

The Personal Income Tax : *e* Tax Rate Structure

The federal personal income tax from 1987 to 2001, had three tax brackets — officially. For example, for 2000, income up to \$30,004 was taxed at 17 percent, every dollar earned in excess of \$30,005 was taxed at 25 percent, up to an income of \$60,009, and every dollar in excess of \$59,180 was taxed at 29 percent. That structure meant that the **average** tax rate increased from 17 percent (on all income levels below \$29,590), to approach 29 percent as a person’s income level increased towards infinity. Prior to 1987, there were more tax brackets : 15 brackets in 1949, and 10 in 1981.

Since 2002, the number of tax brackets has increased to 4. In 2015, income below \$44,701 was taxed at 15 percent, income between \$44,701 and \$89,401 at 22 percent, income between \$89,401 and \$138,586 at 26 percent, and income in excess of \$138,586 at 29 percent. (Why the “not round” numbers for the boundaries between brackets? These brackets are indexed to inflation, and so change each year according to a fixed formula.)

Also, the first \$11,327 of taxable income is exempt. This “basic exemption” is treated as a tax credit on the tax return : each person gets a non-refundable tax credit of 15% of \$11327, or \$1699.05 (if her tax payable is larger than that credit).

However, this apparent simplicity is quite misleading. The actual situation is best described as having many different brackets — with the marginal rates going up and down as we move between brackets. An example of this sort of structure is the case of Alberta in 2011, depicted in figure 17.2, on page 364 of *Rosen, Wen, and Snoddon*. That picture shows about 13 different marginal rates, and also shows the marginal rates rising, and then falling, and then rising again.

What increases the complexity of the tax structure so much, compared with the 4 brackets listed on the federal tax return? There are really three types of complication (not all included in the picture in Rosen et al). First of all, there are the other taxes on income : CPP and EI premia. These taxes are not part of the personal income tax, so it may be a bit misleading to include them here, but they are taxes on people’s (labour) earnings. These taxes certainly are relevant in calculating how much of an added dollar earned is taxed, in order to derive the effect of taxation on people’s after-tax rate of pay. Second, there are the **provincial** tax brackets. These are definitely part of the personal income tax. Alberta has only 1 provincial tax bracket. But every other province has at least 3 (Ontario has 3, British Columbia has 5.). And some provinces (such as Ontario) still have surtaxes on income tax, which is really just an additional bracket at the top with a higher rate. Third, there are the “clawbacks” of certain low-income subsidies, which impose an **effective** marginal tax on income. Again, these are not part of the official personal income tax. But some of these programmes do impose marginal taxes on people’s earnings : the higher their earnings, the lower the benefits they receive.

To work backwards, consider an imaginary plan for social assistance to the poor. Suppose that we give a grant of \$10,000 per year to old people. But we want to target this grant to the very poor old people. One way we could achieve this targeting would be to give this grant — \$10,000

per person — only to people whose other income was below a certain threshold, say \$20,000. But this approach is a very clumsy one. It implies that someone earning \$19,000 will be better off than someone earning \$21,000, since the first person gets the \$10,000 grant and the second person does not. So, in this imaginary system, an old person with earnings of \$19,000 would have total income of \$29,000 : her earnings, plus the government grant of \$10,000. But the person with income \$21,000 does not get any of this imaginary grant, so that his total income is just his earnings of \$21,000. Increasing earnings from \$19,000 to \$21,000 actually would reduce total income by \$8000. In effect, defining eligibility for social assistance in this way, by a maximum possible level of income, creates a very very high marginal tax rate at certain levels of income. In the example, the person is paying an effective tax of \$10,000 on his additional income of \$2000, if the income raised her total earning from \$19,000 to \$21,000.

This extreme approach is still used for a few social programmes in Canada. That is, a person is either eligible for the benefit, or not, and there is an income threshold which determines eligibility. Any such a programme, with an “all or nothing” eligibility criterion, implies that a person faces a very high effective tax rate (infinite, actually) right at the threshold, where \$1 more in earnings means that she no longer qualifies for any benefits from the programme.

So most subsidy programmes take a more gradual approach. Each dollar you earn lowers your benefits from the programme, but by less than a dollar. The government is “clawing back” these benefits as your income increases. This gradual approach does leave some incentive for lower-income people to earn more : but it still is effectively taxing this added income at a high rate.

An example of clawbacks within the personal income tax is the Canada Child Tax Benefit (CCTB) (and the related provincial programmes). This is a payment given to families with children. A low-income Ontario taxpayer with two children between the ages of 6 and 18 got assistance from the federal and provincial governments of \$825.74 per month (as of July 2015). This assistance has 3 pieces : the “basic” Canada child tax benefit (CCTB) of \$245.17, the Ontario child benefit of \$1336 per year for each child under the age of 18, and the “supplementary” national child benefit supplement (NCBS), geared to very low income people, of \$357.92 per month. The CCTB and NCBS come from the federal government, the Ontario child benefit from the provincial government. [In addition to these three programmes, there is a fourth one, the “Universal Child Care Benefit” (UCCB), through which the federal government pays \$100 per month for each child under the age of 6. This benefit (*i*) applies only to children under the age of six ; (*ii*) is paid at the same rate to all families, regardless of the family’s income ; (*iii*) is considered taxable income, and so is subject to federal and provincial personal income tax. But the UCCB only applies to families with children under the age of 6.]

But this payment of \$825.74 per month is paid only to taxpayers earning \$20,400 per year or less. Above this threshold, the [annual] amount of the Ontario tax credit is reduced, by 8% of the amount the taxpayer’s family’s annual income exceeds the threshold level (\$20,400). In other words, the clawback of this benefit imposes a marginal income tax of 8 percent on the recipient —

on top of the “statutory” personal income tax rate (of 15% federally).

The federal NCBS also gets reduced above a threshold level of income, \$26,021. Once a family’s income is greater than that threshold level, the NCBS benefits are reduced. The “clawback” rate is 23% : every dollar increase in a family’s income reduces the total annual NCBS they receive by 23 cents.

So a family earning \$30,000 a year would have monthly child care benefits less than \$825.74, for their 2 children under the age of 18, since the Ontario child benefit and the NCBS benefits are being clawed back. Their NCBS benefits would not be $(12)(\$357.92)$ per year, but $(12)(\$357.92)$ minus 23 percent of the difference between their annual income and \$26,021. Since $(0.23)(30000 - 26021) = 915.17$, their NCBS benefits are reduced by \$915.17 per year, or \$76.26 per month, to \$281.66 per month. Meanwhile, the Ontario child benefits are reduced by the provincial government, by 8% per year of the excess of the family’s annual income over \$20,400. Therefore, they would not get \$2672 per year from the province. Their provincial benefits would fall by $(0.08)(30000 - 20400) = 768$ dollars per year, or \$64 per month, so that they would received only \$158.66 in Ontario child benefit payments per month. If their annual income were \$35,000, the NCBS payments would be reduced further, to \$186.03 per month, and the Ontario child benefits would be reduced to \$125.33.

The Ontario benefits of \$2672 a year are reduced by 8% of 1000, or \$80 a year, for each extra \$1000 in annual income. So those annual benefits are only \$1904 when the family earns \$30,400 a year. And at an income of \$53,800, they have been clawed back to nothing : 8% of $(53800 - 20400)$ is \$2672 per year, so that annual benefits are $2672 - 2672 = 0$. When the family’s annual income is \$53,800 or greater, they receive no Ontario child benefit.

But zero is as low as the benefits can be. They can’t be negative. Further increases in annual income above \$53,800 have no further effect on the Ontario child benefit : it’s already disappeared.

Similarly, when their income reaches (approximately) \$44695 per year, the NCBS benefits have been taxed away : 23 percent of $(44695 - 26021)$ approximately equals the annual value of the NCBS benefits [12 times 357.92].

So a two-child family with annual income greater than \$44695 receives no NCBS benefits at all. What happens as the family income rises still further above \$44695 ? The NCBS benefits cannot be reduced further : they are already zero. So these clawbacks stop. [The income level at which NCBS benefits are clawed back to 0 depends on the number of children : it would actually be higher if the family had only 1 child — or if it had 3 children.]

But then the clawbacks start again : the “basic” CCTB of \$245.17 does not actually go to every family with 2 children. These “basic” CCTB benefits are reduced if the family’s annual income exceeds \$44701, by 4 percent (per year) of the difference between the family’s annual income and \$44701. That implies that the CCTB benefits fall with income (above the threshold of \$44701 per year), until they reach zero, at an annual income of about \$118,250.

So people in Ontario with 2 children between the ages of 6 and 18 have an additional marginal tax on income they earn, because the NCBS and CCTB benefits are geared to income. This “clawback rate” is 0 for income levels below \$20,400, 8 percent for people whose income is between

\$20,400 and \$26,021, 31 percent (23+8) for people whose income is between \$26,021 and \$44,695, 8 percent for those with income between \$44,695 and \$44,701 (since NCBS child benefits are no longer being clawed back), 12 percent on income between \$44,701 and \$53,800, 4 percent for people whose income is between \$53,800 and \$118,250, and 0 again for people whose income is above \$118,250.

(My numbers are different from those in table 17.6 of Rosen, Wen, and Snoddon. *i* They consider the GST rebate clawback as well. This is another benefit programme in which the benefits are tied to income, and which therefore adds another clawback rate. *ii* They use rates for Alberta, which does things somewhat differently than Ontario *iii* They left out the supplementary child tax benefits, and included only the “basic” CCTB.)

The bottom line on “clawbacks” : if the tax system gives benefits to low income people, then the benefits have to fall as income rises. This clawing back of benefits imposes an effective **marginal tax** on recipients of the benefits (in addition to the regular marginal income tax rate that they face). But this clawing back also means that people above a certain income level don’t get any of the benefits. That means these people do not face any clawbacks. So clawbacks raise the marginal rates only for a certain (intermediate) range of incomes.

So suppose, for example, that the only government policies in effect were the federal income tax, and the Canada Child Tax Benefit. What would the effective marginal tax rate be? The effective marginal tax rate is how much money you lose, for each dollar that you earn. Put otherwise, if t is your marginal effective tax rate, then you get to keep $1 - t$ dollars for every dollar increase in your gross earnings. A person earning around \$18,000 would face a marginal tax rate of 15 percent ; she would be eligible for full CCTB and NCBS payments. But someone earning just over \$24,000 would face an effective marginal tax rate of more than 40 percent : each extra dollar earned increases her tax liabilities by 15 cents, and lowers her CCTB and Ontario child benefit payments by 31 cents. Someone earning more than \$118,250 is unaffected by CCTB clawbacks. Her effective marginal tax rate would be the statutory federal marginal rate, which was 26 percent (in that income range) in 2015. The presence of clawbacks means that, if we look at effective marginal rates as a function of income, they will rise (at \$20,000) as income rises, but then they may fall again, at higher levels of income. If only the federal income tax and the CCTB (and Ontario child benefit) were present, the highest effective marginal rate would be faced by people with incomes in the \$24,000 to \$41,000 range.

The first item I mentioned which increased the complexity of taxation was the presence of payroll taxes. Now these really are separate taxes from the personal income tax. They also are regressive, since both CPP contributions and EI premia are only paid on incomes below a certain threshold (it’s \$53,600 for CPP contributions, and \$49,500 for EI premia, in 2015). (To further complicate matters, we get tax credits for 15 percent of EI and CPP “contributions”.) But what this does is add still more brackets to the overall effective tax schedule. Income above \$53,600 is not subject to CPP “contributions”, so that the effective marginal tax rate falls at \$53,600, as this tax is removed.

The fact that effective marginal tax rates actually decrease with income at several parts of the

income distribution does **not** mean that the overall tax system is regressive. But it may have large efficiency consequences. People in the lower middle income range face a much greater distortion in their labour supply decisions, since they face such high effective marginal tax rates.

But the complexity of the overall tax level (as a function of income) may not be easily remedied. If we want to give some benefits to low-income people, and if we want to target those benefits at low-income people (rather than give the benefits to all families, rich and poor alike, at the same level), then we must have some sort of eligibility criterion, based on income. And as soon as we introduce such criteria, effective marginal rates are raised : either a huge effective marginal rate, if we use a simple “all or nothing” threshold, or a more moderate (but still significant) effective marginal rate over a broad range of incomes, if we claw back benefits gradually.

On the other hand, some aspects of the tax system do seem complex for no reason. The “health premium” tax introduced in Ontario about 10 years ago is certainly an example. Although it is called a “health premium”, it is an income tax surcharge : what you pay depends (only) on your income, and has nothing to do with your health status or the quality of health care you get. And the marginal rate for that tax wiggles around wildly.

So the following programmes are used in constructing figure 1 (and figure 1a) : a person’s “total taxes” are her personal income taxes (provincial and federal), plus her employment insurance premia, plus her firm’s payment of EI premia [which section 2 of the course suggested are shifted mostly onto the workers], plus her CPP contributions, plus her Ontario health tax payments, minus any child care benefit payments she gets from federal or provincial government. So these “total taxes” will be negative for low-income people, who are collecting more in child care benefits than they are paying in taxes. The “marginal tax rates” in the figures are just the rate at which the “total taxes” increase with an increase in the person’s income : how many dollars more she must pay in total taxes if her income goes up by \$100 per year. The “average tax rate” is her total taxes divided by her annual income.

The figures describe an Ontario family with one income earner and with 2 children between the ages of 6 and 18, for the year **2011**. The marginal rates include the federal and provincial personal income tax rates, the Ontario health premium tax, the payroll taxes (employment insurance [employees **and** employers’ “contributions”] and Canada Pension Plan), and the “clawbacks” of child benefits that are tied to income — all added together. Figure 1a is a close-up of the same family, focussing on incomes in the 30,000 to 50,000 range. The figures illustrate three things

i the combined marginal rates are pretty high : in several income ranges, a person only takes home 40 cents or less from every additional dollar of gross income

ii the combined marginal rates do not increase smoothly with income ; they go up and down and then up again ; this is in large part due to the clawback of child care benefits

iii there are isolated spikes in the graph, due to the strange nature of the Ontario “health premium” tax