Tax Increases and the Price Level
By Alan D. Viard

Alan D. Viard is a resident scholar at the American Enterprise Institute. He thanks Matthew Jensen, Regan Kuchan, Stephen Oliner, Jason Saving, and Michael Strain for helpful comments. The views expressed in this article are solely the author’s and do not reflect the views of any other person or institution.

Viard explains that tax increases cause the overall price level to rise if they are accommodated by the Federal Reserve. A tax increase is likely to be accommodated only if it significantly reduces the real wages employers are willing to pay, as would be true for the introduction of a large VAT or retail sales tax.

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The policy debate features considerable confusion about what kinds of tax increases may cause the overall price level to rise and the consequences of any such price increases. One view mistakenly holds that any business tax increase results in higher prices because businesses must pass on their costs. A related misconception holds that the rise in prices shifts the burden of the tax increase to consumers as a group. Although these views may seem plausible, they are invalid because they fail to recognize that the overall price level is determined by monetary policy.

I explain in this article that the impact of a tax increase on the price level depends on how the Federal Reserve reacts to the tax. The Federal Reserve’s response is likely to be determined by how the tax increase affects the labor market. The Fed has no reason to raise the price level in response to increases in employee payroll taxes, personal income taxes, and business income taxes. The Fed may increase the price level in response to increases in employer payroll taxes, VATs, and retail sales taxes, but only if the tax increases are large. Any price increase leaves the distribution of the tax increase’s underlying burden largely unchanged, but it has some impact on particular groups.

The only current tax proposals for which a potential increase in the price level is a serious issue are those that would introduce large VATs or retail sales taxes. I offer some thoughts on whether and how the price increases could be avoided if they were undesired, and the implications of any price increases that might occur.

I begin the analysis by considering the potential effects of employee and employer payroll taxes on the overall price level, which offer a simple illustration of the basic principles.

A. Which Payroll Taxes Can Cause Prices to Rise?

I consider a payroll tax that applies throughout the economy. Assume that the typical worker’s marginal product is 100 widgets and that widgets sell for $100 each in the absence of taxes. If labor markets are competitive, workers receive a $10,000 wage in the no-tax economy.

1. Economy with flexible wages.

In a textbook model of an economy with flexible wages, employees and employers can react to changes in the terms of the transaction. For either tax, the allocation of its real economic burden between the employer and the employee depends on the two parties’ relative flexibility. The larger burden is borne by the party that is less able to alter its behavior in response to changes in the terms of the transaction.

For simplicity, assume that workers have no short-run flexibility, meaning that workers are willing to work the same number of hours in the short run, regardless of changes in their take-home pay. Assume that employers have at least some short-run flexibility, so that they will hire fewer workers if hiring becomes more expensive and will hire more workers if hiring becomes cheaper. Under those

1The two taxes can have different effects, however, if other provisions of the tax code treat them differently. For example, because individual income taxes are imposed on wages net of employer payroll taxes and gross of employee payroll taxes, income tax revenues are lower under an employer tax than an employee tax. The revenue difference does not reflect any inherent differences in employee and employer taxes, but simply reflects the income tax system’s artificial distinction between the two taxes. See Congressional Budget Office, “The Role of the 25 Percent Revenue Offset in Estimating the Budgetary Effects of Legislation,” at 4-5 (Jan. 13, 2009).
assumptions, workers bear the full economic burden of a payroll tax in the short run, regardless of whether it is labeled as an employee or employer tax.

First, consider an employee payroll tax imposed at a 10 percent (tax-inclusive) rate. Because the supply of workers is assumed to be fixed in the short run, equilibrium requires that employers be willing to hire the same number of workers. For that to be true, employers’ costs of hiring must remain unchanged at $10,000. Because employers are not liable for any tax, that occurs if the wage paid by employers remains unchanged at $10,000. Workers’ take-home pay falls to $9,000 because the $1,000 tax is paid from the $10,000 wage that they receive from employers.

Next, consider a $1,000 employer payroll tax. Again, because the supply of workers is fixed in the short run, equilibrium requires that employers be willing to hire the same number of workers. So, once again, employers’ cost of hiring must remain unchanged at $10,000. Because employers are liable for the $1,000 tax, hiring costs can remain unchanged only if the wage falls to $9,000. Workers keep the full $9,000 wage because they are not liable for the tax and their take-home pay therefore falls to $9,000.

Under either tax, the real effects are the same, with employers facing a $10,000 cost and workers receiving take-home pay of $9,000. The only difference is that the wage paid by employers to workers remains at $10,000 under the employee tax but falls to $9,000 under the employer tax. That is a difference of form rather than substance, reflecting that the $1,000 tax is paid from the wage paid by the employer to the worker and is paid before the wage payment under the employer tax. In the presence of nominal wage rigidity, however, that difference of form turns out to have potential implications for monetary policy and the overall price level.

2. Nominal wage rigidity and potential accommodation. It has long been recognized that it is more difficult to reduce nominal wages than it is to reduce the real inflation-adjusted value of wages through an increase in the price level. John Maynard Keynes made this point in 1935:

Now ordinary experience tells us, beyond doubt, that a situation where labour stipulates (within limits) for a money-wage rather than a real wage, so far from being a mere possibility, is the normal case. Whilst workers will usually resist a reduction of money-wages, it is not their practice to withdraw their labour whenever there is a rise in the price of wage-goods. It is sometimes said that it would be illogical for labour to resist a reduction of money-wages but not to resist a reduction of real wages...this might not be so illogical as it appears...But, whether logical or illogical, experience shows that this is how labour in fact behaves.

Keynes understood that the best confirmation of the existence of downward nominal wage rigidity comes from the ordinary experiences of ordinary people. The rigidity has also been confirmed by formal data analysis for the United States and other countries. The downward rigidity also has a legal basis since wages cannot be reduced below the legally prescribed minimum wage. Because that constraint affects only a small fraction of the wages paid in the United States, however, it accounts for only a minor portion of the rigidity.

As a working assumption, therefore, suppose that the nominal wage paid by employers cannot be reduced below $10,000. For the employee payroll tax, that doesn’t change anything. As before, the wage paid by the employer to the worker remains at $10,000 and the worker pays the $1,000 tax from that wage. For the employer payroll tax, however, the downward rigidity makes a big difference. Because the wage remains at $10,000, employers’ gross hiring costs rise to $11,111 as employers pay $1,111 tax. The increased hiring costs prompt employers to hire fewer workers. Because the supply of willing workers is unchanged, the hiring reduction translates into higher unemployment.

The increase in unemployment would run counter to the Federal Reserve’s statutory mandate to pursue “maximum employment.” The Fed could avert the incipient rise in unemployment by altering monetary policy to allow a higher overall price level. If the price of widgets rises from $100 to $111.11, employers can continue to hire the same number of workers as they did before the tax. Allowing the price level to rise in response to the tax is referred to as monetary accommodation of the tax.

The price increase is a substitute for the nominal wage reduction that would occur in an economy without the downward rigidity. Even when the real

4Section 6(a)(1) of the Fair Labor Standards Act, 29 U.S.C. section 206(a)(1), sets the federal minimum wage at $7.25 per hour. Some state laws and local ordinances set higher minimum wages.
wage — the nominal wage divided by the price level — paid by employers cannot be lowered through a nominal wage reduction, it can be lowered through an increase in the price level, as Keynes observed.

Monetary accommodation of the 10 percent employer payroll tax causes only a one-time 11.11 percent increase in the price level, not ongoing inflation. After the price increase has taken place, economic equilibrium has been restored and there is no need for further price increases. By the same token, a 10 percent employee payroll tax causes a one-time 10 percent reduction in workers’ nominal take-home pay rather than an ongoing decline in take-home pay.

The results would be different if the wage rigidity took a different form. For example, if workers’ nominal take-home pay was rigid, the employer and employee payroll taxes would both create pressure for monetary accommodation because both taxes reduce workers’ real take-home pay. If employers’ nominal gross hiring costs were rigid, the employer payroll tax would create pressure for monetary accommodation because neither tax reduces employers’ real gross costs. But those are not the types of nominal wage rigidity observed in actual labor markets. Instead, the observed rigidity applies to the nominal wage paid by employers to workers, which is the wage net of employer payroll taxes and gross of employee payroll taxes. Under that kind of rigidity, employer payroll taxes create pressure for monetary accommodation and employee payroll taxes do not. Although employer and employee taxes are equivalent when wages are flexible, they can have different effects when wages are rigid.

Many authors have discussed the possibility that the Federal Reserve will accommodate some tax increases in the presence of downward nominal wage rigidity.6

3. Large and small taxes. In the simple static framework presented above, any increase in the employer payroll tax would likely trigger monetary accommodation. Examining a more realistic description of how the labor market evolves over time reveals that only large increases in the employer payroll tax would need to be accommodated. Two features of labor markets combine to make monetary accommodation of small taxes unnecessary. First, nominal wages are trending upward over time. Second, small temporary deviations of real wages from their equilibrium values need not cause unemployment.

On the first point, recent U.S. experience indicates that nominal wages trend upward at a rate of approximately 3 percent per year.7 A crucial reason for this trend growth is that the Federal Reserve does not seek to keep the price level stable but instead seeks a path of slowly and steadily rising prices. The Fed committee that sets monetary policy recently expressed its view that “inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve’s statutory mandate.”8 The upward trend in prices, reinforced by the upward trend in workers’ productivity, gives rise to an upward trend in nominal wages.

On the second point, because employers do not change the size of their workforce every day, real wages need not be precisely equal to their equilibrium value every day. (Indeed, it is unclear that the labor market is ever fully in equilibrium and it is obviously far away from equilibrium during recessions.) Although the equilibrium value of real wages constantly fluctuates in response to numerous forces that are buffeting the economy, it is common for employers to leave salaries and wage rates fixed for significant periods, often a year or more. The preset wage inevitably deviates from the equilibrium wage at various points throughout the year, but employers, which know that employee turnover is costly, do not hire and fire in response to the daily deviations. Conversely, a worker who

Footnote continued in next column.)


7 The Bureau of Labor Statistics reports that average nominal hourly earnings of production and non-supervisory employees in all private businesses rose from $9.14 in 1987 to $19.77 in 2012, a growth rate of 3.13 percent per year, compounded annually.

There is no reason for tax rate reductions, no matter how large, to change the price level. Tax reductions increase, rather than reduce, short-run market-clearing real wages. That pleasant development can be handled quite smoothly through nominal wage increases; although nominal wages are downwardly rigid, they are upwardly flexible. Consider the implication for an economy that currently has no employer payroll tax, but in which a 10 percent tax was introduced in one fell swoop and then repealed several years later. The economy likely has a higher price level than if the tax had never existed. The introduction of the tax probably caused an increase in the price level, but its subsequent repeal did not cause any offsetting price reduction.

B. Does It Matter Whether Prices Rise?

Although employer and employee payroll taxes would be equivalent in an economy with flexible wages, nominal wage rigidity introduces potential differences between them. No employee payroll tax increases cause increases in the overall price level, but some employer payroll tax increases may do so. Does that difference matter? If an employer payroll tax is accommodated by the Federal Reserve and causes an increase in the overall price level, does that make the tax any worse (or better) than an employee payroll tax that leaves the price level unchanged?

1. No ‘shifting to consumers.’ A common fallacy holds that an increase in the price level from a tax means that the tax burden has been shifted to consumers as a whole. That view reflects a profound misunderstanding of nominal and real magnitudes. The price level change merely alters the units in which incomes are measured and does not impose a burden on consumers as a whole.

As a starting point, consider the most basic question about the incidence of a payroll tax, the division of its burden between employers and workers. That division is the same under an accommodated employer payroll tax as under an employee payroll tax.

Under the current assumption that workers have no flexibility, for example, the entire burden of the payroll tax falls on workers in both cases. For the employee payroll tax, workers bear the burden through a reduction in nominal take-home pay. For an accommodated employer payroll tax, workers bear the burden through a price increase that reduces the real value of their unchanged nominal take-home pay.

For simplicity, compare a 10 percent employer payroll tax that is fully accommodated with a 10 percent employee payroll tax. Although prices are 11.11 percent higher under the accommodated employer payroll tax, employers’ nominal hiring costs and workers’ nominal take-home pays are also 11.11 percent higher on January 1 than on December 31, even though the equilibrium value of her real wage did not jump 3 percent overnight.

Employer payroll tax rate increases of 1 or 2 percentage points can be handled by simply slowing the rate of increase in nominal wages at some point before or after the tax increase. An anticipated tax increase during the year may be reflected in a smaller pay raise at the beginning of the year, and an unanticipated tax increase during the year may be reflected in a smaller pay raise at the end of the year. Although those adjustments do not keep wages at their equilibrium value at every point throughout the year, they keep wages close enough to equilibrium for labor markets to function under normal economic circumstances. Unlike outright nominal wage reductions, smaller nominal wage increases are not precluded by the downward rigidity. Small tax increases therefore do not need to be accommodated, and the Federal Reserve does not need to deviate from its plan to keep the price level rising roughly 2 percent per year.

The logic presented above also suggests that large tax increases may be partially, rather than fully, accommodated by the Federal Reserve. If the labor market can adjust to a tax increase of 2 percentage points, it can adjust to a 10 percentage point tax increase if the Fed accommodates only four-fifths of the tax increase.

The differential effects of small and large tax increases imply that the price level in an economy with a 10 percent employer payroll tax need not be 11.11 percent higher than it would have been if no employer payroll tax had ever existed. The likely extent of any price increase depends on the historical path of the tax rate. For example, if the tax rate was raised from 0 to 10 percent in a series of 1 percentage point increments, each separated from the other by several years, the tax has likely caused no change in the price level because none of the tax increases would have required monetary accommodation. (As discussed below, the history of the employer payroll tax in the United States resembles this scenario.) However, if the 10 percent tax was introduced in one fell swoop, most of the tax was probably accommodated.

Another wrinkle is introduced if the historical path of the tax rate includes any rate reductions. There is no reason for tax rate reductions, no matter

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9James Tobin, “Inflation and Unemployment,” 62 Am. Econ. Rev. 1 (Mar. 1972), argued that a low positive inflation rate was better than zero inflation because positive inflation increased the trend growth of nominal wages, thereby allowing greater room for real wage reductions.
percent higher. The increase in the price level simply changes the units in which workers’ and employers’ incomes are measured, without shifting the burden between the two groups.

The equivalence continues to hold even if workers have some short-run flexibility. Suppose, for example, that the increase in the number of willing workers caused by a 1 percent increase in take-home pay is half as large as the reduction in the number of workers employers are willing to hire caused by a 1 percent increase in hiring costs. Then, workers bear two-thirds of the payroll tax burden and employers bear one-third. That division is the same for an employee payroll tax and an accommodated employer payroll tax. Greater worker flexibility may make accommodation less likely, however, because it causes the short-run market-clearing level of real wages to fall by a smaller amount; as discussed above, smaller declines in real wages need not be accommodated.

As a starting point, consider an economy in which the only nominal rigidity is the downward wage rigidity; all other nominal incomes are completely flexible. Then, the nominal income of each individual is 11.11 percent higher under the fully accommodated employer payroll tax than it is under the employee payroll tax, offsetting the effects of the 11.11 percent higher price level. In that case, the real burden of the accommodated employer payroll tax is distributed in exactly the same way as the burden of the employee payroll tax. It is then meaningless to say that the employee payroll tax is borne by workers while the accommodated employer payroll tax is shifted to consumers. The price increase imposes no burden on any consumers because each consumer is compensated for the higher price level by a higher nominal income.

2. Other nominal rigidities. The analysis is slightly more complicated when other nominal rigidities exist, as they do in the U.S. economy. If the nominal values of some types of income cannot rise in proportion to the price increase, the recipients of those incomes bear burdens from an accommodated employer payroll tax that they do not bear from an employee payroll tax. On the other hand, the payers of those incomes enjoy offsetting gains from the accommodated employer payroll tax that they do not enjoy from the employee payroll tax. The price increase therefore changes the distribution of the tax burden to some extent.

Even in this case, however, the price increase does not impose a burden on consumers in general. The price increase still leaves the division of the tax burden between employers and workers unchanged, but it also creates burdens and offsetting gains for recipients and payers of selected types of income. The most important nominal rigidities outside the labor market concern debt contracts and fixed nominal benefit payments.

For reasons that are not entirely clear, nearly all debt contracts in the United States feature principal and interest payments that are not adjusted for inflation. As a result, an increase in the overall price level reduces the real value of the payments, which imposes burdens on creditors and generates offsetting gains for debtors. The impacts arise in three different contexts. First, the price increase burdens bondholders and other creditors of businesses, with offsetting gains for equity holders in their capacity as the businesses’ residual claimants. Second, there are effects on households and financial institutions that borrow from and lend to each other. For example, holders of checking and savings accounts are burdened while banks enjoy offsetting gains and banks that have made loans are burdened while their borrowers enjoy offsetting gains. Third, the price increase burdens the holders of government debt, with offsetting gains for the government, which presumably flow through in the form of lower taxes and increased services and benefits for the public.

Some public and private benefits are fixed in nominal terms. Most alimony and child support payments, many pension benefits, and most states’ Temporary Assistance to Needy Families (TANF) benefits are not automatically adjusted for inflation. The price increase burdens the recipients of the benefits, with offsetting gains for the payers; the payers of pension benefits are the equity holders of the business sponsoring the pension plan, and the payers of TANF benefits are the taxpayers and public services recipients of the federal and state governments. The burdens and the offsetting gains are negated, though, if family courts, pension plan sponsors, or state legislatures adopt discretionary benefit increases in response to the price increase.

In contrast, other benefit programs are inflation-indexed, including Social Security, Supplemental Security Income (SSI), veterans’ benefits, and Supplemental Nutrition Assistance Program (SNAP) benefits (commonly known as food stamps). Although an accommodated employer payroll tax causes recipients to pay higher prices, they automatically receive offsetting nominal benefit increases under the programs’ cost of living adjustments. The lack of impact on the recipients’ consumption confirms that consumers as a group do not bear the burden of an accommodated employer payroll tax.10

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10One nominal rigidity that affects recipients is the lag in the programs’ COLAs. Under 42 U.S.C. section 415(i), the nominal benefits received by Social Security recipients during a calendar

(Footnote continued on next page.)
year are proportional to the value of the consumer price index in July through September of the preceding year; the same is true for SSI recipients under 42 U.S.C. section 1382(a) and for veterans’ benefit recipients under 38 U.S.C. section 5121. Under 7 U.S.C. section 2012(u)(4), the nominal benefits received by SNAP recipients throughout a fiscal year (October through September) are based on food costs in June, four months before the beginning of the fiscal year. The adjustment lag causes the recipients to bear temporary burdens, with offsetting temporary gains for the taxpayers and service recipients of the governments paying the benefits.

As a technical matter, distributional analyses should properly account for the effect of accommodation. As discussed in the red book, supra note 6, at 9-10, 37, 51-59; Burman et al., supra note 6; and Toder et al., supra note 6, at 4-5, 9-10, 17-19, a distributional analysis can attribute the burden of a tax increase to the year in which the taxpayer received the income that was lowered by the tax increase or to the year in which the taxpayer consumed that income. Using the consumption-timing approach makes a tax look more regressive (or less progressive) in analyses based on annual data. A distributional analysis should not switch from the income-timing approach to the consumption-timing approach merely because a tax is structured in a particular way (for example, as a VAT rather than as a flat tax or X tax) or because it is accommodated. The distribution of the tax burden reported for an accommodated tax should be the same as the distribution reported for a similar tax that is not accommodated, except for the effects on debt and fixed nominal benefits. Although neither approach is conceptually perfect, the income-timing approach is preferable to the consumption-timing approach because it is easier to implement it consistently, as explained by the red book, supra note 6, at 9-10, 38-59; and Toder et al., supra note 6, at 17-19.

3. Little change in overall burden. The magnitude of the burden of an accommodated employer payroll tax is also similar to that of an employee payroll tax. The size of the burden on employers and workers is the same. Although the former tax imposes additional burdens on creditors and some benefit recipients, it offers offsetting gains for debtors and benefit payers.

The price increase is not a second tax burden piled on top of the direct burden of the tax payments. It is merely a means through which the underlying tax burden is manifested. Nevertheless, the price increase may impose additional costs on the economy. The Federal Reserve has been given a mandate to keep inflation low and stable because it is widely understood that price fluctuations can damage the economy. For example, price changes can make it more difficult for individuals and businesses to plan and to make economic decisions.

C. Other Taxes

Which taxes, other than employer payroll taxes, reduce the short-run market-clearing level of real wages and therefore have the potential to trigger monetary accommodation?

Many important taxes, including personal income taxes, do not have that effect. Personal income taxes on wages are similar to employer payroll taxes because the taxes are paid out of the wages received by workers. Personal income taxes on interest income, dividends, and capital gains have no effect on the short-run market-clearing level of real wages, and the same is true for estate and gift taxes. Similar conclusions hold for personal expenditure taxes, sometimes called consumed income taxes. Personal expenditure taxes are similar to personal income taxes, except that taxpayers deduct their saving, a difference that has no effect on the short-run market-clearing level of real wages.

A VAT, however, reduces the short-run market-clearing level of real wages because businesses are taxed on the value of their workers’ output without being allowed to deduct wages paid. A VAT imposed at a 10 percent (tax-inclusive) rate therefore reduces the real value of the worker’s labor to the employer by 10 percent, just as the 10 percent employer payroll tax did. If the Federal Reserve does not accommodate the VAT and the price of widgets remains at $100, the employer clears only $90 for each widget that is sold, with the other $10 paid in tax. Because the 100 widgets produced by the worker are now worth only $9,000 to the employer, the market-clearing wage falls to $9,000. If the nominal wage remains at $10,000 because of downward rigidity, hiring is reduced and unemployment rises. The Fed then has the same potential incentive to reduce unemployment through monetary accommodation as it had with the employer payroll tax. As with the payroll tax, accommodation is likely to occur only for large tax increases.
The analysis is similar for a retail sales tax, which simply compresses the VAT into a single levy collected at the retail stage. Retail sales taxes therefore may prompt monetary accommodation, although accommodation is again more likely for large tax increases than for small ones. In the absence of a federal sales tax, the nationwide effects of an increase in a state’s sales tax generally would be too small to warrant accommodation. Excise taxes, which can be viewed as selective retail sales taxes, also reduce the short-run market-clearing level of real wages, although the economy-wide effects of an excise tax would generally be too small to trigger monetary accommodation.

Under VATs, retail sales taxes, and excise taxes, employers are taxed on the output produced by their workers without being allowed to deduct their wage payments. In contrast, employers are normally allowed to deduct wage payments under business income taxes, including corporate income taxes and the individual income and self-employment taxes imposed on the profits of flow-through businesses. The allowance of a wage deduction eliminates any reduction in the short-run market-clearing level of real wages.

Consider a 10 percent tax on the widget producer’s business income and assume that the Federal Reserve takes no action, leaving the price of widgets at $100. The business income tax reduces each widget’s net value to the employer from $100 to $90, just as the VAT and the retail sales tax did, because 10 percent of the widget sale proceeds are taxed away. Like the VAT and the sales tax, the business income tax therefore reduces the amount that employers are willing to pay out of pocket for each worker from $10,000 to $9,000. Nevertheless, the market-clearing wage remains unchanged at $10,000. Because the $10,000 wage payment can be deducted against the 10 percent business income tax to yield a $1,000 tax savings, the out-of-pocket cost of the wage payment is only $9,000.

The above analysis of business income taxes also applies to the business cash flow taxes that are imposed as part of the Hall-Rabushka flat tax and the Bradford X tax because those taxes also allow businesses to deduct their wage payments to workers. Business cash flow taxes are similar to business income taxes, except that businesses are allowed to immediately expense, rather than depreciate, purchases of capital, a difference that has no impact on the short-run market-clearing level of real wages.

In some cases, either business income or business cash flow taxes may disallow the normal deduction for employee compensation payments. For example, employers’ costs of providing health insurance and other fringe benefits might be made nondeductible, either under the income tax or under a Bradford X tax, as an administratively simple offset for the benefits’ tax-free status at the employee level. That policy would reduce the short-run market-clearing level of real wages (an effect that would not arise from the taxation of fringe benefits to employees), but probably would not be necessary for a flat tax or X tax.

13In its pure form, a retail sales tax applies only to the sale of consumer products to households. When a business sells capital goods and intermediate inputs to another business, there is no tax on the selling business (and also no deduction or credit for the buying business). Nevertheless, the retail sales tax reduces the market-clearing real wage paid to workers who produce capital goods and intermediate inputs, as well as those who produce consumer products. Because businesses selling to consumers are taxed on the value of the output attributable to capital and intermediate inputs with no deduction for the costs of purchasing those items, the sales tax reduces the amount those businesses are willing to pay for capital and intermediate inputs. The price of capital and intermediate inputs therefore falls, relative to the price of consumer products, which lowers the market-clearing wages for workers who produce capital and intermediate inputs.

14Because retail sales taxes are generally stated separately from the posted price, the increase in tax-inclusive prices resulting from monetary accommodation may be simpler to implement. Businesses need not increase their posted prices, as they would under an employer payroll tax or under a VAT that is included in posted prices. Instead, businesses can leave their posted prices unchanged, with the retail sales tax being added to the posted prices at the cash register. The Federal Reserve may be more willing to accommodate a tax when the price increase does not show up in posted prices.

15Economic theory and statistical evidence suggests that business income taxes are likely to reduce the long-run market-clearing level of real wages, relative to what it otherwise would have been, by reducing capital accumulation and thereby lowering the productivity of workers. Indeed, a significant portion of those taxes’ long-run burden may be shifted to workers through lower real wages. For a recent discussion, see Matthew H. Jensen and Aparna Mathur, “Corporate Tax Burden on Labor: Theory and Evidence,” Tax Notes, June 6, 2011, p. 1083. Because those effects occur gradually over an extended period, however, they are likely to require only smaller increases in nominal wages rather than outright reductions in nominal wages, similar to the case considered in the text of a 10 percent employer payroll tax that was gradually introduced in a series of 1 percentage point increments.

16Gravelle, supra note 6, at 1522; Bradford, supra note 6, at 137; Hall, supra note 6, at 77-78; Zodrow, supra note 6, at 248; Burman et al., supra note 6, at 2226; and Carroll and Viard, supra note 6, at 169, observed that monetary accommodation is unnecessary for a flat tax or X tax.

17A VAT is equivalent to an employer payroll tax plus a business cash flow tax. Because the business cash flow tax does not reduce market-clearing real wages, the VAT has the same real-wage impact as an employer payroll tax. A flat tax or X tax is equivalent to an employee payroll tax (with an exemption and possibly graduated tax rates) plus a business cash flow tax. Because the employee payroll tax and the business cash flow tax do not change short-run market-clearing real wages, the flat tax or X tax does not do so.
large enough to require monetary accommodation. The scattered provisions in the current tax code that deny deductions for selected types of employee compensation are clearly far too small to require accommodation.\(^\text{18}\) Similarly, scaling back or repealing tax credits for payments of employee compensation reduces the short-run market-clearing level of real wages, but the employment tax credits now in place are far too small for their repeal to require monetary accommodation.\(^\text{19}\)

Excise taxes on hiring or on the payment of employee compensation also reduce the short-run market-clearing level of real wages. Examples of those taxes include the tax penalty of up to $3,000 per employee per year on large employers that do not provide affordable health insurance, which section 4980H will impose when its enforcement begins in 2015,\(^\text{20}\) and the 40 percent excise tax on high-cost employer-provided health insurance policies that section 4980I will impose when it takes effect in 2018. However, those taxes are probably too small to require monetary accommodation.

A tax’s potential impact on the overall price level depends on whether it reduces the short-run market-clearing level of real wages, not on whether it is a consumption tax. Although the personal expenditure tax, the flat tax, and the X tax are consumption taxes, they lack the potential to increase the overall price level because they do not reduce the short-run market-clearing level of real wages.

A tax’s potential impact on the overall price level also does not depend on the presence or absence of a border adjustment that imposes tax on imports and rebates tax on exports. To the extent that foreign currencies float against the U.S. dollar, exchange rate adjustments enable the Federal Reserve to freely choose whether to accommodate a tax increase, with or without a border adjustment. A border-adjusted tax causes the dollar price of goods sold in the United States to rise relative to the dollar price of goods sold abroad. If the Fed does not accommodate a border-adjusted tax increase, leaving the U.S. price level unchanged, the dollar appreciates against foreign currencies, thereby reducing the dollar price of goods sold abroad. A non-border-adjusted tax leaves the dollar price of goods sold in the United States unchanged relative to the dollar price of goods sold abroad. If the Fed accommodates a non-border-adjusted tax increase, causing the U.S. price level to rise, the dollar depreciates against foreign currencies, thereby increasing the dollar price of goods sold in those countries. The value of the dollar need not change in response to a border-adjusted tax increase that is accommodated or a non-border-adjusted tax increase that is not accommodated.\(^\text{21}\)

Not all taxes collected from businesses have the potential to increase the overall price level. As discussed above, business income taxes generally lack that potential. To be sure, an accounting identity guarantees that any business tax must increase the prices charged by businesses, reduce other nominal business costs, or reduce nominal after-tax profits. But monetary policy determines which of those responses occur. Because business taxes that do not reduce the short-run market-clearing level of real wages can be financed through reductions in other nominal business costs or nominal after-tax profits, there is no reason for monetary policy to allow price increases. For example, business income taxes reduce nominal after-tax profits, rather than increase prices, in the short run.\(^\text{22}\)

D. Policy Implications

1. Employer versus employee payroll taxes. In principle, the above analysis may have implications for the choice between employer and employee payroll taxes. In practice, however, those implications are generally irrelevant.

The employer and employee payroll taxes earmarked for Social Security have always featured the same tax rates, now set forth in sections 3101(a) and 3121(e).\(^\text{23}\)

\(^{18}\)Examples include section 162(m)’s restrictions on the deductibility of executive compensation payments, section 274(n)’s denial of deductibility for half of meal and entertainment expenses, and section 280G’s restrictions on the deductibility of golden parachute payments.

\(^{19}\)Examples include the section 45A Indian employment credit, the section 51 work opportunity credit, and the section 1396 empowerment zone employment credit. All three credits expired on December 31, 2013, but they will likely be retroactively reinstated and extended.


\(^{21}\)The analysis in the text assumes that foreign countries do not change their price levels (as expressed in their own currencies) in response to changes in U.S. tax policy. Countries that peg their currencies against the dollar do not have that freedom. To maintain their pegs, the countries must increase their price levels if the United States adopts a border-adjusted tax increase that is not accommodated by the Federal Reserve, and they must reduce their price levels if the United States adopts a non-border-adjusted tax increase that is accommodated. The countries do not need to change their price levels in response to a border-adjusted tax increase that is accommodated or a non-border-adjusted tax increase that is not accommodated. Because the Fed exists to serve the American people rather than the citizens of the pegging countries, it will likely give little or no weight to those effects in deciding which tax increases to accommodate.

\(^{22}\)No rigidity prevents nominal after-tax profits from falling; profits rise and fall all the time in response to various economic developments.
3111(a). The same was true through 2012 for the employer and employee payroll taxes earmarked for Medicare Part A, as reflected in sections 3101(b) and 3111(b). Starting in 2013, however, section 3101(b)(2) imposes an additional 0.9 percent employee Medicare payroll tax on high-paid workers, with no corresponding increase in employer Medicare payroll tax.23

Economists have generally deemphasized the division between employee and employer taxes because the two taxes are identical in an economy with flexible wages. As discussed above, however, employer payroll taxes may cause an increase in the price level in the presence of nominal wage rigidity. In cases in which an employer tax will likely be accommodated, it should be viewed as less desirable than the employee tax.

The purpose of the payroll tax is to impose a tax burden on wages. There is therefore no reason for a payroll tax to impose burdens on creditors and recipients of fixed nominal benefits or to provide offsetting gains to debtors and payers of fixed nominal benefits. Also, the economy might be harmed by the deviation from price stability. Accordingly, if Congress decides to increase payroll taxes by many percentage points in one fell swoop, it probably should impose most or all of the tax increase on the employee side, to avert the monetary accommodation that may be triggered by an increase in the employer tax.

In practice, however, payroll tax increases have been too small to require monetary accommodation. The Social Security-Medicare employer payroll tax rate has been increased 21 times, ultimately rising from 1 percent in 1937 to 7.65 percent today. The largest increase was 0.65 percentage points, from 5.2 to 5.85 percent, on January 1, 1973, and the second largest increase was 0.575 percentage point, from 3.625 to 4.2 percent, on January 1, 1966; all the other increases were 0.5 percentage point or less.24 It seems unlikely that any payroll tax increases were accommodated.

The effects of monetary accommodation can therefore generally be ignored in choosing between employer and employee payroll taxes. Nevertheless, as discussed below, a shift between the two
taxes can be used to avert the accommodation that might otherwise occur in response to other tax changes.

Although a variety of tax increases could be accommodated, nearly all of them are too small to actually require accommodation. There is one class of tax reform proposals, however, for which accommodation would be a real possibility.

2. Potential accommodation of a federal VAT. Several recent proposals, from different points on the ideological spectrum, call for the introduction of a significant VAT or retail sales tax. The Bipartisan Policy Center proposed a 6.5 percent VAT in its November 2010 deficit reduction plan.25 House Ways and Means Committee member Paul Ryan, R-Wis., proposed an 8.5 percent VAT in 2010.26 Michael Graetz of Columbia Law School proposes a VAT with a 12.9 percent tax-exclusive rate.27 The Free Congress Foundation proposed a VAT with a 15 percent tax-inclusive rate as part of its growth code tax plan.28 During the 2012 Republican presidential primary, Herman Cain proposed the combination of a 9 percent VAT and a 9 percent retail sales tax. The FairTax plan calls for a retail sales tax with a 23 percent tax-inclusive rate. At these high rates, VAT or sales tax may be accommodated.29

In some of the plans, the proposed VAT or sales tax would replace part or all of the individual and

26Section 602(a) of H.R. 4529, as introduced by Ryan in the 111th Congress on Jan. 27, 2010.
29The experience in countries with VATs is mixed. Robert Carroll et al., “The Macroeconomic Effects of an Add-On Value Added Tax,” EY report prepared for the National Retail Federation, at 36-38 (Oct. 2010), found that central banks have often accommodated increases in VAT tax rates. Although central banks have not always accommodated introductions of new VATs, those VATs were often accompanied by offsetting reductions of other taxes that also reduced short-run market-clearing real wages, making accommodation unnecessary. Alan A. Tait, Value Added Tax: International Practice and Problem, at 194-212 (1998), found mixed evidence on whether introductions of VATs and rate increases have been accommodated in various countries.
corporate income taxes, payroll and self-employment taxes, and estate and gift taxes. It is sometimes argued that the removal or reduction of those other taxes would reduce the price level, offsetting part or all of the price increase that might arise from the VAT or sales tax. As the above analysis makes clear, this argument is largely wrong. Reducing or eliminating those other taxes, except the employer payroll tax, would not change the short-run market-clearing level of real wages. Accordingly, reducing or eliminating those taxes, except the employer payroll tax, would not reduce the pressure for monetary accommodation.

Plans with high tax rates would require large nominal wage reductions or large increases in the price level. The effects are particularly dramatic for the FairTax plan because its sales tax rate is so high. Consider a worker who produces $10,765 of output and currently receives a $10,000 wage, net of $765 employer payroll tax. After the employer payroll tax was repealed and the 23 percent sales tax was instituted, the market-clearing wage would fall to $8,289, net of $2,476 sales tax, if the price level was unchanged. To fully avert the 17.11 percent nominal wage decline, the price level (inclusive of sales tax) would need to rise by 20.64 percent, which would increase the nominal before-tax value of the worker’s output from $10,765 to $12,987 and allow the employer to pay the worker a $10,000 wage, net of $2,987 sales tax.

3. Could accommodation be averted? If large price increases were not desired, would it be possible to avert the accommodation of a large VAT or sales tax while avoiding the unemployment that accommodation is designed to prevent? Three potential strategies should be considered.

One strategy would attempt to erode the downward nominal wage rigidity. The president and other public officials could urge employers and workers to accept nominal wage reductions and could lower the legally prescribed minimum wage. They could explain that nominal wage reductions would be no more harmful than the real wage reductions that would occur through accommodation. They could also explain that the harm to workers from either type of wage reduction would be offset to the extent that workers can keep more of their paychecks through any reductions in individual income taxes and employee payroll taxes that might accompany the introduction of the VAT or sales tax.

It is far from clear that the strategy would drive down nominal wages by the required amount. And if there was any uncertainty about whether nominal wages would fall, prudence would require the Federal Reserve to err on the side of accommodation. If the Fed accommodated when it did not need to do so, it would merely allow an unnecessary one-time price rise, which would do little harm to the Fed’s credibility because it would clearly be attributable to a unique tax change. But if the Fed failed to accommodate when it needed to do so, the economy would plunge into recession. On the whole, attempting to erode nominal wage rigidity is not a promising strategy.

Another strategy would gradually phase in the tax. As discussed above, tax increases of only a few percentage points do not need to be accommodated. A phase-in would be a promising strategy for VATs or sales taxes that were not too large. For example, the Bipartisan Policy Center’s plan would introduce its VAT at a 3 percent rate in its first year, with the final 6.5 percent rate taking effect in the second year, which would reduce or eliminate the need for monetary accommodation. Most of the other proposals mentioned above do not provide for phase-ins, but they could be modified to do so if and when they were adopted. However, plans with very high tax rates, such as the FairTax plan, could not fully avoid accommodation unless they were phased in over unrealistically long intervals.

A third strategy has received less attention. When the VAT or sales tax is introduced, the employer payroll tax could be reduced with an offsetting increase in the employee payroll tax. Moving the payroll tax to the employee level would also have the advantage of making workers’ tax burdens more transparent. If the employer payroll tax reduction was the same size as the new VAT or sales tax, there would be no net reduction in the short-run market-clearing level of real wages and therefore no need for monetary accommodation. That outcome could be achieved for VATs or sales taxes that were no larger than the current employer payroll tax. For larger VATs or sales taxes, even the complete elimination of the employer payroll tax would not be a full solution, although it could reduce the size of the potential price increase.

30 For example, Americans for Fair Taxation, the organization that developed the FairTax plan, asserts that “when the FairTax removes income, capital gains, payroll, and estate and gift taxes, the pre-FairTax prices of these goods and services will fall.” Available at http://www.fairtax.org/site/PageServer?pagename=FAQs. Section 2(a)(9) of H.R. 25, the FairTax bill, asserts that the income tax “hides the true cost of government by embedding taxes in the costs of everything Americans buy.”

31 For a brief discussion, see Carroll and Viard, supra note 6, at 168-169.

32 In theory, the strategy need not stop when the employer payroll tax has been eliminated, because an employer payroll subsidy could be introduced. For example, the 7.65 percent payroll tax to the employee level would also have the advantage of making workers’ tax burdens more transparent.
would be unavailable for plans that already call for the elimination of the employer payroll tax, such as the FairTax plan.

The second and third strategies could avert accommodation of VATs or sales taxes with moderately high rates. For very large taxes, however, the strategies could, at most, reduce the size of the accommodation. In the face of this uncertainty, budgetary and distributional analyses have adopted different assumptions about whether a VAT would be accommodated.33

I now turn to another question: To the extent that accommodation can be prevented, should it be?

4. Implications of accommodation. In the context of an employer payroll tax, the reduction in the real value of debt and the corresponding increase in the real value of equity caused by accommodation make little sense, as discussed above. The payroll tax is intended to tax workers, not to provide gains to holders of some financial assets and impose burdens on holders of other assets. In the context of a sales tax or VAT, however, the burden on debt holders and gain for equity holders caused by accommodation might be viewed as beneficial.

A consumption tax imposes a transition burden on existing capital. For example, a VAT or sales tax with a 20 percent tax-inclusive rate reduces the value of existing business capital by 20 percent because the future output produced by the capital will be subject to the tax. If the VAT or sales tax is not accommodated, the entire 20 percent reduction in the value of capital is borne by equity holders in their capacities as residual claimants. If debt is equal to one-third of the capital stock, the 20 percent decline in the value of capital reduces the value of equity by 30 percent. In that case, equity holders suffer a 30 percent loss of wealth while debt holders escape unscathed.34 The picture changes dramatically if the VAT or sales tax is fully accommodated. The real value of debt then declines by 20 percent, which trims the decline in the real value of equity to 20 percent. The transition burden is spread evenly across all claimants of the capital stock, which may be viewed as a fairer outcome. Accommodation of a payroll tax, which imposes no overall burden on capital, capriciously transfers wealth from debt holders to equity holders, but accommodation of a VAT or sales tax, which imposes an initial burden on equity holders, helps spread that burden more evenly.35

Nevertheless, it can be argued that equity holders should bear a disproportionate share of the transition burden imposed by a consumption tax and that full accommodation is therefore undesirable. Buyers of debt instruments expect a relatively safe return, while buyers of business equity agree to bear (and are presumably compensated by the market for bearing) the risks of business operations. A company’s equity holders bear the loss when the company’s costs rise or demand for its products weakens, just as they reap the gains when costs fall or demand strengthens. One could argue that the equity holders should also bear the risk that the company’s capital will be devalued by the adoption of a consumption tax. Also, if the consumption tax is used to replace existing taxes on business income, equity holders, not debt holders, receive the gains from the removal of business income taxes.36 It seems appropriate that they should bear much of the burden of the replacement tax.

It is debatable, therefore, whether accommodation results in a more or less fair allocation of the transition burden. It is also not immediately clear how accommodation affects, on balance, the regressivity of a VAT or sales tax. Accommodation imposes burdens on groups as poor as TANF recipients and as affluent as bond holders while providing offsetting gains to a wide range of groups, including taxpayers, recipients of public services, and stockholders.

Some evidence suggests that accommodation, on balance, increases regressivity. The Joint Committee on Taxation has stated that “the most important determinant of the burden on the poor [from a VAT] is whether prices rise or [nominal] factor returns fall. They are much worse off if prices rise.” For an illustrative VAT proposal, the JCT found that accommodation would increase the burden on households with annual incomes less than $10,000 (equivalent to more than $15,000 today) and reduce

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33Bradford, supra note 6, at 135-136, suggested that accommodation of a consumption tax may be desirable because it spreads the transition burden more broadly and also may avert business bankruptcies.

34For discussion of the gains to equity holders from the removal of business income taxes and dividend taxes, see Carroll and Viard, supra note 6, at 118-124.
the burden on all other income groups. Another analysis found that the shifting of the tax burden from equity holders to debt holders that occurs under accommodation increases the burden on the bottom three quintiles of the income distribution and lowers the burden on the top quintile.

Of course, the impact of accommodation varies across different types of households. Retirees holding bank accounts and other fixed nominal assets and drawing payments from defined benefit pension plans tend to be harmed, and homeowners with large outstanding mortgages tend to benefit. The economically vulnerable families who rely on TANF are especially hard hit.

Most proposals that call for a VAT or a sales tax include some form of low-income relief to offset the regressivity of the tax. The increased regressivity caused by accommodation could be addressed by making the low-income relief more generous and by targeting it to the households that would be most affected (for example, by providing additional funding for TANF).

For plans with very large VATs or sales taxes, such as the FairTax plan, significant economic disruptions, either from nominal wage reductions or price level increases, are unavoidable. The disruptions must be considered in deciding whether to adopt those plans.

E. Conclusion

An examination of how monetary policy determines prices reveals that most tax increases, including most business tax increases, do not show up in a higher overall price level. Large VATs or sales taxes may prompt the Federal Reserve to raise the price level because the nominal wage reductions that would otherwise be needed to restore equilibrium in the labor market may be difficult or impossible. The potential impact of a VAT on the price level needs to be examined because the adoption of a VAT is likely to receive serious consideration in the next few decades.

37Red book, supra note 6, at 54-56 (based on a comparison of the (p,Y) and (w,Y) methods in Table 3). Gravelle, supra note 6, at 1524, also suggested that accommodation makes a consumption tax more regressive.

38Burman et al., supra note 6, at 228 (based on a comparison of the “wages and equity” and “wages and all capital” allocations in Table 1).