Average Marginal Labor Income Tax Rates under the Affordable Care Act[*]

by Casey B. Mulligan
University of Chicago
August 2013

Abstract

The Affordable Care Act includes four significant, permanent, implicit unemployment assistance programs, plus various implicit subsidies for underemployment. Every sector of the economy, and about half of nonelderly adults, is directly affected by at least one of those provisions. This paper calculates the ACA's impact on the average reward to working among nonelderly household heads and spouses. The law increases marginal tax rates by an average of five percentage points (of employee compensation), on top of the marginal tax rates that were already present before the it went into effect. The ACA's addition to labor tax wedges is roughly equivalent to doubling both employer and employee payroll tax rates for half of the population.

[*] I appreciate conversations with Trevor Gallen, comments from seminar participants at Clemson University, and the financial support of the George J. Stigler Center for the Study of the Economy and the State.

Healthcare is valuable but expensive. As a result, many people believe that poor and middle-income households should pay less than full price for their healthcare, and the United States now has its Affordable Care Act (hereafter, ACA) that will soon implement such a policy.

Economics tells us that redistribution typically comes at the cost of reduced incentives to work and earn, yet some economic analyses of the ACA's labor market effects do not even mention explicit or implicit taxes (Cutler 2011). Others note the ACA's employer penalties, without acknowledging that the Act also includes various implicit taxes on the employee side (Gruber 2011) (Cutler and Sood 2010). The purpose of this paper is to quantify the contributions of various ACA provisions to time series for the marginal tax rate on labor income. In doing so, I prepare the estimates so that the various provisions can be compared with each other, compared with other explicit and implicit taxes, put in a historical context, and aggregated with each other for the purpose of aggregate labor market analysis.

The results are startling. The ACA includes both positive and negative tax rate effects, but nonetheless all provisions combined raise marginal tax rates in 2015 by 10 percentage points of total compensation, on average, for about half of the nonelderly adult population and zero percentage points for the rest. From an aggregate point of view, the employer penalties by themselves are historically significant but nonetheless smaller than each of two of the ACA's implicit tax provisions. The ACA will increase the national average marginal labor income tax rate about twelve times more (sic) than the 2006 "Romneycare" health reform law increased the Massachusetts average rate.

The results account for the fact that many people will not participate in programs for which they are eligible, the tendency of the act to move people off of means-tested uncompensated care, and the fact that the ACA implicitly taxes unemployment benefits. Although parts of the ACA build "notches" and "cliffs" into household budget sets – that is, infinitesimal income intervals over which marginal tax rates are infinite – my quantitative results are not a consequence of those notches or cliffs.

Section I reviews the index number framework from Mulligan (2012) that permits the measurement of statutory marginal tax rates combined over multiple government programs and averaged over various taxpayer situations. Section II explains how the ACA's penalty provisions act as taxes on work. The ACA's subsidy programs and their contribution to marginal tax rates are reviewed in Section III. Section IV notes how two ACA provisions interact with pre-ACA safety net programs for the purpose of determining a person's reward to working. Section V presents an example of how large the ACA's work disincentives can be. Sections VI and VII show how the various programs can be weighted for the purposes of comparing and aggregating their labor market impact. Section VIII concludes. Appendices to the paper show program-specific results for calendar years 2014 and 2016, give more details on health insurance premiums and the ACA's sliding income scale, and report sensitivity analysis.

A Framework for Measuring Legislated Changes in the Average Marginal Tax Rate on Labor Income

Assistance programs available to help people without work or otherwise with low incomes can be summarized by measuring the combined value of benefits available to a person who does not work, less taxes paid, and comparing it to the net of tax value of benefits available to the same person if he or she were working. The difference between the two combined values is the causal effect of working on the value of benefits available. The more that working reduces the net of tax value of available benefits, the more the programs have reduced the reward to working.

The effect of a work decision on the value of assistance received varies by person and by the type of work decision. The effect also depends on calendar time because program eligibility and benefit rules vary over time when new legislation and new regulations are put in place. In order to focus on the latter – especially the effect of the Affordable Care Act on incentives to work in 2014, 2015, and beyond – I use index numbers to summarize the average incentive among a rich variety of incentives for different persons at a point in time. Each type of work decision – moving between employment and unemployment, moving between employment and out of the labor force,

and changing weekly hours – has its own "statutory" incentive index time series $\{b_t\}$. The three margin-specific series are combined into an overall statutory work incentive index by taking a fixed-weighted average of the three.

Each of the three incentive indices is a sum of program-specific terms, such as a food stamp term, a payroll tax term, etc.

$$b_t \equiv \sum_j \omega_j E_{jt} B_{jt} \tag{1}$$

where t indexes time and j indexes safety net programs. Each program's term is itself the product of a statutory eligibility index $\{E_{jt}\}$ and a statutory benefit-per-participant index $\{B_{jt}\}$. The two indices, and therefore their product, change only at dates t when new program rules ("statutes") go into effect. The program-specific products $\{E_{jt}B_{jt}\}$ are combined into the statutory incentive index by aggregating them with a set of time-invariant program weights ω_j, which reflect time-invariant estimates of the propensity of people to participate in program j while they are not employed or otherwise with reduced labor supply.

The Affordable Care Act can itself be understood as a collection of programs, each of which has its own term in the sums that form the three work incentive indices. Those programs are: employer shared responsibility penalties, individual mandate relief, health insurance subsidies for persons who are not offered affordable employer-sponsored insurance (hereafter, ESI) even when employed, and health insurance subsidies for persons who are offered affordable ESI when and only when they are employed.

The ACA provisions interact with related public policies, especially unemployment insurance and uncompensated care. In order to include these interaction terms in my index for the overall safety net, I therefore add two terms quantifying those interactions: "implicit taxation of unemployment benefits" and "move off implicit compensated care tax."

All six of these programs are listed in Table 1. The table's top (middle) panel shows each program's benefit (participation weight) terms, respectively.[1] The bottom

[1] The eligibility indices are not shown because they are trivially zero before January 1, 2014 and 1 thereafter, as long as the ACA eligibility-related statutes and regulations remain unchanged.

panel compiles all of the terms into a single benefit index for each of the months of 2015, which can be added to indices of the non-ACA programs. Appendix I reproduces versions of Table 1 for calendar years 2014 and 2016.

Sometimes, as with a constant replacement unemployment benefit, the dollar amount of benefits to be received as a consequence not working varies across persons according to what they earn when they are working. In these cases, I follow Mulligan (2012) and assume a hypothetical person (hereafter, "median earner") who earns $790 (2014 dollars) per week plus fringes, which is what the median nonelderly household head or spouse earned in 2007 during a week that they were working.[2] The same median earner (inclusive of the value of his fringes) is used to convert Table 1's bottom line dollar amounts into a bottom line tax rate. I use a wage from the middle of the skill distribution because the indices are intended to be used for analysis of nationwide employment, aggregate hours, and other labor market activity measures that weight each person equally, rather than giving extra weight to high earners or to people near the poverty line.[3]

When the dollar amounts vary across persons for other reasons, such as marital status or health insurance status or program take-up, I use the average across non-elderly working household heads and spouses, as noted below. Depending on data availability, the averages are conditioned on working sometime during the calendar year and having weekly earnings within 10 percent of the median earner – I call such non-elderly heads and spouses "median earners" – and usually calculated from the March 2011 Current Population Survey (referring to calendar year 2010).

ACA Penalty Components of the Marginal Tax Rate Index

The ACA includes monetary penalties on employers who do not offer health insurance to their full-time employees and on individuals who fail to participate in the

[2] As of the time of writing, the latest available annual price index was for 2012; for the purposes of calculating 2014 dollars, I assume average annual inflation of 2 percent between 2012 and 2014. The 2014 median working household head and spouse will probably earn slightly more than $790 per week because, among other things, lower skill workers exited the workforce between 2007 and 2014.

[3] Although beyond the scope of this paper, the same methodology could be used to examine other points in the wage distribution as in Mulligan (2013a).

health plans that are made available to them. These penalties are known as the employer and individual shared responsibility provisions, respectively. The individual penalty has also been described as the "individual mandate."

Through its employer shared responsibility provision, the ACA penalizes assessable employers: any large employer that does not offer comprehensive health insurance to its full time employees. The amount of the penalty is based on the number of full time employees (beyond 30) on the employer's monthly payroll during the calendar year in which it is assessable. A large employer is one with at least fifty full-time equivalent employees in the prior calendar year.

With a few exceptions related to thresholds and timing, each full-time employee's presence on an assessable employer's payroll creates a marginal cost of employment in the form of the employer shared responsibility penalty: the employer would owe less penalty if the employee were working part time instead, or were absent from the payroll altogether. Because the employer shared responsibility penalty is contingent on a person's work status, it has many of the economic characteristics of unemployment benefits and payroll taxes – at least for the purposes of quantifying incentives to work.

Taking into account interactions between the penalties and corporate, personal, and payroll taxes, the monthly amount of the penalty is $192 per month in 2015 and increases with the growth rate of health care costs thereafter,[4] which I assume to be 1.6 percent per year in excess of wage growth. Thus, for the purposes of constructing work incentive indices for unemployment and out of the labor force, the shared responsibility index is zero for all months prior to January 2015, $192 for each month of 2015, $195 for each month of 2016, etc. The benefit index is expressed in 2014 dollars and shown in the top row of Table 1's top panel.

[4] The $192 monthly amount is $2,000 per year times the growth rate factor of 1.016 times (1-0.0765-0.18) for employee payroll and income taxes divided by 1.0765*(1-0.39) for employer taxes. Section 1302 of the ACA provides for a premium adjustment percentage based on the growth of the average per capita premium for health insurance coverage in the United States. The ACA specifies a $2,000 penalty for 2014 as well, but the U.S. Treasury will not be enforcing employer penalties for calendar year 2014.

The share responsibility penalty can be avoided for employees if their hours are reduced below 30.[5] For the purpose of constructing the statutory index for weekly hours, the benefit index can be either greater or less than it is for unemployment. On one hand, the hourly penalty is about twice as large for hours changes that cross the part-time threshold than for changing employment status.[6] On the other hand, not all hours changes cross the part-time threshold and therefore would not change penalty status. The former effect dominates, so that the hourly penalty is fifteen percent greater when labor supply is adjusted on the weekly hours margin rather than weeks employed.[7]

Individuals who have access to affordable health insurance (either through their employer or through the marketplaces created by the ACA) but fail to participate are liable for the individual mandate penalty, unless they are experiencing hardship. The hardship exemption acts as an implicit tax on work to the extent that not working allows a person to be classified as experiencing hardship. The text of the ACA is unclear as to the relation between employment and hardship for the purposes of granting the exemption. I assume that, conditional on not having insurance, the penalty is paid only when working or out of the labor force because unemployed persons will be eligible for a hardship exemption.[8]

When applicable, the amount of the individual mandate penalty is the maximum of a flat amount per uninsured household member and a percentage of household income, both of which vary among the years 2014, 2015, and 2016 (U.S. Internal Revenue

[5] The ACA's threshold for part-time work is 30 hours per week for hourly employees. For salaried employees, the threshold is three days per week.

[6] Full-time employed (as measured by the Bureau of Labor statistics: employees working 35 hours per week or more; this part of the calculation is intended to represent labor market conventions rather than statutory definitions of full-time work) household heads and spouses work an average of 43.5 hours per week. Part-time employed heads and spouses average work hours are 21.4: the scaling factor is 43.5/(42.5-21.4). Note that the first weekly hour worked over 30 creates a penalty equivalent to about $60 of weekly wages. Working 43.5 hours rather than 30 therefore costs more than $4 per hour (plus payroll and personal income taxes on the additional wages), which is a significant cost for someone with wages of about $17 per hour.

[7] During the 2008-9 recession, 58 percent of per capita hours reductions by full-time workers involved crossing the part-time threshold (as defined by the BLS: see below for the data source) as opposed to reductions in average hours among the full-time employed. I therefore rescale the benefit index on the employment margins by a factor of 0.58*43.5/(43.5-21.4) = 1.15 in order to obtain a benefit index on the weekly hours margin.

[8] Assuming that out-of-the labor force status counts as hardship would add less than one dollar to my bottom line $208 total work disincentive of the ACA.

Service 2013a). Because my indices are built for the median earner I use the percentages: 1 percent for 2014, 2 percent for 2015, and 2.5 percent thereafter.

The benefit index (unemployment and out of the labor force) for the individual mandate relief program is therefore equal to the penalty percentage applicable in the year times the average monthly household income among uninsured household heads and spouses with weekly earnings within 10 percent of the median. Those amounts are $51 in 2014, $103 in 2015, and $128 in 2016. For the reduced hours index the benefit index is zero because I assume that reduced hours will not be considered hardship for the purposes of relief from the mandate. These amounts derive from relief from the penalty, not the penalty itself.[9] For the reduced hours index the benefit index is zero because I assume that reduced hours will not be considered hardship for the purposes of relief from the mandate.

Jumping onto and Sliding Along the Income Scale: The ACA's Subsidy Components of the Marginal Tax Rate Index

The ACA requires that each state (or the federal government on behalf of the state residents) set up health insurance marketplaces or "exchanges" where individuals can purchase health insurance that conforms to the law. The plans on the exchanges will be subsidized from revenues obtained from taxes on employer-sponsored plans. More important, individuals participating in exchange plans may be eligible for significant assistance (at taxpayer expense) with their premium payments and with their out-of-pocket health expenses on the basis of their household income and the fringe benefits available on their job, if any. The income and fringe benefit contingencies create a variety of implicit taxes on work.

[9] A mandate by itself need not act as a significant tax on work (Summers 1989). Kolstad and Kowalski's (2012) study of Massachusetts suggests that the individual mandate increases labor supply. Perhaps they have in mind income effects, which are beyond the scope of this paper, or that Romneycare's promotion of cafeteria plans makes employment the cheapest way to buy health insurance in Massachusetts. This paper intends to measure the impact of health reform on the reward to working more versus less, which would be zero from a mandate that required workers and nonworkers alike to buy health insurance, at least if insurance could be purchased by nonworkers at similar prices to the prices paid by workers.

Persons not offered insurance by an employer, not eligible for Medicare or Medicaid, and living in a family with income between 100 and 400 percent of the federal poverty line (hereafter, FPL), have their cost of exchange-purchased health insurance capped as a percentage of their household income. If in addition, their household income is less than 250 percent of the FPL, then their out-of-pocket costs (copayments, co-insurance, etc.) are discounted. The cap percentages increase, and discount rates decrease, with income.

Figure 1's solid curves show the 2014 sliding scale payment schedule for exchange plan participants, assuming that they were not offered affordable health insurance by their employer (if any). Both premiums and the average amount of participant out-of-pocket costs are included in Figure 1's payment. The schedule for premium payments can be calculated from the ACA without any assumptions about family composition or the prices that will be quoted by insurance providers on the exchanges as long as the schedule specifies a payment less than the full premium, but the out-of-pocket payments depend on the actuarial value (AV) of the policy purchased.[10] Figure 1 therefore shows two extremes: a low ratio of AV to FPL (solid blue) and a high ratio (solid red). Appendix II gives more details on the derivation of Figure 1.

The ACA's income-based healthcare payment schedules, such as the two shown in Figure 1, create several types of work disincentives. First, a household head or spouse is denied access to the payment schedule as long as he or she holds a job that offers health insurance, and (if in a family between 100 and 400 percent FPL) granted access when not employed. Second, a household head or spouse can be granted access *as a consequence* of moving from full-time employment to part-time employment if that move results in a loss of opportunity for ESI. Third, working fewer weeks per year or hours per week enhances the exchange subsidies for persons (a) in a household between 100 and 400 percent FPL, (b) who work in a job not offering health insurance, and (c) who purchase insurance on the exchanges.

[10] Figure 1 shows the payments for the second cheapest silver plan. Participants of any income can upgrade or downgrade their plan by paying (or receiving) the full cost difference. Thus, the slopes of Figure 1's schedules would be the same regardless of plan choice.

Jumping onto the Income Scale for Health Payments

A person with ESI who would receive an exchange subsidy when not employed forgoes the value of that subsidy when working. That value depends on the type of plan and that person's household income. For the sample of persons with ESI and in households between 100 and 400 percent of FPL, I calculated the average value of the 2014 subsidy under the assumption that a family plan provides benefits valued at $19,000 per year (2014 dollars), an individual plan's benefits are $7,000 per year, and an "employee plus one" plan has a value equal to the average of the two.[11] My subsidy calculation recognizes that, depending on family income, exchange plan participants must pay the plan premium and various out-of-pocket costs like coinsurance according to the ACA's "sliding scales." On average, a month of the 2015 exchange subsidy is worth $508 (2014 dollars), so that $508 is the value of the unemployment and out of the labor force benefit indices for HI subsidies for persons with ESI at work.[12]

Each person has a point on a schedule like the two solid schedules shown in Figure 1 and that point is determined by the amount of his household income when he works, say, 13 fewer weeks of the calendar year. The vertical distance between that point and the full expected medical payment (i.e., premiums plus expected out-of-pocket expenses) associated with the policy is the amount of the ACA's implicit subsidy for not working those 13 weeks.[13] The $508 cited above is the average vertical distance among full-time median earners in the March 2011 Current Population Survey with employer-sponsored health insurance, and in families between 100 and 400 percent of the FPL. For this reason, one could describe this work disincentive as persons "jumping onto" the income scale for health expenses as a consequence of not working.

Full-time ESI employees can also become eligible for exchange subsidies by moving to part time, and part-time (and ESI-ineligible) employees at ESI firms will find that they lose their exchange subsidy by moving to full time. The reduced hours benefit index for this program is $582, which is the $508 scaled by the same factor as used for

[11] Appendix III has more details on valuing health insurance plans.
[12] The Congressional Budget Office (2013) also projects that the average exchange subsidy will be about $500 per month.
[13] Figure 1's distances are measured as a ratio to the FPL and can therefore be applied to a work decision of any duration. For example, if the implicit subsidy shown in the Figure were 0.4 FPL, that is a subsidy for a 13 week work decision that is 0.4 times the FPL for 13 weeks.

the employer penalty (see above). This incentive to cut hours from full time to part time is another example of jumping onto the income scale as a consequence of working less.

At first glance, it might appear that Table 1 needs a row to indicate that people leaving ESI jobs lose the implicit subsidy for ESI associated with the exclusion of ESI premiums from income for the purposes of payroll, personal income, and business income taxation. However, Table 1 quantifies the *impact* of the ACA, and the loss of the implicit ESI subsidy occurred before the ACA and will continue to occur after it.

Sliding Along the Income Scale for Health Payments

The third disincentive associated with the income scales like the two shown in Figure 1 involves "sliding down" – rather than jumping onto – the income scale by working less during the calendar year. This case applies to persons who receive exchange subsidies, or has family members receiving them, even when working. For such a person, there are two notable points on the scale: one when working more and a second when working less. The person's ACA penalty for working more is, as a share of household income added by working more, the slope of the line connecting the two points on the scale.[14]

Unlike the disincentives associated with jumping onto the income scale, the marginal tax rates from sliding along the income scale are especially sensitive to the exact position on the scale because the scale has a number of discrete notches or cliffs in it. For example, a person who earns 390 percent of FPL when working less and 410 percent of FPL when working more would face an ACA marginal tax rate of about 150 percent. In order to emphasize results that are not especially sensitive to notches and cliffs, I approximate the slopes of the sliding scales by averaging the various slopes, weighting by the width of the income interval over which they apply. Geometrically, the weighted average slope is equal to the slope of the dashed secants shown in Figure 1. I used the weighted average slopes only for the disincentives associated with sliding along the income scale and not those associated with jumping onto the income scale.

[14] Note that both axes in Figure 1 are in the same units, with each unit representing a dollar amount equal to the federal poverty line.

The weighted average slopes still vary across households according to family situations, so I average the weighted average slopes across median earners in the Current Population Survey without employer-sponsored health insurance, and in families between 100 and 400 percent of the FPL. That average is about 24 percent of earnings, which is the $832 per month shown in the third row of Table 1. The same entry is shown in all of the columns of that row because the disincentive depends on income, and not whether a specific income level is achieved through unemployment, or out of the labor force, or reduced hours.

ACA Subsidies Interact with Other Safety Net Programs

A multitude of social safety net programs predated the ACA and served to reduce work incentives. The ACA replaces or substitutes for some of them, and thereby might reduce work incentives less than the ACA provisions would if they were introduced by themselves into a world with no safety net.

Unemployment insurance (UI) is a major safety net program, and the benefits paid by the UI program are implicitly taxed by the ACA because UI benefits are part of the household income that determines a household's assistance with health insurance premiums and out-of-pocket costs. In particular, persons laid off from a non-ESI job before the ACA would find their UI benefits taxed at normal marginal personal income tax rates but under the ACA those marginal rates jump about 24 percentage points for recipients of exchange subsidies thanks to the ACA's "sliding scale" premium assistance. For someone receiving $1,265 per month in UI benefits – about the average among UI-eligible persons with earnings potential near the median – that's an extra $301 per month in taxes.

The uninsured sometimes receive uncompensated care from health providers, and uncompensated care is likely means-tested. To the extent that the ACA reduces reliance on uncompensated care (Goolsbee 2011, oral testimony at 77:45), it may reduce the implicit income tax associated with it. I am not aware of a calculation of the nationwide average marginal tax rate from uncompensated care, but it can be estimated by assuming that its value is a linear function of household labor income and noting that: (a) the

uninsured paid, in 2008, an aggregate of $30 billion in health expenses (another $56 billion was uncompensated care for those patients) and (b) aggregate labor income among the uninsured was $510 billion.[15] This puts the average marginal labor income tax rate (including in the average those among the uninsured who do not use any health care) from uncompensated care of 5.9 percent. According to this estimate, when spending a month prior to the ACA without his $3,424 earnings, an uninsured person could expect to save an average of $201 in medical expenditures by increasing his uncompensated care. After the ACA, this help might not be necessary because he would have private HI coverage. Thus, -$201 per month is shown in the top panel of Table 1 as an ACA impact on the amount of benefits available as a consequence of not working.

Without the ACA, some people join Medicaid when they leave employment or have reduced working hours. Others are on Medicaid (or have dependents on Medicaid) even when they are working full-time. The ACA adds health insurance subsidies for families with incomes above the Medicaid threshold. This has no effect on the latter group because they are on Medicaid regardless of their work decision or presence of the ACA. But the former group has more resources *when working* as a consequence of the ACA. That by itself reduces marginal tax rates.

For small adjustments to annual hours worked, such as increasing unemployment time by one month, the former group is a small fraction of the labor force. The fraction would be larger for larger work hours adjustments, but perhaps still small for persons with median earning potential.[16]

The ACA's Medicaid expansion also eliminates Medicaid asset tests on adult participation.[17] This aspect of the expansion by itself reduces the reward to work because it introduces non-employment assistance for persons who would not pass the former asset test when during spells of non-employment. By itself, neglecting this policy change underestimates the ACA's positive impact on marginal tax rates.

---

[15] Kaiser Commission on Medicaid and the Uninsured (2008, 1).

[16] By itself, approximating the size of the former group as zero overestimates the ACA's positive impact on marginal tax rates. However, I also assume that persons in families above but near 400 percent FPL do not have their marginal tax rates elevated by the exchange subsidies, but their rates are elevated to the extent that larger work hours adjustments need to be considered because a large work hours reduction would push family income below 400 percent FPL.

[17] CHIP (pregnant women) assets tests had already been eliminated in 47 (43) states, respectively. Asset tests may remain for those who qualify for Medicaid through other asset-tested programs.

Part of the Population Will Have Their Work Incentives Erased: An Example

Consider a person comparing a part-time position to a full-time position. The full-time position, shown in the left column of Table 2 requires 40 hours of work and $100 of employment expenses (such as commuting or child care) per week, for 50 weeks per year. The part-time position requires 29 hours of work and $75 employment expenses per week. Each of the positions costs the employer $26 per hour worked, including employer payroll taxes and employer contributions for health insurance (if any).

Only the full-time position includes affordable health insurance, which means that a full-time employee would not be eligible to receive assistance from the ACA for premiums or for out-of-pocket health expenses. The employer pays 78% of the premiums for the family insurance plan, and withholds the remaining premiums of $3,146 from the paychecks of participating full-time employees. Each full-time employee's income subject to tax is $35,021, which excludes employer payroll taxes (7.65% of the $35,021), employer health insurance contributions, and employee premiums withheld.

Part-time employees get less total compensation – $37,700 – because they work fewer hours. The part-time employees are not eligible for ESI and the tax exclusions that go with it, which makes their income subject to tax ($35,021) equal to their total compensation minus employer payroll taxes. It is a coincidence that income subject to tax is the same for full-time and part-time employees: more on this below.

The part-time employees are eligible for subsidized health plans from the ACA's exchanges because they are not offered affordable health insurance by their employer. I assume that the second cheapest silver plan has the same expected medical payments as the employer plan: namely, $17,300 per year including out-of-pocket health expenses. By definition of silver plan, the full premium is $12,110. However, because the employee has a family income subject to tax of 145% of the federal poverty line (the employee is the sole earner in a family of four), the ACA caps premiums for the second

cheapest silver plan at 3.7 percent of their income subject to tax, or $1,304 per year. The other $10,806 is paid by the U.S. Treasury to the insurer pursuant to the ACA.

By design, the silver health plans have lower premiums and greater out-of-pocket costs (deductibles, copayments, etc.) than the typical employer plan. That design feature is visible in my Table 2 because exchange plan out-of-pocket costs total $5,190 rather than the $3,000 of out-of-pocket health expenses associated with ESI. However, because the employee's family is at 145% of the poverty line, the employee gets an 80% discount on the out-of-pocket expenses, with the remainder paid by the U.S. Treasury to the insurer pursuant to the ACA.

After health and work expenses, the part-time employee makes $28,929 per year, which exceeds the full-time income ($27,021) after health and work expenses! Table 2 does not show the employee payroll and personal income taxes, but those would be the same for the full-time and part-time employee because the amount of the income subject to the two taxes is, in this example, independent of full-time status.

Table 2's example is special, and a bit simplified, in that part-time employees have: more disposable income than full-time employees, the same income subject to tax, and the same hourly employer cost. But the Table contains a general lesson: moving from full-time employment to part-time employment can trigger generous assistance with health premiums and out-of-pocket expenses that can offset much of the income lost due to reduced work hours. That's why Table 1 includes a significant entry for the "HI subsidies for persons w/ ESI at work" program benefit amount in the reduced hours column. Moreover, Table 2's key parameters – $26 per hour employer cost, $14,300 premiums for ESI, and a single-earner family of four – are not extraordinary, which is a symptom of the fact that, under the ACA, it will not be extraordinary for people to be able to have more disposable income from a part-time position than from a full-time one.

Program Participation Weights

Table 1's top panel shows that the ACA's work incentives vary according to the program, if any, that might be relevant to a worker and his family. For example, a person eligible for the exchange subsidies while working full time will have $832 per month additional help during times of unemployment (minus offsets, if any, from the ACA's

implicit taxation of UI benefits and its substitution away from uncompensated care), whereas a worker that is ineligible solely due to his employer's offer of affordable insurance would get $508 per month added. An uninsured full-time worker is getting only $103 of additional help. For many workers, none of these programs are affecting their incentives to work. The purpose of Table 1's middle panel is to weight the top panel's programs according to the fraction of the population affected.

A program, such as a universally enforced flat-rate payroll tax, that applied to the entire population of non-elderly household heads and spouses would get a program participation weight of one. If instead, say, 30 percent of the population were randomly chosen to pay the tax, then the program weight would be 0.30.

Actual programs, especially on the subsidy side, have eligibility based on personal and household characteristics like income that can be altered by households. For example, giving a subsidy to employees who are not offered health insurance will cause more people to take jobs without health insurance. To form a weight for such a program, I follow index number theory and take the simple average of (i) the fraction of the population that would be eligible and participate with behavior held fixed at its no-ACA values, and (ii) the fraction of the population actually participating under the ACA. Given that I am writing before the ACA goes into full effect, I make conservative estimates of ACA behavioral patterns (i.e., for purpose of forming weights I error on the side of assuming that the ACA's behavioral effects are minor), drawing on the literature whenever possible. I also report sensitivity analysis in Appendix V.

Table 1's weights often cannot be independently varied, because eligibility for one of the programs often implies ineligibility for another. Table 3 shows how Table 1's weights are related to each other by partitioning the entire population of non-elderly household heads and spouses who would be working absent the ACA. The partitions depend on how the person receives his health insurance (Table 3's "HI holder" column indicates which case applies), the income interval for the person's household (the "FPL interval" column indicates which case applies), and the health benefits offered by his employer (indicated at the top of the table). Each column in each of Table 3's four panels has three entries: one for each labor supply margin. The sum of all of the weights for "FT-not employed" plus the sum of all of the weights for "PT-not employed" is one

because the entire would-be working population has the option of reducing their labor supply by not working. Each "FT-PT" weight is identical to the corresponding "FT-not employed" weight because a full-time employee can reduce labor supply either by reducing hours or by not being employed.

For example, the entry of 0.183 in the top row of Table 3 means that 18.3 percent of the would-be working population of non-elderly household heads and spouses (hereafter, "population") (i) would be employed with ESI from his or her employer (who does not offer health benefits to its part-time employees) (ii) lives in a household with income between 100 and 400 percent of the federal poverty line, and (iii) would take up an exchange subsidy if it were available.[18] The (slim) majority of the population is represented in the "all others" panel because they are insured through an employer and have household income above 400 percent FPL or because their household income is below the poverty line.

Most of Table 3's entries are calculated from cross-tabulations of health insurance status, full-time status, and family income relative to the poverty line. The no-ACA tabulation is from the March 2011 CPS, with income items referring to the prior calendar year. The ACA tabulation is constructed from the no-ACA tabulation and assumed impacts of the ACA on (i) the fraction of employers offering ESI to their full-time employees, weighted by employment of persons in families between 100 and 400 percent of the federal poverty line (-10 percent impact) and (ii) the fraction of the population without insurance (the ACA is assumed to cut the fraction in half among would-be working non-elderly household heads and spouses).[19]

Take, for example, the 0.039 and 0.183 entries in Table 3's second row, which total 0.222 and represent full-time employed persons who would receive an exchange subsidy if they left employment. In 2011, 35.0% of non-elderly working household heads and spouses with earnings potential near the median were simultaneously working full-time, obtaining coverage through their employer, and in a family between 100 and

[18] Recall that Table 3's entries are averages of values for the ACA and no-ACA. The 0.183 entry is the average of 0.173 (ACA) and 0.192 (no-ACA).

[19] The Congressional Budget Office (2013) estimates that the ACA will reduce the uninsured population by about half. Forecasts for the fraction of employees who lose ESI range widely; -10 percent (conditional on 100-400 percent FPL) is closer to zero than many, but not all, of the forecasts.

400 percent of the poverty line. With the ACA, that percentage may fall to 31.5. Multiplying the average of the two by the assumed exchange subsidy take-up rate of two-thirds yields the combined fraction of 0.222 noted above.

The entries are color coded according to the program(s) applicable to the relevant subpopulation. Take the green color codes, for example. The aforementioned 0.183 entry (first row) represents all the persons who would jump onto the sliding income scale for exchange subsidies merely by switching to part-time work: 0.18 is therefore Table 1's entry for the "HI subsidies for persons with ESI at work" program on the "reduced hours" margin. For the employment margin, another 0.045 of the population can also jump onto the sliding scale, as indicated by the green-coded 0.039 and 0.006 entries in Table 1's second and third rows. The sum of all three of Table 3's green-coded employment entries is 0.23, which is entered in Table 1 for the "HI subsidies for persons with ESI at work" program.

Table 1's program weights for the individual mandate penalty (employment margin) are small because about 12 percent of the population is uninsured and about six percent are expected to be uninsured.[20] The program weights for "HI subsidies for persons w/o ESI at work" (that is, movements along the sliding income scale for the exchange subsidies) represent the combination of persons who are already covered by non-group insurance and workers who are currently uninsured but will get subsidized NGI once the exchanges come on-line. Both of these groups are thought to be small, which is why the program weights shown in Table 1 are only 0.07.[21] Thus, while the sliding scale for exchange subsidies may be the most recognized source of high ACA

[20] For this purpose, "uninsured" does not include persons aged 25 or less and without dependents because I assume that they satisfy the individual mandate by participating in their parents' plan. The individual mandate program weight of 0.09 does not imply that the ACA would penalize 6 percent of household heads and spouses between the ages of 26 and 64 (about 7 million people) because many of them would be unemployed (indeed, that possibility is the reason why the individual mandate adds to the marginal tax rate). The Congressional Budget Office (2010) predicts that 3.9 million household heads and spouses will be penalized for lack of insurance among family members; my program weight is consistent with about that many penalty payers.

[21] By constraining Table 3's employment-related entries to sum to one, my estimates do not yet recognize the fact that some ESI workers will both be jumping onto the scale (the red color codes in Table 3) when leaving their job and sliding along it (the green color codes) due to another family member's participation in an exchange plan. This tends to understate the program weights for "HI subsidies for persons w/o ESI at work" and thereby understate the impact of the ACA on marginal labor income tax rates.

marginal tax rates, it is less common than: the employer penalties, the withholding of exchange subsidies from persons working in ESI jobs, and perhaps even less common than the hardship relief attached to the individual mandate penalty.

The eligibility-conditional take-up rate for the exchange subsidies among persons leaving employer plans is an important determinant of the entries shown in Table 3's top panel, and by subtraction a determinant of the entries shown in Table 3's bottom panel. I assume a two-thirds take-up rate. In making my estimate, I noted that law is currently written with Congressmen and their staffs required to get their health insurance on the exchanges and that the Administration plans a large advertising campaign for promoting the exchange plans and keeping them distinct from anti-poverty health programs like Medicaid. In this regard, the exchange plans look like a well-advertised version of the COBRA subsidy provided by the American Recovery and Reinvestment Act, which had about a two-thirds take-up rate (see Appendix IV). I also note from the Oregon Medicaid Study that 60 percent of households that won by lottery (conditional on meeting an income requirement) a Medicaid participation opportunity filed an application to participate.[22]

Table 1's weights for the employer penalty program are greater than those for the HI subsidies for persons without ESI at work because any full-time employee creates a penalty at the margin if his employer does not offer ESI, even if that employee does not buy insurance from the exchanges or is ineligible for subsidies due to family income. Because I intend to estimate marginal tax rates for market-level analysis, I treat the employer penalty as $2,000 for any full-time employee hired by any firm not offering ESI to its full-time employees, implicitly ignoring the facts that (i) employers with less than 49 full-time equivalent employees will pay zero penalty at the margin and (ii) employers with exactly 49 employees will pay approximately $40,000 for an additional full-time employee. As a result, Table 1's weight for the employer penalty is 0.23, which is the sum of one entry from the last column of each of Table 3's four panels.

[22] The lottery population is poorer, less educated, etc., than the population represented in my Table 3's top panel, and for this reason the former group might be less likely to accept health insurance assistance than the latter group would be. Medicaid may also be more stigmatized and less well advertised than the exchange subsidies will be. On the other hand, the ACA's exchange subsidies require participants to spend some of their own money, whereas Medicaid participants pay little (if anything) to participate.

Another important determinant of the program weights is the fraction of employees whose employer does not offer ESI, even to its full-time employees. The CBO estimates 27 percent for 2008 (Congressional Budget Office 2007). Using Census Bureau data, Janicki (2013) estimates 29 percent in 2010. Using the Medical Expenditure Panel Survey (MEPS), Carroll and Miller (2011) estimate 13 percent in 2011. The simple average of these three is 23 percent, but I use 24 percent in order to put somewhat less weight on the outlying MEPS estimate.[23] With a few employers dropping ESI under the ACA, the 24 percent could become 28 percent.

My estimates assume that roughly half of workers with earnings potential near the median are not directly affected by *any* of the ACA provisions noted above. Less than 10 percent of such workers will be uninsured while working and therefore liable for the individual mandate penalty while working. Less than 15 percent will have non-group insurance while working and some of those will not be eligible for subsidies because their household income will be outside the 100-400 percent FPL interval. About 54 percent of median earners will have ESI at work, but more than half of them will not take up the subsidy while not working or will be ineligible for exchange subsidies when not working because their household income will be outside the subsidized interval. The remainder of workers with near median earnings potential will be covered by someone else's plan (e.g., spouse or parents), Medicare, or Medicaid.[24]

---

[23] The Congressional Budget Office (2007) uses a variety of sources, including the MEPS and the Census Bureau data. Therefore my weight on MEPS is a bit larger than CBO's, but still much less than 50 percent. Cutler and Sood (2010) only consider the MEPS, and thereby conclude that only 2 million employees work in large firms not offering health insurance, as compared to the CBO's estimate of more than 15 million. This reason alone makes my estimate of the participation weight for the employer penalty program 6 or 7 times greater than it would be under Cutler and Sood's (2010) approach. In addition, Cutler and Sood appear to ignore the extraordinary penalty levied on the 50th employee hired, and did not anticipate that the ACA's employer penalty would not be deductible from employer taxes.

[24] Another way to calculate the fraction with work incentives directly affected is to add (i) the fraction of workers with ESI and in a family with income in the 1-4 FPL range (adjusted for imperfect take-up, this is the fraction who would obtain an exchange subsidy as a consequence of leaving their job), (ii) the fraction of workers at firms not offering ESI even to full-time employees (they are affected because their employer pays a penalty, or faces a large marginal cost of expanding beyond 49 employees), (iii) the non-poor uninsured aged 26-64 who work at employers offering ESI to full-time employers (if they remain uninsured, they will be subject to the individual mandate penalty and its relief provisions). The three groups cited above do not overlap. Fraction (i) is roughly 0.25 or 0.30. Fraction (ii) is roughly 0.20 or 0.25, which means that the sum (i)-(iii) is close to or exceeding 0.5.

The weight for the ACA's implicit taxation of UI benefits is 0.05, which is the program weight for "HI subsidies for persons w/o ESI at work" times the fraction of the workforce who would, during times of unemployment, be UI eligible.[25] The program weight for the uncompensated care interaction term is the product of the propensity to be uninsured times the fraction (0.5) of those who obtain private HI coverage as a consequence of the ACA.[26]

Results for the Overall Index

The bottom panel of Table 1 accumulates the results of the top and middle panels. Its top row begins by, conditional on a margin for reducing labor supply, multiplying each program's benefit index by its program participation weight and then summing across programs. The combined effect of the ACA is to add about $209 per month in the assistance that people with median earnings potential get when they spend time not employed.

On average, the ACA adds $208 per month to the assistance, if any, they get when they move from full-time work to part-time work. In order to be comparable with the results for the other margins, the $208 has already been scaled (see also above) so that the change in labor supply on each of the three margins reflects the same impact on aggregate hours.[27] The $208 is historically unusual because a number of pre-ACA safety net programs are designed to help primarily people without jobs whereas few (if any) are

[25] In order to calculate the benefit index for the "HI subsidies for persons w/ ESI at work," I took the household incomes of workers as they were in 2010, without any reduction for the income that would be lost by working less and thereby somewhat underestimating the amount of the subsidy (recall that subsidies are enhanced by reducing household income). That excluded lost household income would be net of UI benefits, which is why, for consistency, my Table 1 must also exclude an UI offset for "HI subsidies for persons w/ ESI at work."

[26] Instead of applying the removal of the uncompensated care tax to a portion of the uninsured, it could be applied to a somewhat broader group, thereby treating the uncompensated care component of my marginal tax rate formula as a catchall for the propensity of the ACA to replace "free care," such as Medicaid, with insurer-financed care.

[27] E.g., reducing weekly hours by 20 (roughly half of full time) would be the same as reducing the probability of employment during a week by one half. Another example: a new flat-rate payroll tax would add the same dollar amount to the benefit index regardless of whether the labor margin was unemployment, OLF, or reduced hours.

designed to primarily help people with jobs at reduced hours.[28] The employer shared responsibility penalty can be avoided either by non-employment or reduced hours, but the penalty is also unusual – and different from a flat-rate payroll tax – in that it can be avoided with a lesser percentage reduction in hours than in employment.

The final two rows of Table 1 report the results of aggregating across labor supply margins using the weights shown in the table reflecting the relative contribution of each margin to the reduction in aggregate work hours during the recession of 2008-9 (Mulligan 2012).[29] The ACA adds $208 per month to the overall statutory index.[30] This assistance is in addition to the cash flow assistance they already get from unemployment insurance, food stamps, tax policy, and a host of other safety net programs.

$208 per month is 4.9 percent of the total compensation of a person of median earnings potential who is working full-time. Thus, I conclude that the ACA adds 4.9 percentage points to the average marginal labor income tax rate in 2015. In 2014 and 2016, the percentage point additions (relative to the no-ACA baseline) are 3.7 and 5.0, respectively.

Table 3 shows that 51 percent of household heads and spouses who would be working without the ACA – the sum of the table entries without any color codes – are not eligible for, or would not participate in, any of the subsidies or penalties that are created by the ACA. Thus, roughly half of the household heads and spouses who would be working without the ACA have their marginal tax rate unchanged by the ACA and the other half have their marginal tax rate increased by an average of 10 percentage points.

Taking into account both the benefit amounts and the participation weights, the three largest components of the $208 per month disincentive are, in order: (a) the

[28] See also Mulligan (2012).

[29] The data used to measure the three labor supply weights can also be used to quantify the relative contributions to aggregate work hours changes of hours reductions by full-time employees that changed their status to part-time and hours reductions that did not change their status; this is the source of the 0.58 scaling factor used above to calculate benefit indices for the reduced hours margin.

[30] The $208 per month result is not sensitive to the labor supply margin weights because the margin specific totals have a pretty tight range: $207 to $211. The $208 also excludes the ACA's Additional Medicare Tax of 0.9 percent of earnings above a threshold (approximately $200,000 per year), beginning in 2013, because a median earner does not earn enough to be subject to this tax (U.S. Internal Revenue Service 2013b). Among all non-elderly heads and spouses, about one percent will pay the tax in 2014, which makes its contribution to average marginal tax rates about 0.01 percentage points: at least two orders of magnitude less than the rest of the ACA.

premium assistance that becomes available when a person transitions from ESI employment to non-employment (and is withheld when transitioning back), (b) the premium assistance that is enhanced when a worker with premium assistance works a lesser fraction of the year, and (c) the premium assistance that becomes available when a person transitions from ESI employment to part-time employment. To put it another way, even if we completely ignored the sliding scale nature of the premium assistance (item (b)), the ACA's added disincentive would still be more than $147 per month.

Figure 2 displays the overall marginal tax rate for non-elderly household heads and spouses with near median earnings potential, including the safety net programs that pre-dated the ACA. The series through December 2011 is from Mulligan (2012). I updated that series through December 2016 by (i) adding the ACA components (3.7, 4.9, and 5.0 percentage points in 2014, 2015, and 2016, respectively), (ii) accounting for the reduction of the maximum duration of unemployment benefits through mid-2013 (the maximum duration is assumed to remain constant thereafter), (iii) accounting for the erosion of real food stamp benefits by inflation through May 2013 and assuming that future farm bills will increase nominal benefits so that, on average, they are the same as in May 2013, (iv) accounting for the December 2012 expiration of the payroll tax cut, and (v) assuming that the work disincentives of mortgage modification erode at 3.5 percent per year after December 2011.

The 2009-10 peak for marginal tax rates comes from various provisions of the "stimulus" law and the 99 week duration of unemployment benefits in several states. At the end of 2012, the marginal tax rate index reached its lowest value since 2008: less than 44 percent. One year later (January 2014), the index is close to 50 percent due to the combination of the full payroll tax and all of the provisions shown in Table 1, except for the employer penalties. The employer penalty adds more than a percentage point in 2015, while other ACA provisions strengthen their disincentives for the various reasons cited above.

By 2016, the index exceeds 50%, which is at least 10 percentage points greater than it was in early 2007. Over that time frame, the marginal after-tax share falls from 60 percent to 50 percent, which means that at a given marginal productivity of labor the reward to working fell 17 percent.

Conclusions

The possible labor market effects of the ACA's employer penalties have already attracted much discussion. But economists have long recognized that penalizing employees for working, or subsidizing people for not working, has essentially the same substitution effects on the quantity and productivity of labor as penalizing employers on the basis of their payrolls. The ACA's employer penalties by themselves are historically significant but nonetheless smaller than two of the law's other implicit tax provisions.

A number of the ACA's implicit taxes are linked in one way or another to its income-based healthcare payment schedules, which create several types of work disincentives for persons in households with income in or near the 100-400 percent FPL range. First, in order of aggregate importance, a household head or spouse is denied access to the payment schedule as long as he or she holds a job that offers health insurance, and granted access when not employed. Second, working fewer weeks per year or hours per week enhances the exchange subsidies for persons in a job not offering health insurance while purchasing insurance on the exchanges. Third, a household head or spouse can be granted access *as a consequence* of moving from full-time employment to part-time employment if that move results in a loss of opportunity for ESI. Another implicit tax comes from the hardship exemption for the penalties on uninsured individuals.

The ACA's implicit taxes will be experienced primarily by persons above the poverty line. Close to half of non-elderly household heads and spouses with weekly earnings near the median (and employed sometime during the calendar year) will have their marginal labor income tax rate hiked by the ACA. Among sometime-employed household heads and spouses generally (without regard for weekly earnings), 38 percent will experience a rate hike.

Among the near-median heads and spouses with marginal tax rate hikes, the hike as of 2015 will average about 10 percentage points of total compensation, on top of all of the marginal tax rates that were present before the ACA. Their new tax wedge will, on average, be similar to doubling their employer and employee payroll taxes. As Table 2

illustrates, some middle-class workers will find that they can work substantially less without losing any disposable income. The average marginal tax rate hike among all sometime-employed non-elderly near-median household heads and spouses – including in the average those with no hike – is five percentage points.

Five percentage points is large by historical standards. While it lasted, the payroll tax cut of 2011 was one third of the magnitude of the ACA's tax rate hike.[31] Several SNAP (formerly food stamp program) expansions in combination were a quarter of the ACA's magnitude. In terms of its impact on average marginal tax rates, the ACA hike is almost double the effect of permanently increasing unemployment benefit payments to 99 weeks from a baseline of 26 weeks (Mulligan 2012).

Cutler (2011) argues that the ACA will increase employment because it will cut (or slow the growth of) employer health costs without commensurate reductions in the amount employees value their health benefits. He draws on the work of Baicker and Chandra (2006), who treat a specific type of health sector waste as a tax effect, thereby suggesting that cutting health sector waste could be included in my Table 1 that itemizes the ACA's incentive-related provisions. I am not sure about Cutler's approach, because unlike the tax effects in Table 1, reducing health sector waste is not a pure redistribution: health sector wastes are real resources that have an adverse wealth effect on labor supply. More important, Cutler's cost effect is trivial on the scale of Table 1, and could be in either direction.[32]

The ACA has not been introduced into a tax-free economy, so its marginal tax rate hikes add to marginal tax rates already in effect. I estimate that, by 2015, the average marginal after-tax share among household heads and spouses with near-median weekly earnings will have fallen to 0.50 from 0.60 in 2007, largely from the ACA but also from other expansions in safety net programs. That is a massive 17 percent reduction in the

[31] As shown in Figure 2, the ACA hike comes a year or two after the hike associated with the expiration of the payroll tax cut.

[32] Other economists believe that the ACA will increase employer health costs without a commensurate increase in the value of health benefits to employees by, for example, requiring employers to include medical benefits that they would have excluded without the ACA (Cannon 2009) (Kessler 2013). Mulligan (2013b) shows how even Cutler's estimate (the ACA reduces health premiums by 5 percent as of 2015) and approach imply that the cost channel is something like a 0.3-0.6 percentage point reduction in marginal labor income tax rates: health waste amounting to 5 percent of health expenses is 0.3-0.6 percent of the total reward to employment.

reward to working – akin to erasing a decade of labor productivity growth without the wealth effect – that would be expected to significantly depress the amounts of labor and consumer spending in the economy even if the wage elasticity of labor supply were small (but not literally zero). The large tax rate increases shown in Figure 2 are the primary reason why it is unlikely that labor market activity will return even near to its pre-recession levels as long as the ACA's work disincentives remain in place.

The labor market has much experience with (implicit and explicit) taxes on earnings and employment. A novel part of the ACA is that it taxes weekly work hours directly: that is, the new law requires employers to report the amount of time that employees work, and bases taxes and subsidies on that report. This new type of taxation should create new types of avoidance behaviors, and may also change society's willingness to use earnings and employment taxes.

By significantly taxing weekly work hours, it might seem that the ACA would encourage employers to hire in order to compensate for the shorter workweek of the average employee (Congressional Budget Office 2011, 8-9). However, Table 1 shows that the ACA encourages unemployment and labor force exits about as much as it encourages reduced hours, so it would be surprising if the indirect effect on employment through weekly hours would dominate the direct effects of ACA employment taxes. Table 1 does suggest that the reduction in aggregate hours to be created by the ACA will be more intensive in weekly hours and less unemployment intensive than was the recession of 2008-9 because the marginal tax rate hikes during the recession were primarily taxing weeks worked per year rather than hours worked per week (Mulligan 2012).

This paper assumes that the employer penalty will not be further delayed, or eliminated. As shown by the difference between marginal tax rates for 2014 and 2015, the magnitude of the ACA's impact on marginal tax rates would be significantly less, but far from zero, in any year without employer penalties. Appendix V contains sensitivity analysis with respect to various other policy parameters and population estimates, showing that another important assumption is that families will (gross of out-of-pocket costs) value the benefits from a family health plan obtained on the exchanges at about $19,000 per year. The valuation assumption is also related to my assumption that two-

thirds of persons leaving ESI jobs and eligible for exchange subsidies will actually purchase health plans from the exchanges. Altering the valuation assumptions puts the ACA's addition to the 2016 marginal tax rate in a range of 4.3 to 6.4 percentage points.

The Obama Administration and other advocates of the ACA have dismissed concerns that the law might be trading off labor market activity for more redistribution, citing the absence of a Massachusetts-specific labor market contraction when that state passed its law mandating health insurance coverage.[33] As Jonathan Gruber (2011, 27:02) put it, "we've actually run this experiment, folks: we ran it in Massachusetts." However, this argument assumes that the Massachusetts reform increased marginal tax rates in Massachusetts by roughly the same magnitude that the ACA will increase them in the United States. This assumption is no longer necessary, because the methodology used in this paper can be applied to Massachusetts as well. Table 4, reproduced from Mulligan (2013c) is the Massachusetts analogue to Table 1, referring to the effect of the Massachusetts reform on marginal tax rates in that state as of 2010. Not surprisingly, Massachusetts marginal tax rates were elevated by its health reform. However, the average increase in Massachusetts was only 0.4 percentage points, as compared to the ACA's 4.9 percentage point impact on nationwide marginal tax rates. The obvious conclusion from these data is to expect the ACA to depress labor markets by at least an order of magnitude more than the Massachusetts reform did.

Appendix I: ACA Marginal Tax Rate Components for 2014 and 2016

Table 5 reproduces Table 1 using the law's parameters for calendar year 2014. Table 6 shows the results for calendar year 2016.

[33] Cutler (2013). See also the Department of Health and Human Services statement that "The experience in Massachusetts … suggest[s] that the health care law will improve the affordability and accessibility of health care without significantly affecting the labor market." (Contorno 2013)

Appendix II: Details about the Sliding Scale Exchange Subsidies

Table 7 displays the sliding scale parameters. Each row is a household income interval relative to the federal poverty line beginning at the income amount indicated in the first column. The second column shows the premium charge for a family with income at the bottom end of the interval, expressed as a percentage of household income.[34] The premium percentage increases smoothly within the interval and as it crosses the next income threshold, with the exceptions (noted in the last column) of: (a) the 1 – 1.33 interval where the percentage is constant at 2 percent and jumps discretely to 3 percent and (b) the 4+ interval where there is no premium cap (the premium jumps from 9.5 percent of income to the full premium).

Plan participants pay their designated premium and then receive benefits that are expected to be less than (typically 70 percent of) total medical expenses, with the remainder charged to plan participants as various out-of-pocket costs such as co-payments, coinsurance rates, etc. The third column of the table shows the "cost-sharing" discount families receive as a function of their household income. This discount is a step function of income, jumping from 80 to 57 percent at 1.5 FPL, to 10 percent at 2 FPL, and then to zero at 2.5 FPL. For example, someone at 1.4 FPL on a silver plan can expect (in the actuarial sense) to have their premiums cover 70 percent of medical expenses. Of the remaining 30 percent, 6 percentage points would be paid by the participant and the remaining 24 percentage points paid by taxpayers in the form of a cost-sharing subsidy for the plan participant.

Over the income range 1-4 FPL, Table 7 alone has all of the parameters needed to graph household income versus premium (both expressed as a ratio to FPL). The slope of this graph is the rate at which the premium subsidy is phased out with household income, and is less than 100 percent except at the jumps at 1.33 and 4 FPL. Note that Table 1 does not indicate the absolute amount of the premium subsidy, because the absolute amount is the difference between the full cost of the second cheapest silver plan and the

[34] The premium charge is for the second-cheapest silver plan, which is expected to pay 70 percent of medical bills. Participants can choose a more expensive plan at their own expense, or choose a less expensive plan in order to reduce the premium they pay.

premium cap and the plan full cost will vary by year, family size and composition, and state and is not yet known at the time of writing this paper.

Solely for the purpose of preparing Figure 1, I calculated a dollar range of participant cost-sharing by assuming that plans' EMPs (full premium plus full out-of-pocket costs) ranges from $7,000 to $19,000 per year and using the discount percentages noted in Table 7.[35] In order to get a FPL range for the cost-sharing amount, I assumed that the $7,000 EMP applied to a family of one and the $19,000 EMP applied to a family of three.[36] These participant cost-sharing amounts (one for each end of the $9,000 - $19,000 EMP range) are added to the premiums implied by Table 7 and shown in Figure 1 in the main text of the paper.

Appendix III: Health Insurance Values

The Congressional Budget Office (2010) estimated that 2016 bronze plan annual premiums would be about $12,250 ($4,750) for family (single) coverage, respectively. By definition, bronze plan premiums cover 60% of expected medical expenses, which would be $20,417 ($7,917).

For my purposes, I need to know how people value the insurance they get, rather than the actuarial cost. These two are related because people demand insurance from their employers, and ultimately receive less cash by the amount of the actuarial value: in effect employees are spending their own cash on the ESI. However, it is conceivable that cost of administration, bureaucracy, and other loadings mean that exchange plans will need to have greater expenses in order to deliver the same benefits as ESI. In this case, the actuarial value of ESI may be a better measure of the value of exchange plans to their participants.

[35] The quantitative results in the rest of the paper do not depend on the numerical results presented in Figure 1.

[36] For the purposes of putting an upper bound on participant cost sharing, my assumption does not rule out the possibility that families of four or more would have an EMP of $20,000, because their EMP is less in FPL units than a family of three with a $20,000 EMP because the dollar amount of the FPL increases with family size.

The Kaiser Foundation's survey of employer plans for 2012 found that average annual premiums were $15,745 ($5,615) for family (single) coverage, respectively (Claxton, et al. 2012, Exhibit 1.1). Employer plans tend to have premiums equal to about 83% of participant costs, with the other 17% covered by various forms of out-of-pocket payments (Gabel, et al. 2012). Thus, the Kaiser results suggest that annual medical payments (premiums plus out-of-pocket expenses) averaged about $18,970 ($6,765) for family (single) coverage by employer plans, respectively, in 2012. With 4 percent annual cost growth (the rate of growth measured between the 2011 and 2012 Kaiser surveys), these amounts may be $20,518 ($7,317) by 2014, respectively, and $22,192 ($7,914) by 2016.

Based on these various estimates, my benchmark calculations use a conservative $19,000 ($7,000) expected medical payments for family (single) coverage, respectively, in 2014. Employee plus one coverage value is taken as the average of the two.

As a sensitivity analysis, I assigned an expected medical payment value to each household member on the basis of his or her age and household composition, based on the Kaiser Foundation's silver plan premium calculator (hereafter, "KFF calculator") for calendar year 2014, and then summed across household members. I convert silver plan premiums to expected medical payments (EMP) by dividing by 0.7. Each non-elderly household head or spouse in the CPS is assigned the EMP associated with his or her age. For the purpose of calculating the household sum associated with a married head or spouse, the other spouse is assumed to be of the same age. Per the KFF calculator, children under 18 are each assigned an EMP of $2,737 (2014 dollars), except that the total EMP for a household's children under 18 is capped at $8,211. Adults other than the head or spouse, as well as heads or spouses less than age 21, are assigned the EMP for a 21-year-old, regardless of their actual age. As shown in Appendix V, the KFF calculator delivers a slightly larger marginal tax rate.

Appendix IV: Using the ARRA's COBRA Subsidy to Forecast Take-up of the ACA's Premium Assistance

The ARRA's COBRA subsidy has a lot in common with the ACA's exchange subsidies for recently unemployed people (among others). Both of them are (were) sources of health insurance premium assistance for persons who were laid off from a job whose compensation included health insurance. Both of them require that the insured pay for part of their premiums, usually with after-tax dollars. Both programs could have imperfect take-up because, among other things, unemployed persons might be unaware of the program, or might choose to forego health insurance, or might participate in a family member's health plan. One might expect take-up to be greater under the ACA because the ACA opportunities for plan participation will be heavily advertised by the federal government and because plan participation may help satisfy the ACA's "individual mandate."[37]

The COBRA subsidy paid 65% of health insurance premiums, with the unemployed person paying the other 35% of premiums and all of the out-of-pocket costs, which is about 46% of all health expenses. Under the ACA, persons in households between 100 and 300 percent of the federal poverty line and with ESI would get a better deal. Thus, the ACA subsidizes these households' continuation of health insurance after a layoff at about the same rate as the COBRA subsidy did.

In order to estimate a take-up rate for the COBRA subsidy, I first look at the propensity of non-elderly unemployed household heads and spouses to receive COBRA without a subsidy, as opposed to purchasing non-group coverage or going uninsured. The March 2009 CPS does not indicate COBRA coverage per se, but 52 percent of these unemployed people (totaling 2.68 million) were participating in health insurance via their former employer.[38] Persons obtaining coverage through Medicaid or a family member are excluded from the denominator because persons with government coverage or

[37] However, unemployed persons are likely exempt from the individual mandate under the ACA's hardship exemption.

[38] The ARRA had been passed a few weeks before the March 2009 CPS interview. Not surprisingly, Treasury data show that hardly anyone (less than 25,000 households) received a COBRA subsidy prior to 2009-Q2 (United States Department of Treasury 2010).

persons with access to spousal coverage were not eligible for COBRA subsidies (United States Department of Treasury 2010, 2).

The 52 percent participation rate without subsidies is significant for the purpose of understanding the ACA because it indicates that a large fraction of household heads and spouses are willing to pay full price for their health insurance, and presumably even more would be willing to pay less than full price. If people perceive that they can access essentially the same medical services through ACA exchange plans as they access through employer plans, this result suggests that more than half of premium-assistance-eligible household heads and spouses losing ESI coverage through unemployment will participate in the exchanges and receive their subsidy.

In order to obtain a somewhat more precise estimate of COBRA subsidy take-up as of 2009-Q4, I began with all of the respondents to the December 2009 CPS who were a non-elderly household head or spouse and so far unemployed 4-39 weeks (i.e., likely exited employment during the ARRA and would have a spell long enough to rationalize using COBRA), and scaled down by the propensity of unemployed non-elderly heads and spouses to be on Medicaid.[39] Those respondents represent 4.35 million people nationwide.

Some of the 4.35 million would be ineligible for COBRA, let alone the subsidy, because they did not have health insurance on their prior job. In March 2009, 60% of non-elderly employed household heads and spouses receive health insurance from their employer. Because the unemployed are younger and less educated than the employed, I assume that only 55% of the 4.35 million had ESI coverage on their prior job. Of those 55%, I assume that a third would not choose COBRA or be eligible for the subsidy because they could obtain coverage through a spouse, from Medicaid, or because their former employer shut down.[40] This leaves 1.59 million.

The 2.68 million noted above who were unemployed with ESI coverage when the ARRA was passed might also receive the COBRA subsidy in 2009-Q4 if, among other things, they were still unemployed in 2009-Q4. I rescale the 2.68 million by the ratio of non-elderly heads and spouses unemployed in December 2009 with a spell already lasting

[39] Medicaid recipients are not eligible for the COBRA subsidy. I measure this propensity in the March 2010 CPS.

[40] Note that a majority of non-elderly unemployed household heads and spouses are married.

more than 39 weeks to the number of non-elderly heads and spouses unemployed in March 2009, which results in 0.85 million.

The COBRA subsidy was not available to unemployed persons unless they were laid off (as opposed to quit or fired for cause). I take this eligibility criterion to be equivalent to receiving unemployment benefits sometime during the unemployment spell, which Mulligan (2012) estimated to be 68% of unemployed non-elderly household heads and spouses. Adding the 1.59 million to the 0.85 million and multiplying by 0.68 results in 1.7 million.

Thus, the COBRA subsidy eligible population was about 1.7 million households in the fourth quarter of 2009. The United States Treasury (2010) reported that approximately 1.05 million households received the COBRA subsidy during the fourth quarter of 2009, which implies a COBRA subsidy take-up rate of about 63%. It is possible that Treasury processed additional 2009-Q4 COBRA subsidy claims after it published its report (United States Department of Treasury 2010, 3-4), which would imply a take-up rate greater than 63%.

Because the observations above are consistent with a fairly wide range of exchange subsidy take-up rates, my forecast range must also be wide. My benchmark parameterization assumes a 2/3 take-up rate. A 50 percent take-up rate seems low, but not unreasonable, so I have also estimated marginal tax rates assuming 50 percent take-up and display the results in Appendix V. I doubt that take-up rates will be close to 100 percent, but Appendix V also examines the 100 percent case in order to put an upper bound on the results that could derive from take-up.

Appendix V: Sensitivity Analysis

Table 8 shows how the 2014-16 results change with changes in various assumptions about group sizes and policy parameters. The entries are ACA impacts on work disincentives, expressed as a percentage of compensation of the median worker (defined in the main text). The top row is the benchmark specification: namely, the bottom line from each of Tables 5, 1, and 6, respectively. The next rows show the results from subtracting or adding one percentage point to the assumed 1.6%/year growth of

health care costs. Worker valuation of participation in exchange health plans is explored in the next three rows. After that, results are shown from assuming 50 percent or 100 percent take-up of exchange subsidies among persons leaving employer plans and eligible for the subsidies, rather than the benchmark assumption of 2/3 take-up.

The next four rows show results of alternative assumptions about the effect of the ACA on insurance status. The row labeled "50% take-up of hardship exemption" shows the result of assuming that only half of those leaving ESI to be uninsured and unemployed are eligible for a hardship exemption from the individual mandate. The final two rows of the table show the results of putting alternative weights on each of the three labor supply margins.

Table 1: ACA and Related Components of the Statutory Marginal Tax Rate Index
Calendar year 2015, average among household heads and spouses with median earnings potential

Benefit Index Amounts (constant 2014 dollars per month)

	Margins for Reducing Labor Supply			
Program	Unemployed	OLF	Reduced hours	growth rate after 2014
Employer shared responsibility penalty	192	192	220	starts at 192 in 2015,then grows at wages +1.6%/yr
Individual mandate relief	103	0	0	grows with inflation after 2016
HI subsidies for persons w/o ESI at work	832	832	832	
HI subsidies for persons w/ ESI at work	508	508	582	grows 1.6%/year more than wages
Implicit taxation of unemployment benefits	-301	0	0	
Move off implicit uncompensated care tax	-201	-201	-201	grows with wages

Program Participation Weights (fractions)

Program	Unemployed	OLF	Reduced hours	growth rate after 2014
Employer shared responsibility penalty	0.23	0.23	0.23	
Individual mandate relief	0.09	0	0	all program participation weights are constant by definition
HI subsidies for persons w/o ESI at work	0.07	0.07	0.07	
HI subsidies for persons w/ ESI at work	0.23	0.23	0.18	
Implicit taxation of unemployment benefits	0.05	0	0	
Move off implicit uncompensated care tax	0.05	0.05	0.05	

Statutory index, all ACA programs	**207**	**211**	**208**
LFS weights	0.583	0.089	0.328
Statutory index, all ACA programs & all LFS	**$208/month = 4.9% of employer cost**		

Table 2. The ACA's Implicit Tax on Full-time Work: An Example

beginning in 2014, for employers offering health insurance to full-time employees.
All dollar amounts are annualized unless noted otherwise.
Subsidies are calculated for a family of four with one earner.

	full-time position	part-time position	
Health insurance source	ESI	ACA exchange	
Employee costs			
weekly hours worked	40	29	(1)
weekly work expense	$ 100	$ 75	(2)
Employer costs			
hourly basis	26	26	(3)
annual	52,000	37,700	(4) = 50*(3)*(1)
employer payroll taxes	2,679	2,679	(5) = 50*[(4)-(6)-(7)]*0.0765/1.0765
Health insurance premiums			
employer	11,154	0	(6) = 78% of total premium (ESI only)
employee, excluded from tax base	3,146	0	(7) = 22% of total premium (ESI only)
employee, included in tax base	0	1,304	(8) = 3.7% of (12)
ACA	0	10,806	(9) = 70% of total health expenses - (8)
out-of-pocket health expenses			
employee	3,000	1,038	(10) = 17% (6%) of total ESI (exch.) expenses
ACA	0	4,152	(11) = (3/7)*[(8)+(9)]-(10)
Employee income subject to tax			
total	35,021	35,021	(12) = (4) - (5) - (6) - (7)
ratio to FPL	1.45	1.45	(13) = (12)/24100
after health & work expenses, annual	27,021	28,929	(14) = (12) - (8) - (10) - 50*(2)

Notes: Both types of employees work 50 weeks per year. The ACA exchange plan is assumed to be a silver plan (70% actuarial value).

Table 3. Building Blocks of the Program Participation Weights

The table entries are averages of ACA and no-ACA values.

			Type of Employer		
		HI offer to FT?	yes	yes	no
		HI offer to PT?	yes	no	no
HI holder	FPL interval	Supply margin			
own	1-4	FT-PT	0.039	0.183	0.056
		FT-not employed	0.039	0.183	0.056
		PT-not employed	0.006	0.011	0.002
family NGI	1-4	FT-PT	0.000	0.000	0.002
		FT-not employed	0.000	0.000	0.002
		PT-not employed	0.000	0.002	0.000
none	1+	FT-PT	0.000	0.000	0.078
		FT-not employed	0.000	0.000	0.078
		PT-not employed	0.000	0.012	0.002
all others		FT-PT	0.078	0.364	0.095
		FT-not employed	0.078	0.364	0.095
		PT-not employed	0.008	0.038	0.023
sum of weights		reduced hours	0.117	0.547	0.231
		not employed	0.132	0.610	0.259

Legend for ACA-related labor wedges

- slide down scale for exchange payments
- jump onto scale for exchange payments
- hardship relief from individual mandate
- turn off employer penality
- none

Abbreviations: HI=health insurance, FPL=federal poverty line, FT=full time, PT=part time, NGI=non-group insurance

Table 4: Romneycare and Related Components of the Statutory Marginal Tax Rate Index
Calendar year 2010, average among MA household heads and spouses with median earnings potential

Benefit Index Amounts (constant 2014 dollars per month)

	Margins for Reducing Labor Supply		
Program	Unemployed	OLF	Reduced hours
Employer shared responsibility penalty	25	25	25
Individual mandate relief: sliding scale	147	147	147
Individual mandate relief: hardship exemptio	95	0	0
HI subsidies for persons w/o ESI at work	400	400	400
HI subsidies for persons w/ ESI at work	0	262	301
Medicaid/CHIP expansion for children	389	389	389
Implicit taxation of unemployment benefits	-155	0	0
Move off implicit uncompensated care tax	-233	-233	-233

Program Participation Weights (fractions)

Program	Unemployed	OLF	Reduced hours
Employer shared responsibility penalty	0.17	0.17	0.17
Individual mandate relief: sliding scale	0.03	0.03	0.03
Individual mandate relief: hardship exemptio	0.02	0	0
HI subsidies for persons w/o ESI at work	0.03	0.03	0.03
HI subsidies for persons w/ ESI at work	0	0.05	0.04
Medicaid/CHIP expansion for children	0.01	0.01	0.01
Implicit taxation of unemployment benefits	0.02	0	0
Move off implicit uncompensated care tax	0.03	0.03	0.03
Statutory index, all ACA programs	**14**	**28**	**27**
LFS weights	0.583	0.089	0.328
Statutory index, all ACA programs & all LFS	**$20/month = 0.4% of employer cost**		

Table 5: ACA and Related Components of the Statutory Marginal Tax Rate Index
Calendar year 2014, average among household heads and spouses with median earnings potential

Benefit Index Amounts (constant 2014 dollars per month)

	Margins for Reducing Labor Supply			
Program	Unemployed	OLF	Reduced hours	growth rate after 2014
Employer shared responsibility penalty	0	0	0	starts at 192 in 2015,then grows at wages +1.6%/yr
Individual mandate relief	51	0	0	grows with inflation after 2016
HI subsidies for persons w/o ESI at work	832	832	832	
HI subsidies for persons w/ ESI at work	500	500	573	grows 1.6%/year more than wages
Implicit taxation of unemployment benefits	-301	0	0	
Move off implicit uncompensated care tax	-201	-201	-201	grows with wages

Program Participation Weights (fractions)

Program	Unemployed	OLF	Reduced hours	growth rate after 2014
Employer shared responsibility penalty	0.23	0.23	0.23	
Individual mandate relief	0.09	0	0	all program participation weights are constant by definition
HI subsidies for persons w/o ESI at work	0.07	0.07	0.07	
HI subsidies for persons w/ ESI at work	0.23	0.23	0.18	
Implicit taxation of unemployment benefits	0.05	0	0	
Move off implicit uncompensated care tax	0.05	0.05	0.05	

Statutory index, all ACA programs	**156**	**165**	**156**
LFS weights	0.583	0.089	0.328
Statutory index, all ACA programs & all LFS	**$156/month = 3.7% of employer cost**		

Table 6: ACA and Related Components of the Statutory Marginal Tax Rate Index
Calendar year 2016, average among household heads and spouses with median earnings potential

Benefit Index Amounts (constant 2014 dollars per month)

	Margins for Reducing Labor Supply			
Program	Unemployed	OLF	Reduced hours	growth rate after 2014
Employer shared responsibility penalty	195	195	223	starts at 192 in 2015,then grows at wages +1.6%/yr
Individual mandate relief	128	0	0	grows with inflation after 2016
HI subsidies for persons w/o ESI at work	832	832	832	
HI subsidies for persons w/ ESI at work	516	516	592	grows 1.6%/year more than wages
Implicit taxation of unemployment benefits	-301	0	0	
Move off implicit uncompensated care tax	-201	-201	-201	grows with wages

Program Participation Weights (fractions)

Program	Unemployed	OLF	Reduced hours	growth rate after 2014
Employer shared responsibility penalty	0.23	0.23	0.23	
Individual mandate relief	0.09	0	0	all program participation weights are constant by definition
HI subsidies for persons w/o ESI at work	0.07	0.07	0.07	
HI subsidies for persons w/ ESI at work	0.23	0.23	0.18	
Implicit taxation of unemployment benefits	0.05	0	0	
Move off implicit uncompensated care tax	0.05	0.05	0.05	

Statutory index, all ACA programs	**212**	**214**	**211**
LFS weights	0.583	0.089	0.328
Statutory index, all ACA programs & all LFS	**$211/month = 5.0% of employer cost**		

Table 7. Sliding Scale Exchange Subsidies
as a function of household income for the calendar year

Income as a ratio to FPL	Percentage of income owed as premium	Discount on out-of-pocket cost (jumps when crossing thresholds)	Notes on interval
1	2%	80%	premium percentage is constant on this interval, jumping at 1.33
1.33	3%	80%	
1.5	4%	57%	
2	6.3%	10%	
2.5	8.05%	0%	
3	9.5%	0%	premium percentage is constant on this interval
4	9.5%	0%	
4+	full premium	0%	premium jumps here because the premium cap is eliminated

Notes: (a) the first column indicates the bottom threshold of the income interval
(b) income percentages change continuously between thresholds unless otherwise noted.
(c) FPL = federal poverty line.

Table 8. Sensitivity Analysis

	Marginal Tax Rate Impact, percentage points		
	2014	2015	2016
Benchmark	3.7	4.9	5.0
Health care cost growth, annual rate			
-1 pct point	3.7	4.9	4.9
+1 pct point	3.7	4.9	5.1
Health plan values			
-10 pct	3.1	4.3	4.4
KFF calculator	3.8	5.0	5.1
+10 pct	4.3	5.5	5.6
Exchange take-up when leaving ESI jobs			
50 pct	3.0	4.2	4.3
100 pct	5.0	6.2	6.4
Percentage of uninsured getting coverage			
-15 pct points	3.6	4.8	4.9
+15 pct points	3.8	5.0	5.1
Percentage of ESI moving to exchanges			
none	3.5	4.7	4.8
+10 pct points	3.9	5.1	5.2
50% take-up of hardship exemption	3.7	4.8	4.9
Labor force weights			
Move 10 pct points from UE to OLF	3.7	4.9	5.0
Move 10 pct points from UE to underemployment	3.7	4.9	5.0

Figure 1. 2014 Health Payments as a Function of Household Income and Policy Type

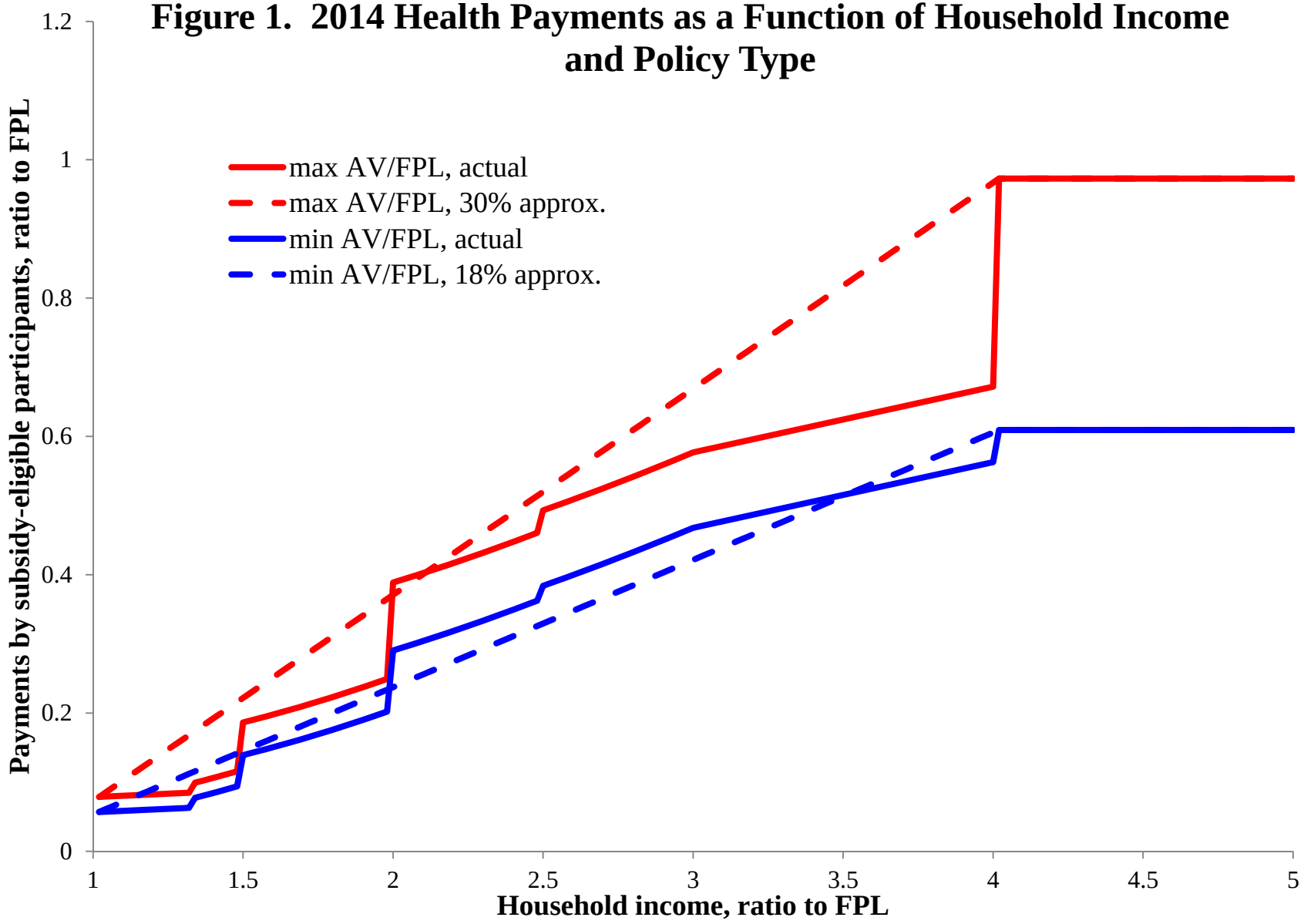
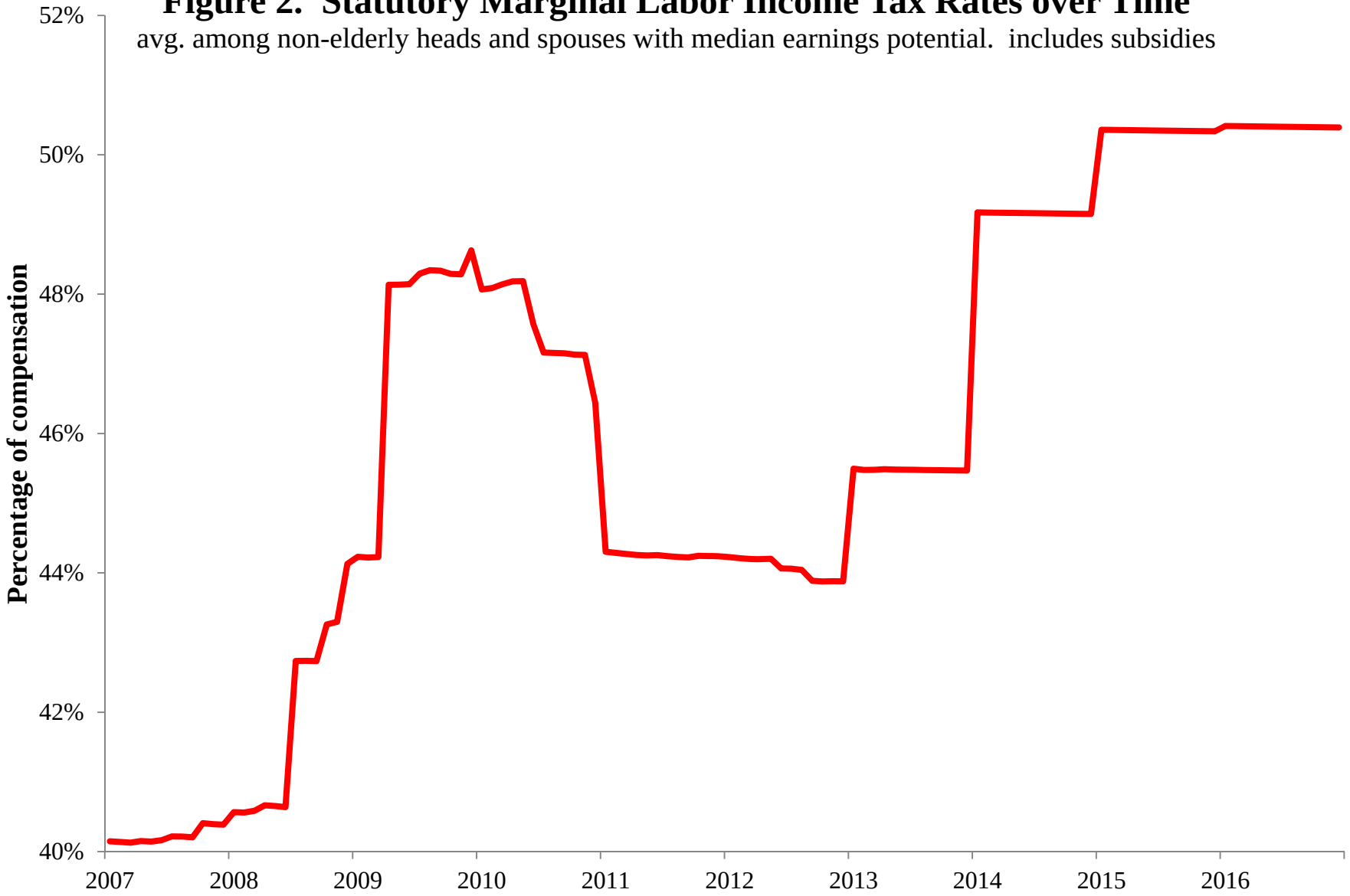


Figure 2. Statutory Marginal Labor Income Tax Rates over Time

avg. among non-elderly heads and spouses with median earnings potential. includes subsidies



Bibliography

Baicker, Katherine, and Amitabh Chandra. "The Labor Market Effects of Rising Health Premiums." *Journal of Labor Economics* 24, no. 3 (2006): 609-34.

Cannon, Michael F. "Massachusetts' Obama-like Reforms Increase Health Costs, Wait Times." *cato.org.* August 27, 2009. http://www.cato.org/publications/commentary/massachusetts-obama-reforms-increase-health-costs-wait-times (accessed July 30, 2013).

Carroll, William A., and G. Edward Miller. *Health Insurance Status of Full-Time Workers by Demographic and Employer Characteristics, 2008.* Statistical Brief, Washington, DC: HHS, Agency for Healthcare Research and Quality, 2011.

Claxton, Gary, et al. "Employer Health Benefits 2012." *kff.org.* September 2012. http://kff.org/report-section/ehbs-2012-section-1/ (accessed June 10, 2013).

Congressional Budget Office. *CBO's Analysis of the Major Health Care Legislation Enacted in March 2010.* Testimony before the Subcommittee on Health, Washington, DC: Congressional Budget Office, 2011.

Congressional Budget Office. "CBO's Health Insurance Simulation Model: A Technical Description." *CBO Background Paper*, October 2007.

—. "Estimate of the Effects of the Affordable Care Act on Health Insurance Coverage." *Congressional Budget Office.* February 2013. http://www.cbo.gov/sites/default/files/cbofiles/attachments/43900_ACAInsuranceCoverageEffects.pdf (accessed July 24, 2013).

—. "January 11, 2010 letter to Olympia Snowe." *Congressional Budget Office.* January 11, 2010. http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/108xx/doc10884/01-11-premiums_for_bronze_plan.pdf (accessed July 24, 2013).

—. "Payments of Penalties for Being Uninsured under the Patient Protection and Affordable Care Act." *Congressional Budget Office.* April 22, 2010. http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/113xx/doc11379/individual_mandate_penalties-04-22.pdf (accessed July 24, 2013).

Contorno, Steve. "Localities split on providing health benefits for part-time workers." *The Washington Examiner*. February 14, 2013. http://washingtonexaminer.com/localities-split-on-providing-health-benefits-for-part-time-workers/article/2521655 (accessed August 8, 2013).

Cutler, David M. *Testimony of David M. Cutler.* Testimony, Washington, DC: Committee on Energy and Commerce, U.S. House of Representatives, 2011.

—. "The Economics of the Affordable Care Act." *nytimes.com.* August 7, 2013. http://http://economix.blogs.nytimes.com/2013/08/07/the-economics-of-the-affordable-care-act/ (accessed August 7, 2013).

Cutler, David M., and Neeraj Sood. *New Jobs through Better Health Care.* Washington, DC: Center for American Progress, 2010.

Gabel, Jon R., et al. "More Than Half Of Individual Health Plans Offer Coverage That Falls Short Of What Can Be Sold Through Exchanges As Of 2014." *Health Affairs* 31, no. 6 (June 2012): 1-12.

Goolsbee, Austan. *Testimony at the Hearing on the Health Care Law's Impact on Jobs, Employers, and the Economy.* Washington, DC: Committee on Ways and Means, U.S. House of Representatives, 2011.

Gruber, Jonathan. "2011 Hewitt Health Care Lecture: The Budgetary Impact of Federal Health Care Reform." *vimeo.com.* March 2011. http://vimeo.com/21114715#t=27m2s (accessed August 8, 2013).

Janicki, Hubert. *Employment-Based Health Insurance: 2010.* Washington, DC: U.S. Department of Commerce, 2013.

Kaiser Commission on Medicaid and the Uninsured. *Covering the Uninsured in 2008: Key Facts about Current Costs, Sources of Payment, and Incremental Costs.* Menlo Park, CA: The Henry J. Kaiser Family Foundation, 2008.

Kessler, Daniel P. "Obamacare is Raising Insurance Costs." *Wall Street Journal*, June 4, 2013: A13.

Kolstad, Jonathan T., and Amanda E. Kowalski. "Mandate-Based Health Reform and the Labor Market: Evidence from the Massachusetts Reform." *NBER working paper*, no. 17933 (March 2012).

Mulligan, Casey B. "Health Care Inflation and the Arithmetic of Labor Taxes." *nytimes.com.* August 7, 2013b. http://economix.blogs.nytimes.com/2013/07/24/the-new-economics-of-part-time-employment-continued/ (accessed August 7, 2013).

Mulligan, Casey B. "Is the Affordable Care Act Different from Romneycare? A Labor Economics Perspective." *NBER working paper*, August 2013c.

Mulligan, Casey B. "Recent Marginal Labor Income Tax Changes by Skill and Marital Status." *Tax Policy and the Economy*, 2013a.

—. *The Redistribution Recession.* New York: Oxford University Press (redistributionrecession.com), 2012.

Summers, Lawrence H. "Some Simple Economics of Mandated Benefits." *American Economic Review* 79, no. 2 (May 1989): 177-83.

U.S. Internal Revenue Service. "Notice of Rulemaking: Shared Responsibility Payment for Not Maintaining Minimum Essential Coverage." *irs.gov.* February 1, 2013a. http://www.irs.gov/PUP/newsroom/REG-148500-12%20FR.pdf (accessed August 14, 2013).

—. "Questions and Answers for the Additional Medicare Tax." *irs.gov.* July 25, 2013b. http://www.irs.gov/Businesses/Small-Businesses-&-Self-Employed/Questions-and-Answers-for-the-Additional-Medicare-Tax (accessed August 16, 2013).

United States Department of Treasury. "COBRA Premium Assistance." Interim Report to Congress, 2010.