



Tax Buyouts

*Raising government revenue
without distorting work decisions¹*

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Introduction

Little is certain about the United States' fiscal future beyond this: Given foreseeable trends in economic growth, future tax revenues will not cover forecasted mandatory and discretionary expenditures; therefore, a large and growing budget deficit is highly probable.² While policymakers may be able to enact modest spending cutbacks, they will undoubtedly need to consider options for raising taxes as well.

Unfortunately, when they do so, they will face a further unpleasant economic reality: Taxes often introduce distortions and inefficiencies that depress economic activity. Indeed, taxes generally undercut the incentive to generate the income on which they are levied.

This economic policy paper addresses that quandary by offering an option with a number of appealing features:

- It allows governments to raise revenues without the labor-discouraging distortion common to income taxes.
- Its elimination of economic distortion contributes to economic activity and well-being.
- Because it allows citizens free choice to opt for an alternative tax arrangement, it is politically viable.

To be specific, this paper suggests that a tax buyout program could achieve the goal of raising revenues without distorting work incentives and thereby diminishing economic activity. The buyout is a contract between the government and individual citizens whereby each person has the option in each tax period to pay a fixed price in exchange for a set

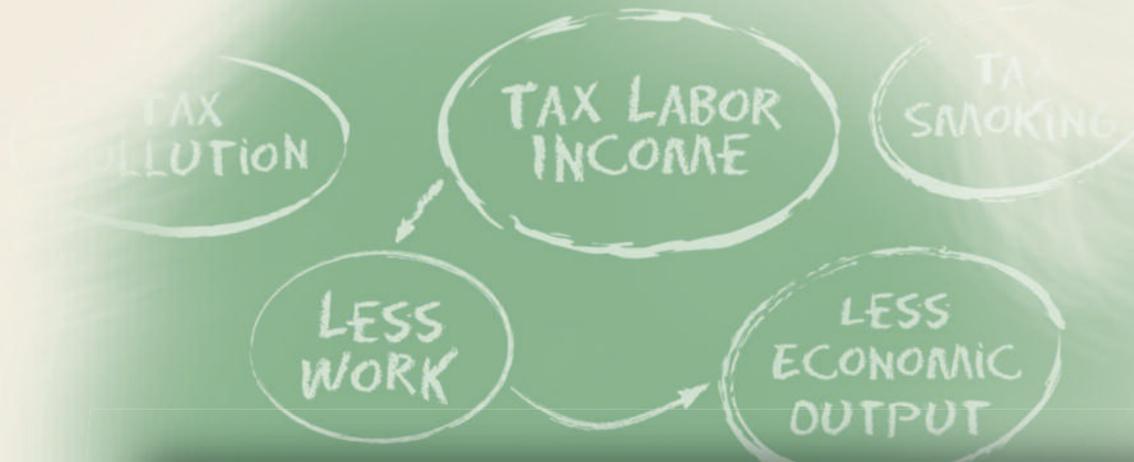
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ABSTRACT

Due to cyclical and structural factors, including the fiscal response to the 2007-2009 recession, and rising Medicare, Medicaid and Social Security expenditures, the U.S. government is facing unprecedented levels of spending, now and for years to come. To maintain fiscal sustainability, revenue levels must increase, but doing so through higher taxes depresses economic activity and is politically difficult.

This paper proposes a fiscal instrument, which we call a "tax buyout," that would allow the government to raise at least part of the needed revenues in a politically viable way, and without stifling economic activity.

The essence of a tax buyout is to offer citizens the choice to decrease their tax rate for a period of time in exchange for a fixed payment. The tax rate reduction avoids the inhibition of economic activity, the fixed payment allows government to raise revenues, and presenting the buyout as a choice ensures political feasibility. Our initial estimates indicate that a well-designed tax buyout program would have significant quantitative importance in a national economy. Prior to public implementation, however, a number of concerns and possibilities for improvement should be considered.



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reduction in his or her marginal tax rate for a given period (say, one year).

We call it a “buyout” because it allows individuals who purchase the contract to effectively pay off a percentage of their regular (and distortionary) taxes with a lump-sum payment to the tax collection authority. Participation is voluntary and involves no risk from the individual citizen’s point of view: Only those who would gain from entering the contract in a given period (after any uncertainty about their labor income is resolved) will do so.

This paper begins by discussing the distortion problem addressed by this plan, including background from related research. It then describes the model we developed to analyze how a tax buyout program would work in a dynamic macroeconomy, including quantitative estimates of the impact such a program might have on the U.S. economy during a time of high fiscal pressures such as those now present. We conclude with suggestions of further issues that should be addressed to make tax buyouts a concrete policy option—an important goal in a period of substantial and growing fiscal deficits.

The views expressed here are ours, and not necessarily those of others in the Federal Reserve System.

Background and description of tax buyouts

The idea of a tax buyout focuses on an issue that is central to economic analysis: the disincentive effect of taxation. Taxes are sometimes imposed on activities that society wishes to discourage, such as smoking or pollution; in such cases, the disincentive is intentional. But when a government seeks to generate revenue by imposing taxes on a worker’s earnings, it spites itself. A tax on labor income discourages work because the worker knows that each hour of labor will generate less take-home pay. The resulting decrease in work effort leads to less economic output, which in turn leads to a lower tax base—undercutting the revenue generation that is the very goal of imposing such taxes. That distortion of economic incentives is a key challenge to tax policy, and to economic research as well.

In an effort to understand how to design a better tax system, British economist and Nobel laureate James Mirrlees analyzed these “labour-discouraging effects” in a classic 1971 paper, and much of modern “optimal fiscal policy” research—including ours—is based on his model.³ Mirrlees recognized

that any labor tax system must cope with “asymmetric” information: A citizen knows more about his or her ability to work than does the government. Given that asymmetry, how do policymakers design a tax system that provides maximum incentive to work and minimal distortion to labor supply, economic growth and revenue generation? Mirrlees’ solution was to design a system that is “incentive compatible,” meaning that it must give workers a pecuniary incentive to reveal their true work abilities—that is, it must be designed such that workers’ self-interest will induce them to provide as much labor as they can.

That, indeed, is the intent of our buyout proposal: To establish a tax scheme that draws forth as much

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work effort as possible by offering individuals the chance to purchase a “buyout” contract that decreases their marginal tax rate. And our challenge is to determine whether there is, in fact, a contract price low enough to draw people into the program, but high enough to generate sufficient revenue to fund the buyout scheme *and* other government expenditures. Our analysis suggests that such a program is not only feasible, but also quantitatively significant and politically viable.

It should be noted that other economists have suggested related ideas. During a milder economic downturn in the early 1990s, Harvard economists Alberto Alesina and Philippe Weil proposed a two- (or more) tiered tax schedule under which taxpayers could purchase a lower marginal tax rate.⁴ “The tax payers who select to ‘buy’ the reduction in the

marginal rate, i.e., who choose the new tax schedule, will be the most productive workers: under the new tax schedule they will work and consume more. ... [The] introduction of the second tax schedule does not reduce total tax revenues. More generally, additional revenue-neutral or revenue-increasing Pareto improvements can be achieved.”

Similarly, in a 1994 paper, the University of Michigan’s Joel Slemrod and his co-authors investigated a two-bracket income tax structure and found that “a second tax bracket allows the lower marginal tax rate on high-wage people to coax out ... greater labor supply from the most productive segment of society, with the increased tax revenue used to lower the tax burden of the least productive segment. Although the calculated optimal tax system features declining marginal tax rates, it still generally features increasing average tax rates, so that it is progressive but not graduated, in the standard sense of these terms.”⁵

This research provides important background but does not include several elements that are potentially important to fully evaluate the impact of these schemes. These previous models are static—analyzing economies at just one point in time—and the people acting in these models are essentially identical to one another in every way but work ability. Our research extends this idea into an economy that is dynamic (it evolves over time) and incorporates “heterogeneous agents” (meaning that people in our model vary substantially in numerous characteristics relevant to labor supply, income and taxes). In addition, we look at the broad macroeconomy and also at the idea of tax schedules that are “nonlinear” (tax rates for different income brackets can vary dramatically—tax rate graphs are curves, not straight lines). We believe that this appraisal renders our buyout scheme a pragmatic proposal that, with refinement, could be used to address current challenges in fiscal policy.

Step-by-step analysis

We first conduct an abstract exercise with a mathematical model of a national macroeconomy to see if the tax buyout idea is sensible at a theoretical level. Do the basic relationships among critical variables in our model economy—tax rates, labor supply, consumption levels and the like—result in the buy-

out plan inducing enough extra labor, and therefore extra output and tax revenue, to more than pay for itself? The answer is yes.

While our model is designed to represent crucial economic incentives and relationships, like all such models, it abstracts from reality in a number of respects. Nonetheless, in our analysis we take a step-by-step approach to incorporating increasing levels of realism into the model and at each step evaluate whether the important result of a tax buyout drawing forth additional work effort can be achieved.

We begin with a very basic model: an economy that examines static relationships between individuals and government with a constant tax rate and perfect information. By “perfect” information, we mean that the work capability of every individual is public knowledge: Tax collectors know how much work everyone is able to perform, so pretending to be disabled to avoid work and collect government insurance benefits isn’t an option. In this (unrealistic) case, our model demonstrates that the offer of a contract to reduce an individual’s tax rate in exchange for a set contract payment will be accepted by everyone in the population, will increase total labor and well-being, and will leave government revenues unchanged.

To understand the logic of this result, consider a simplified example. There are two workers: Alice and Ben. Alice earns a high labor income, while Ben earns a low one. Both pay taxes, and the more they earn, the more taxes they pay. If the government knows their ability exactly, it can offer them a tax buyout contract that involves Alice and Ben paying a fixed amount (high for Alice and low for Ben) in exchange for a reduction of their tax rate to zero. If the fixed amounts are chosen equal to the pre-buyout tax receipts, the government will not lose money from the contract.

But what incentive do Alice and Ben have to buy into this program?

The key difference between standard taxation and the tax buyout program is that in the tax buyout, the government asks for a *fixed* amount. So if Alice or Ben works an extra unit (another hour, day or week, say), she or he is the sole beneficiary of the extra revenue—they no longer have to pay a portion of it to the government as under standard taxation. This increases their incentive to work and

thus will increase their income and, ultimately, their well-being.

In other words, by lowering an individual's tax rate, the tax buyout removes what Mirrlees called the "labour-discouraging effect" of labor income taxes, thereby eliminating the inefficiency due to distortionary taxation. That releases a surplus that can then be shared by both government and individuals.

We then extend this to the more realistic scenario considered by Mirrlees in which information about work ability is imperfect, or "asymmetric": The government does *not* know how much work every person is capable of. Can a tax buyout program create the incentive compatibility that Mirrlees showed is necessary?

Going back to the Alice and Ben example, now the government does not know which one is the more productive worker and thus cannot offer a tailored contract (a high price for Alice and a low one for Ben), but instead must offer a single contract. In this case, we find that the buyout contracts can nonetheless be priced at a level high enough to generate positive revenues for the government, but low enough to attract enough individuals to buy them.

In the Alice and Ben example, if the government offers the buyout at the price equal to the pretax liabilities of Alice, then Alice will take the buyout (and this will increase her labor effort and well-being), while Ben will typically not take it, and so his welfare will be unaffected. Still, the buyout is socially desirable because part of the population gains, while another part does not lose.

Some might contend that because Ben, a poor person, is unaffected, while Alice, who is rich, is gaining from the buyout, the program could increase the gap between rich and poor—an arguably unfair outcome. In the paper, we argue that it is possible to construct buyout schemes in which all people, including poor workers, can be made better off by the introduction of the buyout, even when they don't participate in it directly. The idea again is that the contract generates a surplus that can be shared. With a properly designed buyout plan, the government can receive and redistribute some of this additional surplus so that the entire population benefits, not just the most productive.

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Real-world relevance?

The step-by-step analytical modeling demonstrates that the tax buyout idea has substantial theoretical merit. But that leaves aside the issue of quantitative importance. That is, given actual levels and distributions of economic and demographic variables (such as household earnings, wealth levels, tax and interest rates, life span and retirement length), would a tax buyout program have any real dollars-and-cents impact on a multitrillion-dollar economy? Or is this merely an interesting academic proposition without practical application?

To answer this question, we write a more detailed artificial model economy with overlapping generations of heterogeneous (in terms of abilities and luck) households who make labor decisions, consume and accumulate wealth over their lifetimes. We then put this model through a process called "calibration"—essentially, setting the model's parameters so that its basic predictions capture aspects of actual U.S. households that we think are crucial for our policy experiment.

In particular, we calibrate our model to ensure that

- (1) households in the model have the same wealth and labor earnings distribution as households in actual U.S. data for 2006, and
- (2) the shape of the tax function (i.e., the equation that assigns a household's tax liability as a function of its total earnings and family composition) is consistent with actual U.S. tax code.⁶

A key parameter for our model economy is the so-called Frisch elasticity of labor supply, a measure

of how much workers change their labor supply in response to a change in wages (or taxes), keeping everything else (including their wealth) constant.

This parameter is crucial for our question because if workers are not very responsive to wage or tax changes, then taxes are not very distortionary—that is, tax increases or decreases hardly affect overall welfare and labor supply. If that's the case, the tax buyout, which operates through reduction of distortions, will not yield large benefits.

A very large literature in economics has tried to estimate Frisch elasticity, but economists are still uncertain. In our work, we start by considering a value that lies in the middle range of existing estimates, but we also experiment with different values.⁷

Generating answers

After this calibration process, we run the model through many computer simulations to generate numerical answers for the questions we're interested in:

- What percentage of people will purchase a buyout contract at a given price for a specified reduction in their tax rate?
- What effect will that have on the hours of work they supply?
- How will that affect government tax revenue?
- To what degree will this change in labor supply (through a reduction in tax distortion) alter the nation's economic output?

Our strategy is to consider an economy with a set level of government spending and no tax buyout plan (for example, the U.S. economy before the recent financial crisis), which then unexpectedly faces a 20 percent jump in public expenditures, due, say, to a financial sector bailout or sharply higher Medicare costs (the U.S. economy post-crisis). We then consider two scenarios: one without the buyout offer and one with it.

In particular, we consider the following buyout option: Each citizen has the option of reducing his or her labor income taxes by 5 percent for one year by paying the government the fixed price of \$4,500. The contract is very simple to understand and to accept or reject.

An example may help to make the option more

concrete. Consider again our friends Alice and Ben. We'll assume that Alice, the more productive worker, earns a labor income of \$100,000, while Ben's labor income is \$30,000. At the time of filing her taxes, Alice would find it advantageous to accept the buyout because her take-home pay will be \$500 higher. In contrast, Ben will *not* buy the contract because doing so would actually reduce his take-home pay by \$3,000.⁸

Note that accepting or rejecting the buyout would not involve any additional risk for either Ben or Alice (the decision is taken at the time of filing taxes), but the *essential* element is that Ben and Alice know that the buyout is an option at the beginning of the year, when they decide how much to work. Notice that if Alice knows of the buyout option, she will in general work harder, because she can retain more of the additional dollars she earns, and her additional work is the key social and private benefit of the buyout.

In both cases (with and without buyout), we assume that the government will raise taxes to finance the additional expenditures so that the budget is balanced in every period. By comparing those scenarios, we can judge the quantitative impact of a variety of buyout plans. And because we use a dynamic model, we're able to estimate results over a span of 20 years.

Quantitative results

In our first experimental run-through, we find that in the scenario without the buyout, taxes as a fraction of total income need to rise (in order to balance the budget) from roughly 21 percent to 26 percent. With the tax buyout option, however, taxes would rise to just 24.5 percent.

Given that government expenditures are identical in both scenarios, why would buyouts result in lower average taxes? Because, according to the model, over 8 percent of the population will purchase the buyout contracts, thereby generating additional government revenue. This transformation of part of government revenues from a tax that distorts labor decisions to a lump-sum payment that does not is the essence of the tax buyout contract. And it does so in a revenue-neutral fashion without making anyone worse off.

The reduction in work-supply distortion—the decrease in what Mirrlees called the “labour-dis-

couraging effects” of income taxes—is quantitatively important. Labor supply with the tax buyout scheme is 0.33 percent higher than without it because those who buy the contracts choose to work harder (since their marginal tax rate is lower). Moreover, those people tend to be the most industrious workers, so there is an increase in average labor productivity. Therefore, while national economic output (or alternatively, national income) drops because taxes had to increase to fund higher government spending, it drops less with the buyout program, about 1 percent less. Due to higher overall taxes, wealth and consumption decrease, but the decrease is less severe with buyout contracts.

Changing assumptions

We then run the model under a few different scenarios, changing the size of the buyout, making its price age-dependent and altering the estimate of worker responsiveness to wage changes. The table below shows the results, compared with the results in the baseline scenario, reported in the first row.

As the table indicates, increasing the tax buyout size (or, alternatively, the tax rate reduction) from 5 percent to 10 percent (column 1, rows 1 and 2) means nearly a tripling in price (from \$4,500 to \$12,900) and half as many buyers. As expected, reducing the size (row 3) lowers the contract price and increases program participation. The larger

buyout scenario still has a significant impact on GDP; the smaller buyout less so.

Interestingly, if the price of the buyout contract is varied according to the purchaser’s age (row 4), similar to life insurance pricing, it will attract more buyers and generate a bit more revenue. This is because older people have higher wages on average, would benefit more from the reduction of distortion provided by the tax buyout and, hence, are willing to pay a higher price.

As discussed previously, a crucial parameter for evaluating the effectiveness of the buyout is the Frisch elasticity of labor supply. In the table’s last row (5), we show results when we consider a low elasticity value. In this more conservative case, the benefits of the buyout are smaller than in the baseline case but remain significant, with gains in GDP exceeding half of 1 percent.

Finally, we looked at how things change over time to get a sense of which types of people are most likely to buy the contract, not just now but in the future. This is one of the clear advantages of using a dynamic rather than a static model. One way of looking at a tax buyout is that it’s an opportunity to buy, for a fixed price, a subsidy on one’s labor income. And because the subsidy is calculated as a percentage of income, the benefits are greatest for those who earn—or *expect* to earn—high labor income. Bottom line: The people most

Tax Buyout Scenarios					
	Buyout size (reduction in marginal tax rate)	Buyout price	Contract buyers as a percentage of taxpayers	Percentage of total tax revenue from buyout contracts	Gain in GDP
	(1)	(2)	(3)	(4)	(5)
Baseline scenario	(1) 5%	\$4,500	8.2%	4%	0.95%
Larger buyout	(2) 10%	\$12,900	4%	5.6%	0.8%
Smaller buyout	(3) 2%	\$1,300	14.5%	2%	0.6%
Age-dependent pricing	(4) 5%	Increases with age	10.1%	4.2%	1.1%
Lower labor elasticity	(5) 5%	\$5,100	6%	3.3%	0.55%

likely to buy the buyout contract now or in the future are

- high-wage (and therefore older) people
- people who are patient (because they value the possibility of earning a lot in the future) and
- people with little wealth (because lower wealth induces individuals to work harder).

Our computer simulations find considerable differences over time among people. The types of individuals just listed would significantly benefit from introduction of a tax buyout program even when they don't participate in it initially. An obvious example is young people: Even if they are not buying into the contract now, they will probably earn higher labor income when they're older and therefore be more likely to participate. The program's existence, and the possibility of (literally) buying into it in the future, is highly valued. Thus, in a dynamic world evaluated over the long run, the benefits of a tax buyout program spread well beyond the fraction of people who participate in it at any single point in time.

Further work needed

Before a buyout program is designed and implemented, a number of concerns call for further investigation. By the same token, several promising possibilities could lead to significant improvements in buyout strategy.

The first concern is what economists call a "general equilibrium effect." One consequence of introducing a tax buyout program is that prices (in particular, wages) will change, and perhaps in a direction that is disadvantageous for some. Specifically, the tax buyout's reduction in incentive distortion will result in a labor supply increase. That could reduce wage levels in general and hurt in particular the low-wage, low-productivity people who are least likely to buy the contract. This effect deserves quantitative investigation because its impact likely depends on factors not considered in our model, such as the openness of capital and labor markets.

Another concern arises in regard to the distribution of high and low ability within the total population. The issues here are complex, but they come down to two basic questions: Would the program benefit only high earners, rendering it socially less

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desirable and politically unpalatable? As we discussed earlier, a possible solution to this issue is to accompany the buyout program with a redistribution policy (financed by the buyout itself) to assist low earners.

And secondly, are there so many high-labor-income people in the population, or people of such high labor income, that offering them the chance to lower their tax bill would significantly undercut general tax revenues? Future research should therefore investigate the benefits of limited buyouts, in which a person's gain from tax reduction is limited to a specified multiple of the contract price. For instance, what if the tax benefits for a buyout contract were limited to, say, twice the contract purchase price? What labor supply, tax revenue and GDP impact would such a program have?

On the more encouraging side, there are many directions in which this buyout idea could be extended to reduce labor effort distortions still further. For example, varying the contract pricing schedule for individuals of high and low work ability could have a beneficial impact. Another possibility: In our current setup, we assume completely asymmetric information, meaning that the government knows essentially nothing about individuals' work abilities. In reality, of course, the government knows quite a bit about its citizens—education levels and earning history, for example—and could alter contract prices accordingly.

Third, it seems likely that labor supply elasticity—again, sensitivity to changes in wage levels—differs among individuals: Some people will

respond more than others to a \$5 wage hike. In our quantitative experiments, we plug in just one value for the entire population, but in fact, people with high elasticity would be more likely to buy tax-reducing contracts, leading to higher program participation. And lastly, the tax buyout idea could be expanded to capital income—stock dividends, for instance—and further analysis should estimate the combined effects of buyout programs offered for both labor and capital income.

Conclusion

We believe that a tax buyout initiative is a promising means of addressing likely revenue shortfalls in the United States. By offering citizens the opportunity to decrease their marginal tax rate in return for a fixed payment, governments could reduce the negative impact that labor income taxes have on labor supply decisions, thereby increasing total work effort, raising overall economic output and well-being, and generating higher tax revenues.

Our initial analyses suggest that tax buyout programs can have significant quantitative importance in a national economy, especially at a time when high fiscal needs call for high levels of distortionary taxation. Prior to designing such a program for public implementation, a number of concerns should be addressed and several possibilities for improvement considered. Also, the effects and consequences of such a scheme could be evaluated with alternative methods, for example, by running small-scale experiments such as introducing the buyout for local and state taxes in small communities. **R**

Endnotes

¹ This policy paper is based on: Del Negro, Marco, Fabrizio Perri and Fabiano Schivardi. 2010. “Tax Buyouts.” Research Department Staff Report 441, Federal Reserve Bank of Minneapolis. The authors thank Doug Clement for many insightful comments and excellent editorial assistance.

² As noted by Federal Reserve Chairman Ben Bernanke in recent congressional testimony, “[I]n the absence of further policy actions, the federal budget appears to be on an unsustainable path. A variety of projections that extrapolate current policies and make plausible assumptions about the future evolution of the economy show a structural budget gap that is both large relative to the size of the economy and increasing over time. . . . To avoid sharp, disruptive shifts in spending programs and tax policies in the future, and to retain the confidence of the public and the markets, we should be planning now how we will meet these looming budgetary challenges.” Statement by Ben S. Bernanke, chairman, Board of Governors of the Federal Reserve System, before the Committee on the Budget, U.S. House of Representatives, June 9, 2010.

³ Mirrlees, James A. 1971. “An Exploration in the Theory of Optimum Income Taxation.” *Review of Economic Studies* 38(2), pp. 175-208.

⁴ Alesina, Alberto, and Philippe Weil. 1992. “Menus of Linear Income Tax Schedules.” NBER Working Paper 3968.

⁵ Slemrod, Joel, Shlomo Yitzhaki, Joram Mayshar and Michael Lundholm. 1994. “The Optimal Two-Bracket Linear Income Tax.” *Journal of Public Economics* 53, pp. 269-90.

⁶ The distribution of earnings and of wealth for U.S. households is computed using the most recent waves of two widely used economic surveys: the 2007 Current Population Survey and the 2007 Survey of Consumer Finance. For further details, see the original paper.

⁷ In particular, we consider a value of the Frisch elasticity of 0.75, which implies that on average a worker who faces, say, a 10 percent reduction in wages while keeping his or her total resources constant would reduce his or her labor supply by 7.5 percent.

⁸ The savings from the tax buyout are 5 percent of labor income. For Alice, this is 5 percent of \$100,000, a \$5,000 savings that exceeds the buyout contract cost of \$4,500 by \$500. She’ll take home an extra \$500 from choosing the buyout. For Ben, however, the buyout would yield a saving equal to 5 percent of \$30,000, i.e., \$1,500 that falls \$3,000 short of the \$4,500 contract cost.