another 18 percent of the gross return constitutes a “normal” return to land.<sup>25</sup> Therefore, about 74 percent of capital income should be regarded as having “normal” returns, and about 26 percent might be regarded as “super-normal.”

Even assuming the normal versus super-normal rationale holds as advertised, this data suggests that it should predict that 74 percent of a “pure” business income tax may be subject to some shifting from capital to labor. This is a far cry from the 40 percent normal return found using the TPC method.

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24 Investment has been abnormally low since 2008. These recent years do not represent a normal economy. The depressed investment and resulting wage stagnation is what tax reform should be designed to correct. Papers which regard the current abnormal situation as the new normal do not contribute to the solution.

25 Our calculation for land uses the land value series based on BLS numbers, rather than the series in the Flow of Funds table. The Flow of Funds formula gives a peculiar negative price for land during the Great Recession, and is obviously flawed. We have smoothed the BLS time series to avoid the extremes.

Simply assigning 74 percent of the business taxes to labor and capital using their respective shares of GDP, one would estimate that about 50 percent of the tax falls on labor, and about 50 percent on capital, much more in line with what the empirical results suggest looking at real-world data. This method still overstates the lack of shifting of risk-related taxation described above, and might represent a lowest bound on the degree of shifting of the tax.

## An Issue Relating to the Starting Point for Depreciation.

This NIPA approach would deliver a different estimate of normal versus super-normal returns relative to a purer income tax utilizing “economic depreciation,” and might reflect the situation under the Asset Depreciation Range or Kennedy Guideline lives in the 1960s and 1970s. The lower bound for the shiftable portion of the tax would be modestly lower under the faster write-offs allowed under Modified Accelerated Cost Recovery System (MACRS), which shelters some normal profit from tax. However, the entire concept is dependent on whether the Commerce Department and Treasury estimates of real economic depreciation are correct. Treasury has periodically studied asset lives, and repegged them (or asked Congress to repeg them) to match obsolescence and replacement behavior in the real economy. Over time, these reviews have repeatedly led to a shortening of asset lives. If current estimates of the pace of economic depreciation are too low, economic income is overstated, and MACRS is doing less to offset the taxation of normal profit than currently supposed.

The Treasury and TPC procedure is aimed at answering the question: “What share of the current law corporate income tax base is supernormal returns?” Current “accelerated” depreciation schedules (MACRS) allow faster deductions than would be used under a “pure” income tax. Because of the accelerated depreciation, the current tax base does exempt a portion of the normal return on investment from tax, which should reduce the presumed amount of the tax that may be shifted to labor. If the question is, “What share of corporate income is super-normal returns?” we get a different outcome. Measuring the differential between a “pure” corporate income tax and a tax employing expensing, such as a value-added tax (VAT), would show a bigger drop in tax, and, therefore, more normal profits and smaller super-normal profits, than starting with a MACRS-based income tax system. This suggests that a higher amount of a “pure” corporate tax may be shifted to labor than the current “impure” corporate tax.<sup>26</sup>

This discussion of the role of accelerated depreciation on the incidence of the corporate tax raises an interesting point. Expensing should result in a greater share of the corporate tax falling on capital, and less on labor, potentially making the corporate system more progressive. This runs counter to concerns that accelerated depreciation somehow favors the wealthy.

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<sup>26</sup> Current law also includes partial or “bonus” expensing, which would worsen the disparity and increase the understatement of normal profits. The papers claim to have corrected for this “bonus expensing” provision.