Corporate Tax Reform and Wages: Theory and Evidence

The Council of Economic Advisers

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Executive Summary

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Wage growth in America has stagnated. Over the past eight years, the real median wage in the U.S. rose by an average of six-tenths of a percent per year. But even as Americans' real wages stagnated, real corporate profits soared, increasing by an average of 11 percent per year. The relationship between corporate profits and worker compensation broke down in the late 1980s. Prior to 1990, worker wages rose by more than 1 percent for every 1 percent increase in corporate profits. From 1990-2016, the pass-through to workers was only 0.6 percent, and looking most recently, from 2008-2016, only 0.3 percent.[1] The profits of U.S. multinationals are still American profits, but, increasingly, the benefits of those profits do not accrue to U.S. workers.

The deteriorating relationship between wages of American workers and U.S. corporate profits reflects the state of international tax competition. The problem is not unique to America; countries around the world have responded to the international flow of capital by cutting their corporate tax rates to attract capital back from other countries. They have doubled down on such policies as they have seen business-friendly policies benefit workers.

This analysis from the Council of Economic Advisers reviews the evidence that has driven other developed countries to pursue the path of lower corporate tax rates and estimates how business tax reform in the Unified Framework for Fixing Our Broken Tax Code[2] (hereafter, the "Unified Framework") is expected to affect wages for American workers.

Reducing the statutory federal corporate tax rate from 35 to 20 percent would, the analysis below suggests, increase average household income in the United States by, very conservatively, $4,000 annually. The increases recur each year, and the estimated total value of corporate tax reform for the average U.S. household is therefore substantially higher than $4,000. Moreover, the broad range of results in the literature suggest that over a decade, this effect could be much larger.

These conclusions are driven by empirical patterns that are highly visible in the data, in addition to an extensive peer-reviewed research. While much of the academic literature predates the latest data, the covariation between the trajectory of inflation-adjusted wages

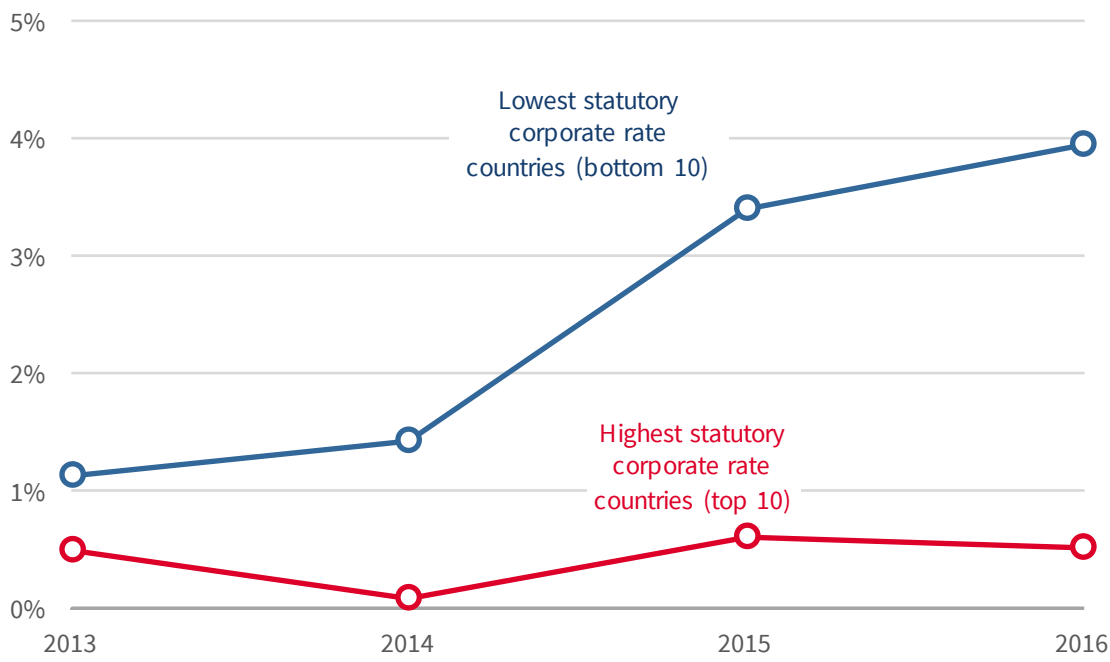
[1] Results from a regression of total labor compensation in the U.S. on corporate profits from BEA data covering 1966-2016. A Wald test supremum trend break occurs in Q4 1989.
[2] U.S. Treasury (2017), also available at https://waysandmeansforms.house.gov/uploadedfiles/tax_framework.pdf

and statutory corporate tax rates (Federal and sub-Federal) between the most-taxed and least-taxed developed countries (OECD) over recent years, visible in Figure 1, is indicative of these papers' findings. Between 2012 and 2016, the 10 lowest corporate tax countries of the OECD had corporate tax rates 13.9 percentage points lower than the 10 highest corporate tax countries, about the same scale as the reduction currently under consideration in the U.S. The average wage growth in the low tax countries has been dramatically higher, as would have been predicted by a consumer of the academic literature, which looks at much longer time periods and explores the relationship with modern econometric techniques.

This sizable empirical literature measures the relationship between wages and corporate taxes, controlling for other variables that may affect wage growth across countries and over time. The literature suggests the relationship between corporate taxes and wages is more than observational and is econometrically robust. The remainder of this report explains the theory and the empirical regularities that relate lower business tax rates – such as those in the Unified Framework – to higher wages and uses these estimates to measure the likely wage effects of the business tax reforms of the Unified Framework.

Figure 1. Wage Growth in Developed Countries: Lowest vs. Highest Corporate Tax Countries

(Year-over-year change)



Note: Wage data show year-over-year percent changes in 2016 constant prices at 2016 USD PPPs. Wage growth measures are the unweighted average over the ten countries.

1. Introduction

An extensive literature on corporate tax policy documents that reducing the corporate tax rate results in increased capital formation and economic output. Effectively, reductions in the corporate tax rate incentivize corporations to pursue additional capital investments as their cost declines. Complementarities between labor and capital then imply that the demand for labor rises under capital deepening and labor becomes more productive.

Standard economic theory implies that the result of more productive and more sought-after labor is an increase in the price of labor, or worker wages. Indeed, considerable academic research indicates that this is the case; to summarize, the literature finds that worker wages are lower when corporate taxes are higher. Capital deepening, which brings additional returns to the owners of capital, brings returns to workers as well.

Although the wage effects for workers may theoretically differ across the skill distribution, recent research finds that corporate tax reductions serve to raise wages of both low- and high-skilled workers (Felix, 2007). Thus, reductions in the corporate tax rate may offer a potent solution to the tepid wage growth experienced by U.S. workers over the past several years.

We use a variety of estimates from the academic literature on corporate tax policy and wages to project the effects of a reduction in the statutory Federal corporate income tax rate from 35 percent to 20 percent. (We know of no literature on the relationship between worker wages and the introduction of immediate full expensing of capital investment excluding structures, although in theory this should further increase the productivity of labor and also increase the wages of workers.) Using conservative estimates from the academic literature on wages and corporate taxes, we estimate that corporate tax reductions of the Unified Framework, in their entirety, would in the medium term boost average U.S. household income annually in current dollars by at least $4,000, conservatively. When we use the more optimistic estimates from the literature, wage boosts are over $9,000 for the average U.S. household.

An additional potential benefit of corporate tax reform is its estimated effect on the behavior of U.S. firms holding profits overseas. The share of foreign-earned profits repatriated to the U.S. has declined over time along with the tax rates of OECD members and other countries, and in 2016, U.S. firms chose not to repatriate more than 70 percent of foreign-earned income. As a result, $299 billion in U.S. corporate profits remained offshore in that year, unable to benefit U.S. workers. The volume of profits held by U.S. firms abroad has risen sharply in recent years. A lower rate would provide incentive for firms to move their income

and activity back to the U.S. These additional considerations magnify the potential impact of corporate tax reform for workers' wages.

2. Corporate Taxes and Worker Wages: Theory and Evidence

The productivity of workers in an economy depends, in part, on the flow of capital services enabling their production. Even in a closed economy, reductions in the corporate tax rates and the associated capital deepening may imply a higher marginal product of labor and higher wages. The ability of domestic U.S. firms to invest foreign profits overseas exacerbates the implications of corporate tax policy for domestic workers; an uncompetitive domestic corporate tax rate reduces the demand for U.S. workers by encouraging capital formation abroad. Indeed, when viewed in this way, the incidence of the corporate tax could theoretically fall entirely on U.S. workers, so long as workers are immobile and capital moves freely across borders.

How much of the corporate tax burden do workers bear? Empirical estimates differ but largely trend upward over time as estimates have caught up with the pace of global capital flows, whose rise substantially influences these calculations. An earlier literature argued that the incidence of corporate tax fell entirely on the owners of capital (Harberger, 1962). But Harberger's model was based on a closed economy with no ability for capital to move overseas, perhaps a reasonable contemporary assumption but less apt today.

A newer literature places the labor share of the corporate tax burden decidedly above zero based on model calibrations under various assumptions that account directly or indirectly for the fact that capital is much more mobile than labor. Arulpalapam et al (2012) find that workers pay nearly 50 percent of the tax, while Desai et al (2007) estimate a worker share of 45 to 75 percent. Gravelle and Smetters (2006) generate a rate of 21 percent when the rate of capital mobility across countries is moderate and 73 percent when capital can flow freely, evidence that the labor incidence is likely both dynamic and positively correlated with the rate of international capital transfers. A Congressional Budget Office (CBO) study (Randolph, 2006) finds that workers bear 70 percent of the corporate income tax burden in the baseline and 59 to 91 percent in alternative specifications. In a summary study, Jensen and Mathur (2011) argue for an assumption of greater than 50 percent. As a result of these more recent estimates, evaluators have upgraded their estimates of the worker incidence of corporate taxes. Intuitively, these estimates make sense because capital is far more mobile than labor. The idea that immobile factors bear a disproportionate share of taxes relative to mobile factors is almost as old as economics itself.

In addition to estimates of the incidence of the corporate tax, a recent empirical literature measures the relationship between corporate tax rates and worker wages directly. These estimates generally rely on cross-sectional differences in tax rates across states and countries, as well as within-country changes over time, to identify the impact of corporate tax rates on worker wages. The resulting elasticities of average wages with respect to corporate tax rates allow us to calculate the wage implications of the Unified Framework directly without making any additional revenue or capital return assumptions.

The measured elasticities of average wages to the top corporate tax rate range from -1.0 to -0.1 in these studies, implying that a 1 percent change in corporate tax rates reduce worker wages by as much as 1 percent and as little as 0.1 percent. A cross-country study by Hassett and Mathur (2006) based on 65 countries and 25 years of data finds that the elasticity of worker wages in manufacturing after five years with respect to the highest marginal tax rate in a country is as low as -1.0 in some specifications, although other sets of control variables increase the elasticity to -0.3.

Expanded analysis by Felix (2007) follows the Hassett and Mathur strategy, but incorporates additional control variables, including worker education levels. Felix settles on an elasticity of worker wages with respect to corporate income taxes of -0.4, at the high end of the Hassett and Mathur range. Felix's study is also able to analyze distributional effects, finding no difference in the effects of corporate taxes for low-, medium-, and high-skilled workers as proxied by education levels.

Felix (2009) estimates an elasticity of worker wages with respect to corporate income tax rates based on variation in the marginal tax rate across U.S. states. In this case, the elasticity is substantially lower; a 1 percentage point increase in the top marginal state corporate rate reduces gross wages by 0.14 to 0.36 percent over the entire period (1977-2005) and by up to 0.45 percent for the most recent period in her data (2000-2005). The estimates in Felix (2009) imply an elasticity of roughly -0.1 to -0.2. These rates, which may be higher than estimates based on cross-country variation due to the greater mobility of labor across states relative to countries, again confirm the idea that the mobility of a factor influences the extent to which it bears a tax.

In addition to estimating the incidence of the corporate tax, Desai et al (2007) also report estimates of worker wage effects of corporate tax rates. Whereas other papers mentioned above have used the country as the unit of analysis, the sample in this paper consists of individual U.S. employers along with their activities in 50 countries over 15 years. With these data, the authors measure both the changes in worker wages and changes in capital income associated with corporate income tax changes. The estimated labor burden of the corporate tax rate varies from 45 to 75 percent under various specifications in the paper. For a panel data

specification with country fixed effects, 57 percent of the burden of the corporate tax rate falls on labor. Applying the coefficient estimates to the U.S. corporate rate implies worker wages fall by approximately 0.3 percent for every 1 percent increase in the corporate tax rate.

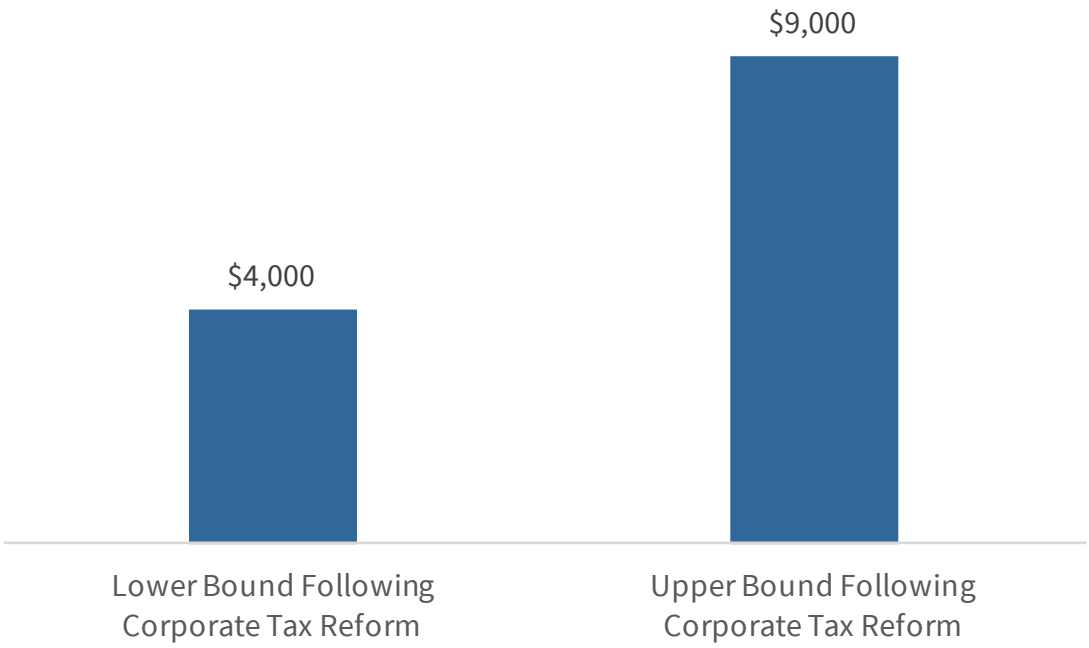
3. Estimating the Effects of a 20 Percent Corporate Tax Rate

The reduced-form estimates of the elasticity of wages with respect to corporate tax rates discussed above suggest U.S. workers would experience substantial wage increases due to a reduction of the corporate tax rate from 35 to 20 percent. (Again, there is no simple way to measure the effects of full expensing on worker wages.) A conservative range of wage increases can be anchored by a lower bound based on cross-state estimation from 2000-2005 in Felix (2009) and an upper bound based on country panel results of Desai et al (2007), reflecting an elasticity of wages with respect to corporate taxes of -0.16 and -0.33, respectively. These wage effects are long-run outcomes and should be thought of as the recurring flow of income after the corporate tax changes have fully taken hold, since the identification relies on cross sectional variation in tax rates.

Using 2016 household income as the baseline, these effects translate into an increase in average household income from $83,143 in 2016 to between $87,520 and $92,222, an increase of $4,000 to $9,000 in wage and salary income alone. (See Figure 2.) For households at the median, the effects would bring household income from $59,039 in 2016 to between $62,147 and $65,486, for a boost of between $3,000 and $7,000.[3] These are the long-run, recurring values measured in 2016 dollars; households would receive these benefits each year once the changes in the corporate tax have been fully absorbed by the economy. As a result, the net present value (NPV) of these household income flows, the exact value of which depends on the speed at which reforms are adopted, will be substantially higher than the annual flow.

[3] These estimates apply the wage growth implied by the papers' point estimates to wage and salary income only. On average, 78 percent of household income in 2016 was wage and salary income; another 11.5 percent was Social Security and other retirement, and 6.4 percent was self-employment income. The remaining 4.5 percent was comprised of various sources, including dividend and other investment income. Results from the Current Population Survey ASEC (2016) indicate households near the median income level have a similar share of wage and salary income.

Figure 2. Estimated Increases in Average Household Income under the Corporate Tax Proposal of the Unified Framework ($2016)



Source: Census Current Population Survey; CEA calculations

Another way of looking at the benefits for U.S. households is to measure changes in the growth rate of real wages. For context, the growth rate of real worker wages in the U.S. has been decidedly slow for several years. In the 8-year span between 2008 and 2016, *median* real household income in the U.S. rose by 0.6 percent per year while the *average* household saw real increases of 1.1 percent per year. To measure the counterfactual rate of income growth without having to project counterfactual wage growth, we assume the income boosts in the previous paragraph (and in Figure 2) phased in over 8 years for a corporate tax reduction that was passed in 2008. This would imply a counterfactual rate of growth of 2.0 percent per year for the median household and 2.4 percent per year for the average household. This is a more than three-fold increase in annual wage growth for the median household and a more than two-fold increase for the average household.

These wage growth estimates are consistent with the evolution of wages in OECD countries. For developed countries, lower corporate tax rates correspond to higher rates of wage growth, as evidenced in Figure 1. Between 2012 and 2016, the average gap in annual wage growth between the highest and lowest corporate tax countries was 2.0 percent per year. At the same time, the difference in the average statutory corporate tax rate between these groups of countries was 14 percent, almost exactly the reduction in the corporate tax rate proposed in the Unified Framework. With additional wage growth of 2.0 percent per year, the

average U.S. household would earn more than $4,000 in additional annual wage and salary income by Year 4 and $9,000 in additional annual wage and salary income by Year 7.[4]

Finally, estimated household income gains from the Unified Framework are consistent with those provided by Auerbach et al (2017) and in Benzell et al (2017) in their evaluation of the House of Representatives' "Better Way" proposal, which also carries a corporate tax rate reduction to 20 percent. Estimated wage effects in these studies are on the order of 8 to 9 percent, implying average household income of more than $5,100 annually above the baseline level. Thus, the impact suggested by the empirical literature is highly consistent with predictions of theoretical models, increasing our confidence that these effects are real.

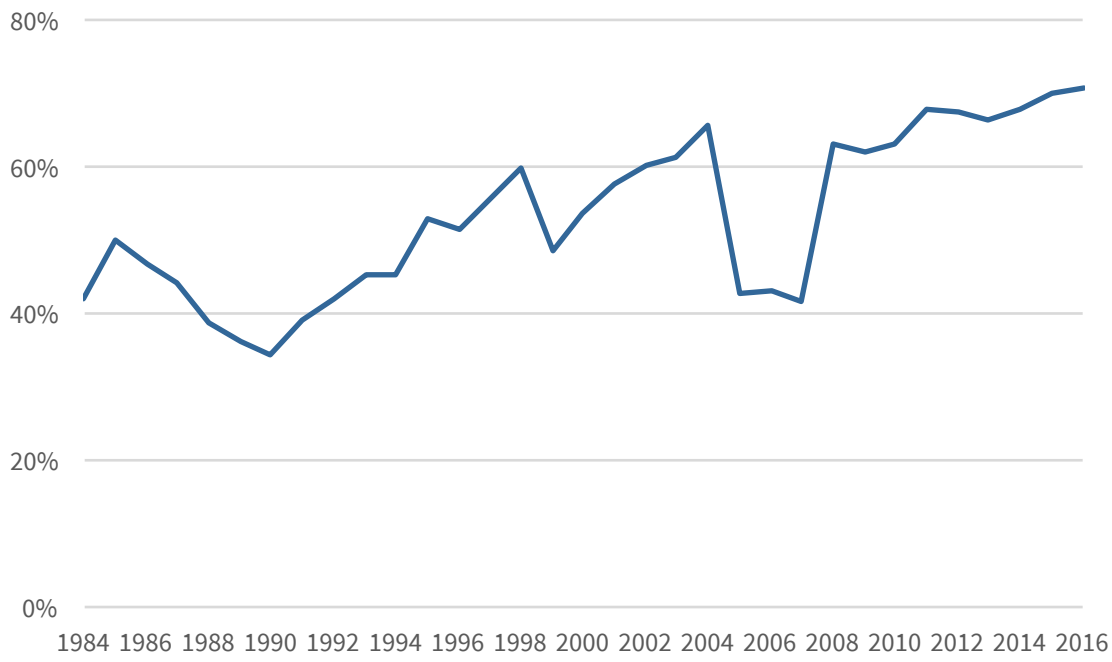
4. The Impacts of Profit Shifting

One increasingly apparent implication of uncompetitive U.S. tax rates is the volume of activity large multinational U.S. firms attribute to foreign affiliates. Figure 3 shows how the share of U.S. multinational profits that appear to originate abroad has changed since 1984. Although there is some variation over time (the large dip in 2005 was due to a temporary tax holiday whereby firms were able to bring back earnings to the U.S. at a lower rate), the share exhibits an overall upward trend. In 1984, the three-year moving average was 42 percent of total foreign profits; by 2016, it had reached 70 percent.

[4] OECD data extending back to 2000 tell a similar story; wage growth differences are 1.8 percent per year between the highest and lowest corporate tax countries between 2000 and 2016 and the average statutory corporate tax rate difference was 16 percent over this period.

Figure 3. Percent of Overseas Profits of U.S.-Based Multinationals Invested Abroad (three-year moving average)

(Percent)



Source: BEA International Data; CEA calculations

Firms' tendency to engage in profit shifting is highly responsive to tax rate differentials. Hines and Rice (1994), using aggregate country-level data from the Bureau of Economic Analysis, estimate a tax semi-elasticity of profit shifting of -2.25, indicating that a 1 percentage point increase in the statutory home corporate tax rate results in 2.25 percent higher profit shifting to lower-tax jurisdictions.[5] Applying Hines and Rice's (1994) findings to a statutory corporate rate reduction of 15 percentage points (from 35 to 20 percent) suggests that reduced profit shifting would result in more than $140 billion of repatriated profit based on 2016 numbers. The assumption that U.S. workers would retain 30 percent of the 2016 profits of U.S. firms earned abroad and not currently repatriated implies a raise for the average U.S. household of up to 1 percent, depending on the share of profits repatriated. (See Kline et al 2017 for an example of workers capturing 29 percent of firm operating surplus.) The trajectory of foreign profits evidenced in Figure 3 indicates the value to U.S. workers of these profit shifts would increase in the future. Household income boosts from this channel may be additive to the

[5] Subsequent papers to Hines and Rice (1994) make use of firm level micro data and estimate smaller semi-elasticities. The consensus semi-elasticity estimate from these studies is 0.8 (see Dharmapala (2014) for a survey), or about one-third the size of the estimate from Hines and Rice. More recently, Clausing (2016) argues that the firm level approach "over controls" for too many firm specific factors and has advocated a return to the aggregate country level approach.

estimated $4,000 in household income discussed in Section 3, as the empirical literature in Section 3 is largely based on countries and time periods with less foreign profit activity, and less existing capital parked overseas as taxes changed.

In general, profits earned abroad evidence the willingness of U.S. firms to invest in production and business operations overseas, at the expense of domestic investment. Reductions in the corporate rate create an opportunity for U.S. firms to increase domestic investment instead. Further, these multinationals are among the class of high-paying employers in the United States. As Krueger and Summers (1987) noted in the early literature on inter-industry wage differentials for seemingly similar workers, "[m]ore profitable industries tend to use some of their rents to hire better quality labor, and share some of their rents with their workers." A more recent literature on intra-industry wage differentials confirms that rent-sharing remains a feature of the U.S. labor market (Barth et al, 2016; Card et al, 2016; Song et al, 2015). Successfully incentivizing these high-paying firms to perform more of their operations in the U.S. is again constructive for U.S. wage growth.

5. Conclusions

In the foregoing analysis, we have pointed to a range of empirical studies demonstrating that reductions in corporate tax rates have substantial effects on wages. By inducing higher capital investment, reductions in corporate tax rates increase the demand for workers and heighten their productivity. Using estimates from the taxes and wages literature, we calculate the change in worker wages resulting from corporate rate reductions espoused in the Unified Framework. Conservative estimates from the literature imply an increase in average household income of $4,000 and more moderate estimates show increases of $9,000. Put simply, capital deepening, which brings additional returns to the owners of capital, brings substantial returns to workers as well.

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