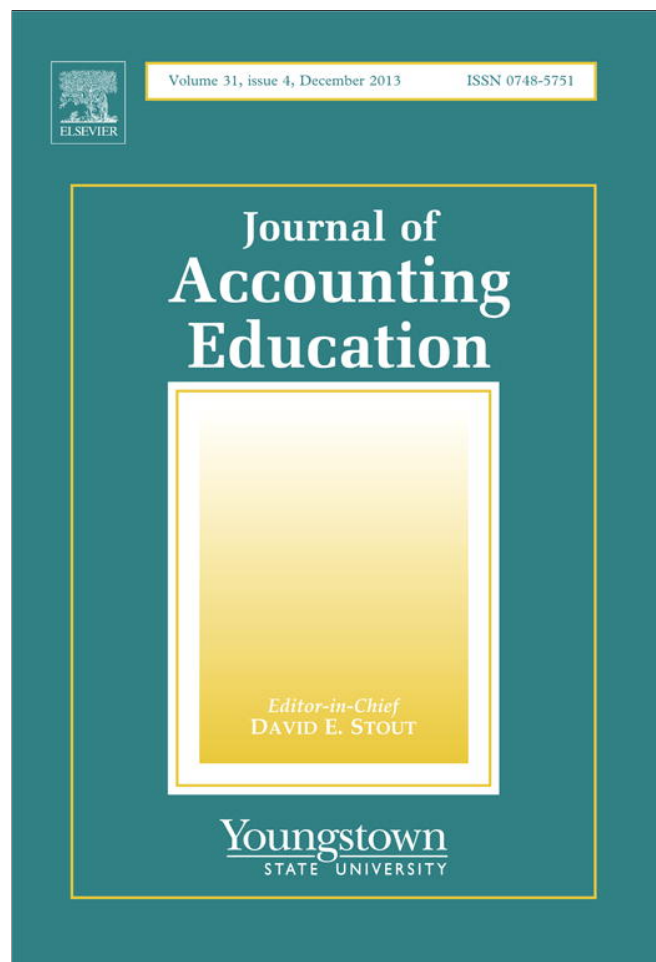


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Teaching and educational notes

## Federal income tax laws that cause individuals' marginal and statutory tax rates to differ



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### ABSTRACT

This article presents a “phaseouts table” as a tax educational tool. The table compiles and summarizes the phaseouts of and limitations on deductions, credits, exclusions from income, and allowed contributions for individual U.S. federal income taxpayers in 2013. Phaseouts can cause individual taxpayers' marginal tax rate (MTR) to be higher than their statutory tax rate (STR) (i.e., “bracket” based on taxable income). For each phaseout, the table includes how the phaseout works, the adjusted gross income (AGI) range for the phaseout, and the related formula to compute MTR, given STR. The table is appropriate for any course that covers either U.S. federal income taxation of individuals or tax planning. (The phaseouts table is updated annually and is available upon request from the author.) The remainder of the article is a teaching resource, explaining how to compute the specific impact on MTR of each of several example phaseouts. Together, the phaseouts table and article enable U.S. tax instructors to assist students in learning about phaseouts in an integrated, comprehensive manner.

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## 1. Introduction

Individual U.S. taxpayers whose adjusted gross income (AGI) is high enough to cause a partial phaseout have a marginal tax rate (MTR) that is higher than their statutory tax rate (STR) bracket

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**Table 1**

Impact of student loan interest deduction phaseout on marginal tax rate (filing status is single; year is 2013).

		Additional Income of \$1000	Relevant Difference
Income	\$60,000	\$61,000	\$1000
Student loan interest deduction	<u>-2500</u>	<u>-2333</u>	<u>167</u>
AGI	57,500	58,667	<u>1167</u>
Standard deduction	-6100	-6100	
Personal exemption	<u>-3900</u>	<u>-3900</u>	
Taxable income	<u>47,500</u>	<u>48,667</u>	<u>1167</u>
Tax (from tax rate schedule)	<u>\$7804</u>	<u>\$8096</u>	<u>\$292</u>

(Geisler & Larkins, 2003).<sup>1</sup> Altshuler and Goldin (2009, p. 335) find that in 2009 MTR was greater than STR for 32% of U.S. individual taxpayers. This finding suggests almost one out of three individual taxpayers in 2009 had one or more tax benefits partially phased out. Table 1 contains an illustration of such a taxpayer.

Table 1 assumes a single taxpayer pays deductible student loan interest of \$2500 in 2013, that the taxpayer takes the standard deduction instead of itemizing deductions, and that AGI before the student loan interest deduction is \$60,000—the beginning of the phaseout range. The first column of Table 1 contains these facts and summarizes the taxpayer's income, deductions, and federal income tax. If AGI were any higher, the taxpayer would not receive the full student loan interest deduction. The second column assumes ordinary income is higher by \$1000, so the student loan interest deduction is lower because it is reduced by the partial phaseout. Both changes affect the amount of federal income tax. The third column contains the differences between the first two columns.

Under the 2013 tax-rate schedule, a single individual with taxable income over \$36,250, but not over \$87,850, is in the 25% STR bracket. Comparing tax before the additional \$1000 of ordinary income to tax after such income, however, shows an increase of \$292. Besides the \$250 increase in tax liability caused by the additional income of \$1000, the other \$42 is caused by the phaseout of \$167 of student loan interest deduction for this taxpayer. The \$292 net tax increase divided by the increase in income of \$1000 results in a 29.2% MTR.

Altshuler and Goldin (2009, 335) also found that for 2009 millions of U.S. taxpayers had one or more full phaseouts of tax breaks but no partial phaseouts. For such taxpayers, MTR is the same as STR. The National Taxpayer Advocate's (NTA) "2008 Annual Report to Congress" states that "more than half of all individual tax returns filed each year are affected by [one or more partial or full] phase-out[s]." The report also states, "The most serious problem facing taxpayers is the complexity of the tax code." The report notes that phaseouts are one cause of the complexity and recommends the repeal of, or at least the simplification of, phaseouts. Former President George W. Bush's Advisory Panel on Federal Tax Reform (2005) also recommended "eliminat[ing] almost all of these phaseouts" for the purpose of simplicity. President Barack Obama's Economic Recovery Advisory Board's "Report on Tax Reform Options" (2010) was not prescriptive, but it consistently criticized the complexity resulting from both so many phaseouts being in the law and all of them having different AGI ranges where the phaseouts occur.

A student learning the U.S. federal income tax laws that affect individuals must deal with this complexity. Using the phaseouts table in this article (Table 2) reduces the complexity. The table contains

<sup>1</sup> Consistent with a Joint Committee on Taxation report in 1998 on MTRs (discussed later in the article), "(effective) marginal tax rate" refers to the increase in tax on an increase in income of \$1. To ensure that an increase in income of \$1 increases tax, we assume that tax is always computed using the federal tax rate schedules, not the tax tables, and that tax can be in cents (i.e., is not rounded to the nearest dollar). Given a taxpayer's filing status, this article refers to the tax rate bracket that the taxpayer's amount of taxable income is inside as the "statutory tax rate." For 2013, such rate is either 0%, when there is no taxable income, or 10%, 15%, 25%, 28%, 33%, 35%, or 39.6%—the seven percentages in the individual tax rate schedules. If a change in income is from either long-term capital gain or qualified dividend income, the statutory tax rate can be 0%, 15%, or 20%. If the taxpayer is subject to the alternative minimum tax, the statutory tax rate is either 26% or 28%. All of these STRs ignore the 3.8% Medicare tax on net investment income in excess of a threshold amount.

**Table 2**  
2013 Phaseouts for individuals that create effective marginal tax rates (MTRs) different from statutory tax rates (STRs). Source: Joint Committee on Taxation (1998) as updated to 2013 law by Gregory G. Geisler. Estimated number of taxpayers in relevant AGI range updated using most recently available SOI Tax Stats-Individual Statistical Tables by Size of Adjusted Gross Income (AGI).

Provision (estimated number in relevant AGI range)	Code §	Relevant Adjusted Gross Income (AGI) Range by Filing Status (see Notes)	How Phaseout Works	Effective MTR
<i>Low-Income Taxpayers</i>				
(1) Phasein of earned income credit (7 million (M))	§ 32	\$0–\$6370 <sup>a</sup>	Credit: Earned income (EI) × 7.65%	No children: Statutory rate – 7.65%
		\$0–\$9560 <sup>a</sup>	EI × 34%	One child: Statutory rate – 34%
		\$0–\$13,430 <sup>a</sup>	EI × 40%	Two children: Statutory rate – 40%
	§ 32(b)(3)	\$0–\$13,430 <sup>a</sup>	EI × 45%	Three or more children: Statutory rate – 45%
Phaseout of earned income credit (15M)	§ 32			
		Joint: \$13,310–\$19,680	\$487 – [7.65% × (EI <sup>b</sup> – \$13,310)]	No children: Statutory rate + 7.65%
		Single or Head of Household (HH): \$7970–\$14,340	\$487 – [7.65% × (EI <sup>b</sup> – \$7970)]	
		Joint: \$22,870–\$43,210	\$3250 – [15.98% × (EI <sup>b</sup> – \$22,870)]	One child: Statutory rate + 15.98%
		Single or HH: \$17,530–\$37,870	\$3250 – [15.98% × (EI <sup>b</sup> – \$17,530)]	
		Joint: \$22,870–\$48,378	\$5372 – [21.06% × (EI <sup>b</sup> – \$22,870)]	Two children: Statutory rate + 21.06%
	§ 32(b)(3)	Single or HH: \$17,530–\$43,038	\$5372 – [21.06% × (EI <sup>b</sup> – \$17,530)]	
		Joint: \$22,870–\$51,567	\$6044 – [21.06% × (EI <sup>b</sup> – \$22,870)]	Three or more children: Statutory rate + 21.06%
		Single or HH: \$17,530–\$46,227	\$6044 – [21.06% × (EI <sup>b</sup> – \$17,530)]	
(2) Limited phaseout of dependent care credit (2M)	§ 21	\$15,000–\$43,001	Dependent care credit: \$Dep. care expenses × [0.35 – [0.15 × [(AGI – 15,000) ÷ 30,000]] (round up to whole%. Max. = 0.15. Min. = 0)]	Statutory tax rate + 1.5% (assumes maximum credit i.e. taxpayers total qualifying expenses are \$3000 for one qualifying person.) Statutory tax rate + 3% (assumes maximum credit i.e., taxpayers total qualifying expenses are \$6000 for two qualifying persons.)

Table 2 (continued)

Provision (estimated number in relevant AGI range)	Code §	Relevant Adjusted Gross Income (AGI) Range by Filing Status (see Notes)	How Phaseout Works	Effective MTR
			Max. \$Dep. care expenses = \$3000 if one qualifying person. Max. \$Dep. care expenses = \$6000 if two or more qualifying persons.	
Retirement Related (3) Phaseout of elderly or disabled credit (<0.1M)	§ 22	Single or HH: \$7500–maximum of \$17,500 Joint: \$10,000–max. of \$20,000 <sup>c</sup>	Varies	Statutory rate + 7.5%
(4) Phaseout of social security (S.S.) benefits exclusion (7M)	§ 86	Single or HH: \$25,000–various <sup>d</sup> Joint: \$32,000–various <sup>d</sup> Single or HH: \$34,000–various <sup>d</sup> Joint: \$44,000–various <sup>d</sup>	Taxable S.S. benefits: 50% × (Provisional income – 25,000) 50% × (Provisional income – 32,000)  Lesser of 50% × (S.S.benefits) or \$4500 + 85% × (Prov. Inc. – 34,000). Maximum = 85% × S.S.benefits  Lesser of 50% × (S.S.benefits) or \$6000 + 85% × (Prov. Inc. – 44,000). Maximum = 85% × S.S.benefits	Statutory rate (for first tier) × 1.5  Statutory rate (for second tier) × 1.85  " " " " " " "
(5) Phaseout of maximum contribution to IRA eligible for a deduction <sup>e</sup> (1M)	§ 219	Single or HH: \$59,000–\$69,000 <sup>f</sup>  Joint: \$95,000–\$115,000 <sup>f, j</sup>	Maximum deductible contribution: \$5500 × [1 – (AGI – \$59,000) ÷ \$10,000]  \$5500 × [1 – (AGI – \$95,000) ÷ \$20,000]	Single or HH: Statutory rate × 1.55 (assuming maximum contribution for under age 50 of \$5500) <sup>f</sup>  Joint: Statutory rate × 1.275 (assuming maximum contribution for under age 50 of \$5500 by one spouse) <sup>g,h</sup>
(6) Phaseout of contribution allowed to a Roth IRA (Not available)	§ 408A	Single or HH: \$112,000–\$127,000 <sup>f</sup>  Joint: \$178,000–\$188,000 <sup>f</sup>	Maximum allowable contribution: \$5500 × [1 – (AGI – \$112,000) ÷ \$15,000]  \$5500 × [1 – (AGI – \$178,000) ÷ \$10,000]	Single or HH: Statutory rate × 1.367 (assuming taxpayer would have contributed maximum for under age 50 of \$5500 if not for phaseout) <sup>k,d</sup>  Joint: Statutory rate × 1.55 (assuming one spouse would have contributed maximum for under age 50 of \$5500 if not for phaseout) <sup>k,m</sup>

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Table 2 (continued)

Provision (estimated number in relevant AGI range)	Code §	Relevant Adjusted Gross Income (AGI) Range by Filing Status (see Notes)	How Phaseout Works	Effective MTR
<i>Education Related</i> (7) Phaseout of American opportunity credit (0.5M)	§ 25A(i)	Single or HH: \$80,000–\$90,000 <sup>f</sup>	Percentage of credit phased out: $(AGI - \$80,000) \div \$10,000$	Single or HH: Statutory rate + 25% (assuming maximum credit of \$2500 if not for phaseout) <sup>h</sup>
		Joint: \$160,000–\$180,000 <sup>f</sup>	$(AGI - \$160,000) \div \$20,000$	Joint: Statutory rate + 12.5% (assuming max. \$2500 credit if not for phaseout) <sup>h</sup>
(8) Phaseout of lifetime learning credit (0.5M)	§ 25A	Single or HH: \$53,000–\$63,000 <sup>f</sup>	Percentage of credit phased out: $(AGI - \$53,000) \div \$10,000$	Single or HH: Statutory rate + 20% (assuming maximum credit of \$2000 if not for phaseout) <sup>g</sup>
		Joint: \$107,000–\$127,000 <sup>f</sup>	$(AGI - \$107,000) \div \$20,000$	Joint: Statutory rate + 10% (assuming maximum credit of \$2000 if not for phaseout) <sup>g</sup>
(9) Phaseout of qualified student loan interest deduction (1M)	§ 221	Single or HH: \$60,000–\$75,000 <sup>f</sup>	Percentage of interest phased out: $(AGI - \$60,000) \div \$15,000$	Statutory rate $\times$ 1.167 (assuming maximum deduction of \$2500 if not for phaseout)
		Joint: \$125,000–\$155,000 <sup>f</sup>	$(AGI - \$125,000) \div \$30,000$	Statutory rate $\times$ 1.083 (assuming maximum deduction of \$2500 if not for phaseout)
(10) Phaseout of education savings bonds interest exclusion (Not available)	§ 135	Single or HH: \$74,700–\$89,700 <sup>f</sup>	Excludible savings bond interest: $\$Interest \times [1 - (AGI - \$74,700) \div \$15,000]$	Single or HH: Statutory rate $\times$ [1 + (exclusion if not for phaseout divided by \$15,000)]
		Joint: \$112,050–\$142,050 <sup>f</sup>	$\$Interest \times [1 - (AGI - \$112,050) \div \$30,000]$	Joint: Statutory rate $\times$ [1 + (exclusion if not for phaseout divided by \$30,000)]
(11) Phaseout of contribution allowed to a Coverdell education savings account (Not available)	§ 530	Single or HH: \$95,000–\$110,000 <sup>f</sup>	Maximum allowable contribution: $\$2000 \times [1 - (AGI - \$95,000) \div \$15,000]$	Single or HH: Statutory rate $\times$ 1.133 (assuming would have contributed maximum of \$2000 for one beneficiary if not for phaseout) <sup>g</sup>
		Joint: \$190,000–\$220,000 <sup>f</sup>	$\$2000 \times [1 - (AGI - \$190,000) \div \$30,000]$	Joint: Statutory rate $\times$ 1.067 (assuming would have contributed maximum of \$2000 for one beneficiary if not for phaseout) <sup>g</sup>

Table 2 (continued)

Provision (estimated number in relevant AGI range)	Code §	Relevant Adjusted Gross Income (AGI) Range by Filing Status (see Notes)	How Phaseout Works	Effective MTR
<i>Middle- and Upper-Income Taxpayers</i>				
(12) Phaseout of child credit (1M)	§ 24	Single or HH: \$75,000–various <sup>d</sup> Joint: \$110,000–various <sup>d</sup>	Child credit phased out: $[(AGI - 75,000) \div 1000](\text{round up to whole number}) \times \$50$  $[(AGI - 110,000) \div 1000](\text{round up to whole number}) \times \$50$	Statutory rate + 5%
(13) Phaseout of allowable rental real estate loss deduction (Not available)	§ 469(i)	\$100,000–\$150,000 <sup>e</sup>	Maximum allowable deduction: $\$25,000 \times [1 - (AGI - \$100,000) \div \$50,000]$	Statutory rate $\times 1.5$ (assuming maximum deduction of \$25,000 if not for phaseout) <sup>h</sup>
<i>Middle- and Lower-Income Taxpayers</i>				
Provision (estimated number in relevant AGI range)				
(14) Phaseout of adoption credit (Not available)	§ 23	\$194,580–\$234,580 <sup>f</sup>	Credit: $\$Adoption\ expenses\ (maximum\ \$12,970) \times [1 - (AGI - \$194,580) \div \$40,000]$	Credit: Statutory rate + 0.32425 (assumes maximum credit of \$12,970 if not for phaseout) <sup>f</sup>
(15) 10% floor for medical deductions (11M)	§ 213	Any taxpayer claiming medical deductions	Deduction phased out: $10\% \times AGI$	Statutory rate $\times 1.10$
(16) 2% floor for miscellaneous deductions (12M)	§ 67	Any taxpayer claiming miscellaneous deductions subject to the 2% floor	Deduction phased out: $2\% \times AGI$	Statutory rate $\times 1.02$
(17) 10% floor for casualty loss deductions (0.1M)	§ 165 (h)(2)	Any taxpayer claiming casualty loss deductions	Deduction phased out: $10\% \times AGI$	Statutory rate $\times 1.10$
(18) Phaseout of mortgage insurance premiums	§ 163(h)(3)(E)(ii)	\$100,000–\$109,001	Percentage of deduction phased out: $10\% \times [(AGI (\text{round up to next } 1000) - 100,000) \div 1000]$	Statutory rate $\times [1 + (\text{deduction amount if not for phaseout divided by } \$10,000)]$

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Table 2 (continued)

Provision (estimated number in relevant AGI range)	Code §	Relevant Adjusted Gross Income (AGI) Range by Filing Status (see Notes)	How Phaseout Works	Effective MTR
deduction (0.1M)				
(19) Phaseout of itemized deductions (2 million (M))	§ 68	Single: \$250,000–various HH: \$275,000–various Joint: \$300,000–various	Deduction phased out:  3% × (AGI – \$250,000) <sup>a</sup>  3% × (AGI – \$275,000) <sup>b</sup>  3% × (AGI – \$300,000) <sup>c</sup>	Statutory rate × 1.03
(20) Phaseout of personal and dependent exemption(s) deduction (2M)	§ 151	Single: \$250,000–\$372,501  HH: \$275,000–\$397,501 Joint: \$300,000–\$422,501	Percentage of deduction phased out: [(AGI (round up to next \$2500) – 250,000)/125,000]  [(AGI (round up to next \$2500) – 275,000) / 125,000]  [(AGI (round up to next \$2500) – 300,000) / 125,000]	Statutory rate × 1 plus 0.0312 for each exemption (e.g., statutory rate × 1.0624 if two exemption deductions)

Notes: Relevant AGI ranges for Married Filing Separately status are not included in Table 2. If only one relevant AGI range is listed for a row, then such range applies to joint, single, and head of household (HH) filing statuses.

- <sup>a</sup> Assumes all income is earned.
- <sup>b</sup> Phaseout is based on the greater of earned income or AGI.
- <sup>c</sup> Assumes only one spouse qualifies for the credit. If both spouses qualify, the end of the threshold changes from \$20,000 to \$25,000.
- <sup>d</sup> Phaseout is based on provisional income instead of AGI.
- <sup>e</sup> Assumes the individual is an employee who is an "active participant," which means that the employee is covered by an employer-sponsored qualified retirement plan. If not, there is no phaseout.
- <sup>f</sup> If age 50 or older, assume the taxpayer contributed the maximum of \$6500 and change 1.55 to 1.65.
- <sup>g</sup> If age 50 or older, assume the taxpayer contributed the maximum of \$6500 and change 1.275 to 1.325.
- <sup>h</sup> Assume both spouses are active participants and contributed maximum to their IRAs given their age. If both are under age 50, change 1.275 to 1.55. If neither is under age 50, change 1.325 to 1.65.
- <sup>i</sup> Instead of AGI, this phaseout range is based on "modified" AGI as defined in this provision's Code section.
- <sup>j</sup> If one spouse is an active participant and the other spouse is not, the relevant AGI phaseout range for the latter is \$178,000–\$188,000. This changes the effective marginal tax rate (MTR) formula for the latter spouse. Specifically, MTR for the spouse who is not an active participant changes to STR × 1.55 if under age 50 and assuming a maximum contribution of \$5500 and changes to STR × 1.65 if age 50 or older and assuming a maximum contribution of \$6500.
- <sup>k</sup> As the Joint Committee on Taxation report (1998) states, "The provision phasing out the taxpayer's eligibility to contribute to a Roth IRA does not create an effective marginal tax rate on current year income that is in excess of the statutory marginal tax rate, but rather subjects more income to income tax in a subsequent year." The effective MTR formula assumes the



individual's current and future tax rates are the same. It is such future tax on the earnings of the disallowed "Roth IRA contribution that increases the effective marginal rate of tax for taxpayers subject to the phaseout range."

<sup>l</sup> If the taxpayer is age 50 or older, assume the taxpayer would have contributed the maximum of \$6500 and change 1.367 to 1.433.

<sup>m</sup> If the taxpayer is age 50 or older, assume the taxpayer would have contributed the maximum of \$6500 and change 1.55 to 1.65.

<sup>n</sup> Qualifying expenses of \$4000 or more generates a \$2500 credit per qualifying student. The maximum credit could be in multiples of \$2500 if a taxpayer has more than one qualifying student with at least \$4000 of qualifying postsecondary education expenses. Assuming that there are two qualifying students and that both have sufficient qualifying expenses for the maximum credit, the credit is \$5000 ( $\$2500 \times 2$ ) if not for the phaseout. In this case, change 25–50% in MTR formula for filing single or HH and change 12.5–25% in MTR formula for filing jointly.

<sup>o</sup> Qualifying expenses of \$10,000 or more generates a \$2000 credit, which is the maximum credit allowed per taxpayer.

<sup>p</sup> As the Joint Committee on Taxation report (1998) states, "The phaseout does not increase a taxpayer's current year tax liability. Like the phaseout for eligibility to contribute to a Roth IRA, the provision phasing out the taxpayer's eligibility to contribute to an education IRA subjects more income to income tax in [the future]."

<sup>q</sup> MTR formula is overstated because it ignores that the provision allows losses to be deducted in the future. Other things being equal, the sooner in the future that such losses are deducted, the lower the current year's MTR.

<sup>r</sup> The credit amount is based on qualified adoption expenses up to a maximum of \$12,970. Credit is maximum amount if a child with special needs is adopted, regardless of the amount of qualified expenses.

<sup>s</sup> Maximum deduction phased out is 80% multiplied by total itemized deductions other than the medical category, investment interest, casualty and theft loss category, and gambling losses.

the relevant AGI range over which each phaseout occurs and how each phaseout provision works. The provisions in the table are organized by whether they affect low-income or upper-middle-income individuals and how they affect education- or retirement-related tax breaks. The authors of one text state, “The individual marginal tax rate can be an elusive number” (Jones & Rhoades-Catanach, 2013). Table 2 also contains formulas that determine how much higher a taxpayer’s MTR is than the taxpayer’s STR when in a phaseout range. Using the formulas properly can determine an individual taxpayer’s exact MTR.

The formulas show that the following phaseouts can cause an increase in MTR above the taxpayer’s STR of at least five percentage points: the earned income credit phaseout, the phaseout of social security benefits exclusion, the phaseout of the deductible contribution to a traditional individual retirement account (IRA), the phaseout of contribution allowed into a Roth IRA, the phaseouts of the two higher education tax credits, and the phaseout of the child credit.

The remainder of this article proceeds as follows: Section 2, “Phaseouts Table,” contains the table summarizing the 20 phaseouts in effect for 2013.<sup>2</sup> In Section 3, “Operation of the Phaseouts,” the provisions are categorized based on their operational design. Section 4, “Two Examples of Determining MTR,” continues the analysis of Table 1, the illustration of a deduction phaseout, and also contains an illustration with a credit phaseout. Section 5, “What Is MTR When Change in Income Is Taxed at the Long-Term Capital Gain Rate?” discusses MTR when an income change is not caused by ordinary income but instead is caused by income taxed at lower-than-ordinary rates. Section 6, “What Is MTR When the Individual Taxpayer Is Subject to AMT?,” explains how to compute MTR if an individual taxpayer is subject to the alternative minimum tax (AMT) and either one of the phaseouts in Table 2 applies or the AMT exemption deduction phaseout applies. While the preceding sections all focus on how to compute MTR, the next few sections, Section 7 (“Types of Phaseouts”), Section 8 (“Effects of Phaseouts on MTR”), and Section 9 (“Lack of Inflation Adjustments and the Increasing Impact of Certain Phaseouts”) discuss how not all phaseouts are smooth, how the phaseouts have very different impacts on MTR, and how, because there are no inflation adjustments, certain phaseouts impact more taxpayers each year. The next few sections, Section 10 (“Tax Planning”), Section 11 (“Implementation Guidance for Instructors”), Section 12 (“Application Problems for Students”), and Section 13 (“Feedback from Students”) deal with how to avoid or reduce the impact of a phaseout, how to bring the phaseouts table into the classroom, application problems about MTR when a taxpayer is inside a phaseout range, and responses by students to poll questions at the end of two recent semesters about the phaseouts table. Section 14 (“Limitations”) and Section 15 (“Concluding Comments”) follow these sections.

## 2. Phaseouts table

In 1998, the U.S. Joint Committee on Taxation (JCT) summarized in a table titled “Summary of Provisions Creating Effective Marginal Tax Rates Different from Statutory Marginal Tax Rates” the phaseouts then in effect (Joint Committee on Taxation (JCT), 1998). The table listed the phaseout provisions, displayed the relevant AGI range over which each phaseout occurred, and contained formulas to determine MTR, based on the relative change to the taxpayer’s STR, for a taxpayer in the relevant AGI range of any provision.<sup>3</sup> Table 2 in this article updates the JCT’s table to 2013. Table 2 differs in that it contains both more consistent MTR formulas and also more detailed information about the phaseouts in its footnotes; adds organization by categorizing phaseouts into low-income, education-related,

<sup>2</sup> Updates to the table for future years will be done on a continuing basis. Those updates are available, upon request, from the author. The table also contains the author’s estimates of taxpayers whose AGI places them inside the phasein or phaseout range for 2009, the most recent year SOI data are available. To the author’s knowledge, these estimates have not been updated since their original publication in 1998.

<sup>3</sup> Some phaseouts use the AGI amount. Other phaseouts use an AGI amount after modification by certain items. Generally, if any of such items apply to a taxpayer, modified AGI is higher than AGI. For only a few provisions, it is possible that modified AGI can be lower than AGI. The modifications are the same for the two higher education credits, the contribution to a Coverdell education savings account, the child credit, and the adoption credit—provisions 7, 8, 11, 12, and 14, respectively. For all other provisions where the phaseout range is based on modified AGI, the modifications are different for each provision. The required modifications are organized by IRC section in the footnotes to table 2.4.1 on page 476 of the National Taxpayer Advocate’s “2006 Annual Report to Congress (NTA, 2006).”

retirement-related, and upper-middle income categories; and adds a new column on how each phaseout works.<sup>4</sup>

If a taxpayer receives one of the tax breaks listed in Table 2 but the taxpayer's AGI is in the "Relevant AGI range" column (also called the *phaseout range*) for such provision, MTR will be higher than STR for the taxpayer.<sup>5</sup> Reviewing the formulas in the "Effective MTR" column (also called the MTR formula) of Table 2 indicates that the difference between provisions can vary from causing MTR to be slightly above STR to causing MTR to be 25 percentage points or more above STR.

### 3. Operation of the phaseouts

#### 3.1. Overview of the 20 phaseouts

Many of the 20 tax breaks listed in Table 2 require specific types of expenditures or receipts. Specifically, 14 of the tax breaks in Table 2 require expenditures. Three tax breaks, the elderly or disabled credit (3), the child credit (12), and the personal and dependent exemption(s) deduction (20), do not require any specific expenditure. The other three provisions, the earned income credit (1), the social security benefits exclusion (4), and the education savings bonds interest exclusion (10), require specific receipts.

Nine of the 14 expenditures contain ceilings, before considering the phaseout, that limit the maximum amount of the tax break: the limited phaseout of the dependent care credit; the phaseout of deductible contribution to a traditional IRA by an active participant in his or her employer's retirement plan (hereafter, "active employee"); the contribution allowed to a Roth IRA; the American opportunity credit; the lifetime learning credit; the student loan interest deduction; the contribution allowed to a Coverdell education savings account; the allowable rental real estate loss deduction; and the adoption credit (Table 2, items 2, 5, 6, 7, 8, 9, 11, 13, and 14, respectively). For these nine tax breaks, the MTR formulas in Table 2 are made tractable by assuming expenditures are enough to result in the maximum deduction, credit, or allowable contribution if not for the taxpayer's AGI being in the phaseout range. The other five expenditures do not have maximum allowable amounts: the three itemized-deduction categories (15, 16, and 17); the mortgage insurance premiums (18); and the phaseout of (up to 80% of) certain itemized deductions (19).

#### 3.2. Phaseouts and contributions

Provisions 5, 6, and 11 require contributions to accounts. The partial phaseout of the maximum contribution allowed to either a Roth IRA (6) or a Coverdell education savings account (11) reduces the maximum amount that can be contributed. If any of the phased-out amount has already been contributed for the year, it must be removed from the account. Because of this requirement, the MTR formulas for provisions 6 and 11 replace the assumption that the contribution is the maximum with "would have contributed maximum if not for the phaseout." The partial phaseout of the maximum contribution to a traditional IRA (5) by an active employee or by the spouse of such individual reduces the maximum amount of contribution that can be deducted. If any of the phased-out amount is contributed, it becomes nondeductible but does not have to be removed from the account.

Instead of assuming, as Table 2 does, that the maximum contribution is made to the IRA (5), or the maximum contribution would have been made to the Roth IRA or the Coverdell education savings account (6 and 11, respectively), assume that the contribution that would be made to any of these accounts before considering any phaseout is less than the maximum. If the taxpayer's AGI is in the phaseout range but the contribution is far enough below the maximum, none of the contribution is phased out. To illustrate, assume a partial phaseout of the maximum contribution to a traditional IRA by an active employee applies. Assume the individual contributing to his or her IRA is under

<sup>4</sup> The phaseout of rehabilitation tax credit under passive loss rules (section 469(i)(3)(B)) is not included in Table 2 because it applies to a relatively small number of individuals.

<sup>5</sup> The earned income credit contains a phasein at very low income levels. This decreases an individual's MTR. This article focuses on the phaseouts in Table 2, all of which increase an individual's MTR.

age 50 and that the individual's AGI is 30% of the way into the phaseout range. Instead of reducing deductibility of the individual's IRA contribution by 30%, the law reduces the maximum contribution eligible for deduction by 30%—from \$5500 to \$3850. If the individual contributes \$3850 or less, the entire contribution is deductible. Now assume the same facts except that the contribution is to a Roth IRA. None of the contribution to the Roth IRA has to be removed because the contribution does not exceed the maximum allowed. Now assume the same facts except that an individual contributes to a Coverdell education savings account. Instead of reducing the allowable contribution by 30%, the law reduces the maximum allowable contribution to one beneficiary's account by 30%—from \$2000 to \$1400. If the individual contributes \$1400 or less, the entire contribution is allowed.

### 3.3. Provisions where phaseout begins and ends at specific amounts

For provisions 1, 3, 7, 8, 9, 10 and 14, the otherwise allowable credit or deduction or exclusion from income is reduced pro rata over the phaseout range (i.e., “relevant AGI range” column of [Table 2](#)). Assume a provision operates this way, and assume a taxpayer's relevant AGI for the provision places the taxpayer 30% of the way into the phaseout range. The taxpayer's credit, deduction, or exclusion from income is only 70% of the amount if AGI was not above where the phaseout threshold begins. The earned income credit (1), elderly or disabled credit (3), and education savings bond interest exclusion (10) phaseouts all work this way. The other four provisions also work this way. The other four all depend on expenditures and have ceilings that limit the maximum credit or deduction. They will be illustrated in more detail now.

Assume a taxpayer files single, has AGI of \$80,000 or less, and has enough higher education expenditures to qualify for the maximum American opportunity tax credit (7) of \$2500. A footnote in [Table 2](#)'s “Relevant AGI range” column indicates that provision 7 uses a modified AGI amount, instead of the actual AGI amount, to determine the phaseout. For simplicity, this article hereafter uses “AGI” as a general term to include the particular AGI amounts as modified by any phaseout provision. The relevant AGI range column in [Table 2](#) for provision 7 shows that the phaseout threshold begins when AGI reaches \$80,000 (i.e., at AGI of \$80,000 or less, there is no phaseout of this tax credit) and ends (i.e., the tax credit allowed is \$0) when AGI reaches \$90,000, so this credit's phaseout range is \$10,000 wide. Now assume AGI is \$83,000, which is \$3000 above where the threshold begins. The taxpayer is 30% (\$3000 divided by \$10,000) of the way into the phaseout range and therefore loses 30% of the otherwise allowable credit of \$2500, which means that \$1750 (70% of \$2500) is the taxpayer's American opportunity tax credit for 2013. Note that this phaseout would work the same way if the expenditure leading to the tax break had been less than the maximum. For example, assume the same facts except that the taxpayer qualifies for only a \$1000 tax credit before considering the phaseout. After phasing out 30%, \$700 in this example is the taxpayer's credit. The lifetime learning credit (8), the student loan interest deduction (9), and the adoption credit (14) are other expenditures whose phaseout works the same way as the American opportunity credit (7) phaseout.

### 3.4. Provisions in which end of phaseout varies

Provisions 15, 16, and 17 (expenditures in the medical, miscellaneous, or casualty loss itemized deduction categories) increase total itemized deductions only to the extent that the total amount for that category exceeds 10%, 2%, or 10% of AGI, respectively. The phaseout is complete (i.e., none of the category's amount increases total itemized deductions) when the deductible amount for a specific category is equal to AGI multiplied by the percentage cutoff for that category. If the deductible amount in any of these three categories does exceed its percentage-of-AGI floor, total itemized deductions will decline if AGI increases further. To illustrate, assume a single taxpayer itemizes deductions, has AGI of \$41,000, and has medical expenses that qualify as itemized deductions totaling \$5525. The amount phased out is \$4100 (i.e.,  $10\% \times \$41,000$ ) and total itemized deductions include \$1425 from the medical category. If AGI increased by \$1000, from \$41,000 to \$42,000, then another \$100 of medical itemized deductions would be phased out and total itemized deductions would include only \$1325 from the medical category.

The social security benefits exclusion, child credit, and overall itemized deductions (provisions 4, 12, and 19, respectively) phaseouts begin at specific amounts but do not end at the same amounts for all tax-

payers. The social security benefits exclusion phaseout ends when 85% of benefits are included in gross income. The end of this phaseout range is “various” because it is based on the amount of benefits received.

The child credit has a stair-step phaseout that is discussed in Section 7, “Types of Phaseouts.” The end of the phaseout range for the child credit is “various” because it depends on the number of qualifying children. Specifically, the phaseout range ends in increments of \$20,000 higher for each qualifying child after the first one. If filing single or as head of household (HH), the phaseout range ends at AGI of \$94,001 if one qualifying child, \$114,001 if two qualifying children, \$134,001 if three qualifying children, and so on. If married filing jointly, the phaseout range ends at AGI of \$129,001 if one qualifying child, \$149,001 if two qualifying children, \$169,001 if three qualifying children, and so on.

The end of the overall itemized deductions phaseout is “various” because it depends on the amounts of certain deductions. This phaseout occurs at a rate of 3% of the excess of AGI over the beginning of the phaseout range. However, the total phaseout cannot be greater than 80% of total itemized deductions after subtracting the medical category, the investment interest subcategory, the casualty and theft category, and gambling losses. This maximum phaseout affects where the end of the phaseout range is for any particular taxpayer. It is higher the greater the taxpayer’s total itemized deductions for the year after the allowable subtractions.

#### 4. Two examples of determining MTR

Returning to the example presented in Table 1, as mentioned earlier the taxpayer’s STR is 25% yet the \$292 tax increase divided by the increase in income of \$1000 is a 29.2% MTR due to the partial phaseout of the student loan interest deduction (9). Assume that instead of ordinary income increasing by \$1000 in the second column, it increases by \$100 or \$500 or \$5000 or \$10,000 or \$15,000. The result is again an increase in tax of 29.2%, because such increases are all inside the phaseout range—\$60,000–\$75,000 of AGI. Instead of assuming in the first column that income is \$60,000 and that in the second column AGI increases, assume in the first column that income is \$75,000 and that in the second column either an “above the (AGI) line” deduction, other than of student loan interest, or deductible loss of \$100 or \$500 or \$1000 or \$5000 or \$10,000 or \$15,000 occurs. The MTR is again 29.2% (i.e., a decrease in tax of 29.2% of the deduction or deductible loss) because such decreases in AGI are all inside the phaseout range.

Using Table 2, the individual’s MTR can be determined for all of the scenarios in the previous paragraph without computing tax in the first column and without computing taxable income and tax after the additional income or deduction and comparing the relevant differences before and after the additional income or deduction (i.e., without the last two columns of Table 1). To do so requires knowing STR, knowing that the taxpayer is not in any other phaseout range except for the student loan interest deduction (9), and knowing that the change in AGI is entirely inside the phaseout range. In other words, given these facts, the Effective MTR column in Table 2 provides the following simple formula to determine MTR without all of the work in Table 1:

$$\text{MTR} = \text{STR} \times 1.167 = 0.25 \times 1.167 = 29.2\%$$

Table 3 contains another illustration, but this time the only partial phaseout is of a tax credit instead of a tax deduction. Assume the taxpayers are married filing jointly with AGI of \$160,000 and one dependent child who is a 20-year-old, full-time college sophomore. Two personal exemptions and

**Table 3**  
Impact of credit phaseout on marginal tax rate (filing status is joint; year is 2013).

		Additional Income of \$1000	Relevant Difference
AGI	\$160,000	\$161,000	1000
Itemized deductions (includes miscellaneous)	–25,000	–25,000	
Personal & dependent exemptions	–11,700	–11,700	—
Taxable income	<u>123,300</u>	<u>124,300</u>	<u>1000</u>
Tax (from tax rate schedule)	\$22,683	\$22,933	\$250
American opportunity credit	–2500	–2375	<u>\$125</u>
Amount owed (before tax paid in)	<u>\$20,183</u>	<u>\$20,558</u>	<u>\$375</u>

one dependent exemption result in an \$11,700 deduction (i.e.,  $3 \times \$3900$ ). Further, assume that total itemized deductions are \$25,000 and none of this total is from the medical or miscellaneous or casualty loss categories. The second column again assumes ordinary income is \$1000 higher so that the American opportunity credit becomes partially phased out. The amount owed in the second column is compared to the amount owed in the first column and the difference is computed in the third column

Under the 2013 tax-rate schedule, a married couple filing jointly with taxable income over \$72,500 but not over \$146,400 is in the 25% STR bracket. After the additional \$1000 of ordinary income in [Table 3](#), tax after credits shows an increase of \$375, so MTR is 37.5%. The \$375 increase in tax has two components. One is the increased income, and the other is the increased credit phaseout: \$250 caused by the additional income of \$1000, taxed at 25%; and \$125 (percentage of credit phased out is  $((\$161,000 - \$160,000)/\$20,000)$  which equals 5%) caused by the partial phaseout of the American opportunity credit (of \$2500).

The three columns in [Table 3](#) are not necessary to determine that MTR is 37.5%. Instead, knowing STR, knowing that the taxpayer is not in any other phaseout range except for the American opportunity credit (7), and knowing the increase in AGI is entirely inside the phaseout range for this credit is enough information. Reviewing the MTR column in [Table 2](#) for provision 7 shows that this phaseout adds 12.5 percentage points to STR as follows<sup>6</sup>:

$$\text{MTR} = \text{STR} + 0.125 = 0.25 + 0.125 = 37.5\%$$

Stated differently, increasing ordinary income by up to \$20,000, which increases AGI from \$160,000 to the end of the phaseout range, \$180,000, increases tax by 37.5% (i.e., the MTR).

### 5. What Is MTR when change in income is taxed at the long-term capital gain rate?

If an individual taxpayer's taxable income in 2013 contains qualifying dividend income and/or net long-term capital gain (LTCG) income, one of the following STRs apply to these two amounts: 0%, 15%, and 20%. However, a 3.8% surtax on investment income also applies when married taxpayers file jointly and AGI is above \$250,000. The surtax also applies to single and head of household (HH) statuses when AGI is above \$200,000. Effectively, the surtax changes the 20% bracket to 23.8%. The surtax changes the 15% bracket to 18.8% to the extent that AGI is above the threshold. It is rare but it also can change the 0% bracket to 3.8% to the extent that AGI is above the threshold. After incorporating the impact of the 3.8% surtax, there are effectively five STRs for qualifying dividend income and/or LTCG income: 0%, 3.8%, 15%, 18.8%, and 23.8%.

Assume a change in income is caused by a change in either of these two specific types of income. To calculate MTR if the taxpayer has tax credits in the phaseout range, add the percentage increases from the applicable MTR formulas in [Table 2](#) to the STR of 0%, 3.8%, 15%, 18.8%, or 23.8% (hereafter,  $\text{STR}_{\text{LTCG}}$ ), as appropriate. Given such a scenario, the general MTR formula is the following:

$$\text{MTR} = \text{STR}_{\text{LTCG}} + Cr$$

$Cr$  is the sum of the percentage increase(s) for the credit phaseout(s) (from [Table 2](#)).

If there are no credit phaseouts but there is one other provision (i.e., a deduction, exclusion, or reduction in allowable contribution) in a phaseout range, MTR is not simply the applicable MTR formula from [Table 2](#) with  $\text{STR}_{\text{LTCG}}$  substituting for STR. To calculate MTR, first, use the applicable formula from [Table 2](#) with STR being from the tax rate schedule for ordinary taxable income (hereafter,  $\text{STR}_{\text{ordinary}}$ ). Next, subtract the taxpayer's  $\text{STR}_{\text{ordinary}}$  and add the resulting difference to  $\text{STR}_{\text{LTCG}}$ . The MTR formula that results is the following:

<sup>6</sup> Assume a taxpayer is in more than one credit phaseout range. To calculate MTR using [Table 2](#), simply add the percentage increases for the partially phased-out credits together with their STR. For example, assume a taxpayer with Head of Household filing status, a 25% STR, and AGI of \$85,000 is subject to partial phaseouts of both the American opportunity credit (7) and Child credit (12). The taxpayer's MTR is 55% (i.e., STR of 25% plus 25% for former phaseout plus 5% for latter phaseout). In contrast, when a variety of partial phaseouts that are not all tax credits apply to a taxpayer, combining the formulas from [Table 2](#) is sometimes complex. One reason for the complexity is that when more than one partial phaseout occurs, the effect on MTR of a partial phaseout that is not a tax credit depends on whether such provision changes AGI or is changed by AGI. Properly combining all possible varieties of partial phaseouts to determine MTR using the formulas in [Table 2](#) is beyond the scope of this article.



$$MTR = STR_{LTCG} + [(STR_{ordinary} \times Ded) - STR_{ordinary}]$$

Ded is the number greater than 1.0 from the MTR formula column in Table 2 for the applicable phaseout of a deduction, exclusion of income, or reduction in allowable contribution.

The reason for such computation of MTR is that the change in income changes tax at the lower-than-ordinary rate (i.e.,  $STR_{LTCG}$ ), but the change it causes to the deduction, exclusion, or allowable contribution for which the taxpayer is in the phaseout range changes tax at the ordinary rate. To illustrate this using a comparison, assume the only phaseout a taxpayer is subject to is miscellaneous itemized deductions being reduced by the 2% of AGI floor. Assume AGI is below the threshold where the 3.8% surtax on net investment income applies. Finally, assume that AGI changes due to \$1000 of additional ordinary income, and that the resulting level of taxable income places the taxpayer in the 25% ordinary tax rate bracket. MTR equals “ $STR_{ordinary} \times 1.02$ ” (from 16 in Table 2), so MTR for the assumed situation is the following:

$$MTR = STR_{ordinary} \times 1.02 = (0.25 \times 1.02) = 25.50\%$$

Now compare this result to the same facts, except assume that the change in AGI is because the taxpayer recognizes a \$1000 long-term capital gain (LTCG). MTR is the following:

$$MTR = STR_{LTCG} + [(STR_{ordinary} \times 1.02) - STR_{ordinary}]$$

$$MTR = 0.15 + [(0.25 \times 1.02) - 0.25] = 15.50\%$$

The \$1000 LTCG increases taxable income by \$1020 because the increase in AGI of \$1000 reduces itemized deductions by \$20. The additional \$1000 of taxable income that results from the LTCG increases tax by \$150 (i.e., 15%), and the additional \$20 of taxable income that results from reduction in itemized deductions increases tax by \$5.00 (i.e., 25% of \$20). The net change in tax of \$155 divided by the change in income of \$1000 is consistent with the MTR formula above: 15.50%.

## 6. What is MTR when the individual taxpayer is subject to AMT?

There are two STRs under the alternative minimum tax (AMT): 26% and 28%. Generally, when an individual taxpayer is subject to the AMT, which is when tentative minimum tax is greater than regular income tax, the MTR formulas in Table 2 use one of these two AMT rates as the STR (hereafter,  $STR_{AMT}$ ).

If a taxpayer is subject to AMT but a provision in Table 2 is not applicable under the AMT, even if the taxpayer’s AGI places the taxpayer in that provision’s phaseout range under the regular income tax, you should ignore such provision in determining MTR. In 2013, this occurs only for miscellaneous itemized deductions (16). Assume a taxpayer’s total itemized deductions include some from the miscellaneous category. Miscellaneous itemized deductions are not allowed under the AMT, so if a taxpayer is subject to AMT the MTR formula for provision 16 in Table 2 does not apply.

The phaseout of the AMT exemption deduction is not in Table 2 because it can occur only when AMT is paid. Its phaseout range is based on Alternative Minimum Taxable Income (before the AMT exemption deduction) instead of AGI. Its effect on MTR and its phaseout ranges, by filing status, are in Table 4.

**Table 4**  
2013 Phaseout for upper-income individuals that creates effective MTR different from alternative minimum statutory tax rate.

Provision (estimated number in relevant AGI range)	Code §	Relevant AMT Income Range by Filing Status	How Phaseout Works	Effective MTR
(1) Phaseout of AMT exemption deduction (2 M)	§ 55(d)(1);	Single or HH: \$115,400–\$323,000	AMT exemption deduction: \$51,900 – [51,900 × [(AMTI – \$115,400) ÷ \$207,600]	$STR_{AMT} \times 1.25$
	§ 55(d)(3)	Joint: \$153,900–\$477,100	\$80,800 – [80,800 × [(AMTI – \$153,900) ÷ \$323,200]	

The phaseout range column of Table 4 is based on an AMT exemption deduction for 2013 of \$51,900 for single and HH filing statuses and \$80,800 for joint filers. Using the MTR formula in Table 4 when a taxpayer has part of the AMT exemption deduction phased out, MTR becomes 32.5% (i.e.,  $26\% \times 1.25$ ) or 35% (i.e.,  $28\% \times 1.25$ ) when the AMT statutory rate ( $STR_{AMT}$ ) is 26% or 28%, respectively.

When a taxpayer is subject to AMT and an increase in income is made up of LTCG and/or qualified dividend income taxed at 0%, 3.8%, 15%, 18.8%, or 23.8%, the two MTR formulas in Section 5 apply. Assuming the only phaseouts are of credits, the MTR formula is the same as in Section 5, “ $STR_{LTCG} + Cr.$ ” If there is one phaseout and it is not of a credit, substitute  $STR_{AMT}$  for  $STR_{ordinary}$  so the MTR formula from Section 5 becomes “ $STR_{LTCG} + [(STR_{AMT} \times Ded) - STR_{AMT}]$ .” Assume a taxpayer subject to AMT is in the phaseout range for the AMT exemption deduction and has an increase in income taxed at the LTCG rate of 15%. If  $STR_{AMT}$  is 26% or 28%, the taxpayer’s MTR on the LTCG is 21.5% (i.e.,  $15\% + [32.5\% - 26\%]$ ) or 22% (i.e.,  $15\% + [35\% - 28\%]$ ), respectively. The change in income taxed at the LTCG rate changes tax by 15% but also changes the AMT exemption deduction, and such impact is at the regular AMT statutory rates. To illustrate, additional LTCG income of \$1000 increases tax by \$150 but also reduces the exemption deduction by \$250. Multiplying  $STR_{AMT}$  of 26% or 28% by a \$250 decrease in deductions results in \$65 or \$70 more tax, respectively. The total change in tax of \$215 or \$220 divided by the change in income of \$1000 is 21.5% or 22%, respectively.<sup>7</sup>

## 7. Types of phaseouts: smooth and stair-step

For simplicity, the formulas in Table 2 assume smooth phaseouts, but four provisions contain “stair-step” phaseouts. One such provision is the partial phaseout of the dependent care credit (2). The credit is reduced by one percentage point for each \$2000 (or portion thereof) that AGI exceeds \$15,000. Before AGI exceeds this threshold, the credit’s rate is 35%. The rate is 20% when AGI exceeds \$43,000. Thus, the dependent care credit is only a limited phaseout instead of a complete phaseout. Another such provision is the phaseout of the child credit (12). The credit is phased out in \$50 increments for each \$1000 (or portion thereof) that AGI exceeds the beginning of the phaseout range. Another such provision is the mortgage insurance premiums deduction (18). This expenditure, which is included in the itemized deduction category of interest, is phased out in 10% increments for each \$1000 (or portion thereof) that AGI exceeds the beginning of the phaseout range (i.e., \$100,000). Another such provision is the exemption(s) deduction phaseout (20). Once the threshold is reached, 2% of the total exemption amount is phased out for every \$2500 (or portion thereof) that AGI increases. To illustrate, assume married taxpayers filing jointly and AGI is in the phaseout range from \$300,001 to \$302,500. Two percent of the total deduction for exemptions is phased out. For 2013, the amount of each exemption deduction is \$3900. Assuming two personal exemption deductions and no dependent exemption deductions, 2% of \$7800 is a \$156 phaseout. However, moving from \$302,500 to \$302,501 of AGI causes 4% of the deduction to phase out. This \$1 increase in AGI lowers the exemption deduction by an additional 2% of its total before any phaseout. Continuing with the same assumptions, the result is a \$312 phaseout.

## 8. Effects of phaseouts on MTR: some are minor and some are major

The ordinary STR schedule has seven rate brackets: 10%, 15%, 25%, 28%, 33%, 35%, and 39.6%. The smallest of the six jumps between the seven rate brackets, from 33 to 35%, is two percentage points. Three common phaseouts—specifically, of miscellaneous itemized deductions (16), of total itemized deductions (19), and of the exemption(s) deduction (20)—cause MTR to be only slightly higher than STR because their MTR formulas are STR, which is a maximum of 0.396, multiplied by a number only

<sup>7</sup> Combining the AMT exemption deduction phaseout along with all possible varieties of partial phaseouts properly to determine MTR when the taxpayer is subject to AMT is beyond the scope of this article.



slightly higher than one. The miscellaneous itemized deductions phaseout will always cause MTR, which is STR multiplied by 1.02, to be less than one percentage point higher than the taxpayer's STR. The total itemized deduction phaseout will cause MTR, which is STR multiplied by 1.03, to be no more than 1.188 percentage points higher than the taxpayer's STR. The exemption(s) deduction phaseout will cause MTR, which is STR multiplied by 1.032, to be no more than 1.236 percentage points higher than the taxpayer's STR, assuming there is only one exemption. In contrast, the greater the number of exemptions, the much more significant effect the phaseout of itemized deductions has on increasing MTR above STR.

The next lowest of the five jumps between the six rate brackets, from 25 to 28%, is three percentage points. The jump from 35% to 39.6% is 4.6 percentage points. The jumps from 10% to 15% and from 28% to 33% are both five percentage points. Five of the six jumps, thus, are five percentage points or less. Many common phaseouts can cause MTR to be at least five percentage points higher than the taxpayer's rate bracket (i.e., STR). Examples include the earned income credit phaseout (1), the phaseout of social security benefits exclusion (4), the phaseout of the deductible contribution to a traditional IRA (5), the phaseout of contribution allowed into a Roth IRA (6), the phaseouts of the two higher education tax credits (7 and 8), and the phaseout of the child credit (12). These phaseouts all have a major impact on MTR.<sup>8</sup> Consistent with such impact, [Altshuler and Goldin \(2009, 335\)](#) report that MTR is on average almost six percentage points higher than STR for taxpayers who have an MTR higher than STR. Phaseouts that cause MTR to be a lot higher than STR can result in “an additional dollar of income [being] taxed at a higher rate than [or at the same rate as] an additional dollar of income earned by a taxpayer [in a higher statutory tax rate bracket],” as the [National Taxpayer Advocate \(NTA\) \(2008\)](#) states. When this occurs, it undercuts what was meant to be built into the U.S. individual federal income tax system for individuals—a progressive tax rate structure.<sup>9</sup>

## 9. Lack of inflation adjustments and the increasing impact of certain phaseouts

For many provisions, annual inflation adjustments occur that can increase where a phaseout range begins and ends. However, no inflation adjustments are made for the dependent care credit, elderly or disabled credit, social security benefits exclusion, contribution to a Coverdell education savings account, child credit, and allowable rental real estate loss deduction—provisions 2, 3, 4, 11, 12, and 13, respectively. This generally leads to increasing numbers of taxpayers being subject to these phaseouts year after year.

Because the exclusion from income of social security benefits received is not indexed for inflation, each year many more taxpayers have some of their Social Security benefits included in income for the first time. Statistics of Income data for 1996 show about 7 million Form 1040s had taxable social security benefits and the average taxable amount was about \$7000; more recent data, for 2011, show about 16 million Form 1040s had taxable social security benefits and the average taxable amount was about \$12,000 ([U.S. Internal Revenue Service, 2013, 1999](#)). Part of this is due to an increasing number of retirees collecting Social Security. Part of this is also due to the annual cost-of-living adjustments increasing the benefits and causing taxpayers who in the previous year were in the range where the exclusion was less than the maximum phaseout of 85% having a higher percentage phased out (i.e., more taxable social security benefits) in the current year.

Out of the other provisions that are not indexed for inflation, arguably the child credit phaseout has the most significant total impact on taxpayers. In 1998, when the child credit was only \$500 per qual-

<sup>8</sup> It is possible that provisions 18 and 20, phaseouts of the mortgage insurance premiums deduction and the exemption(s) deduction, respectively, can have a major impact on MTR. For the former provision, the greater the mortgage insurance premiums paid, the greater the impact. For the latter provision, the greater the number of exemptions, the greater the impact. Also, if a taxpayer is in the phaseout range for either of these provisions, the higher the STR, the greater the impact.

<sup>9</sup> Of these seven phaseouts that have a major impact on MTR, the earned income credit phaseout (provision 1) applies to those with the lowest levels of income, and generally the social security benefit exclusion phaseout (provision 4) applies to those with the next lowest levels of income. These two provisions cause MTR to be very high relative to STR for 15 million and 7 million taxpayers, respectively. Both of these phaseouts cause taxpayers who generally do not have high levels of taxable income to have MTRs higher than those of taxpayers with much higher levels of taxable income.

ifying child, the JCT estimated that 600,000 taxpayers were in its phaseout range ([Joint Committee on Taxation \(JCT\), 1998](#), 6). The Social Security Administration's average wage index ([U.S. Social Security Administration \(SSA\), 2010](#)) has increased by about 50% since 1997—the child credit's original enactment. However, the beginning of the child credit's phaseout range has never increased. In addition, the credit amount has doubled to \$1000, which causes its phaseout range to double. For these two reasons and after reviewing SOI data, an appropriate estimate is that 1 million taxpayers are now in the child credit's phaseout range.

## 10. Tax planning

There are ways for some individuals who will be in one of these phaseout ranges to avoid or reduce such phaseout. Engaging in such strategies is especially important for phaseouts that have a major impact on MTR. One strategy is to increase contributions to a 401(k) (or 403(b) or 457(b)). Another strategy, if it is after the end of the year but not after April 15 of the following year, is to contribute to an IRA if a deduction is allowed. Both strategies reduce AGI, which can reduce the amount of a phaseout. In other words, implementing such strategies will increase the tax benefit of the expenditure, contribution, or allowable exclusion that is subject to partial phaseout. Another way to reduce AGI is to recognize a capital loss, but only if the taxpayer does not already have a net capital loss of \$3000 which is the maximum allowable deduction. Also, to avoid increasing AGI when it will cause the further phase out of a tax benefit, the taxpayer might consider forgoing recognizing any capital gains. Another strategy that applies to a taxpayer who is an S-corporation shareholder where the business expects a net loss for the current year is to ensure that basis is sufficient to deduct the entire loss on the current year's tax return since such deduction reduces AGI. Specifically, if basis is not sufficient have the shareholder make a direct loan to the S-corporation before its year ends, which will increase the amount of losses that can be deducted by the individual shareholder for the current year. Implementing any of these strategies so that AGI falls toward the beginning of an applicable phaseout range can be effective tax planning.

## 11. Implementation guidance for instructors

The recommended time to begin to cover phaseouts is immediately after the first provision subject to a phaseout is covered in the course. Note that this might be a deduction, but for many instructors it will be when exclusions from income are covered, since exclusions are often covered before deductions. The minimum amount of material recommended for coverage in-class is an overview of the phaseouts table (i.e., [Table 2](#) of this article) and a presentation of the two examples of determining MTR in [Tables 1 and 3](#) of this article. These two examples cover one deduction and one credit phaseout. If an instructor also wants to cover an example about an exclusion phaseout and/or a contribution phaseout, illustrations of both are in [Appendix A](#).

Beyond an overview of [Table 2](#), use of the phaseouts table depends on an instructor's learning objectives. If it is the first income tax course, some instructors might want the students to be able to calculate the amount on the tax return (i.e., amount not phased out) but are not concerned about the students knowing the MTR. Such instructors can explain that the students' focus should be on the AGI range of [Table 2](#) (i.e., the third column) and on How the Phaseout Works (i.e., the fourth column) to learn how to apply the provision properly. The Effective MTR column, thus, can be either left in the table but deemphasized or deleted from the table.

Alternatively, some instructors might want students to be able to identify when either a taxpayer is in a phaseout range or has a provision completely phased out. Such instructors can explain that the students' focus should be on the AGI range (i.e., third) column. Alternatively, if the focus is on income tax planning for individuals, some instructors might want to emphasize the AGI range (i.e., third) column and the MTR formula (i.e., fifth) column so the How the Phaseout Works (i.e., fourth) column can be either deemphasized or deleted from the table.

Regardless of the instructor's learning objectives, [Table 2](#) provides all of the phaseouts in one convenient place so memorization of which tax breaks are subject to phaseout and the range of AGI where the phaseout occurs is not necessary. Consistent with not requiring such memorization is the recommendation to attach the phaseouts table to exams and quizzes. Many questions and problems related to the phaseouts table and computing MTR are in [Appendix A](#).

If an instructor feels that [Table 2](#) has too much information, the instructor could simplify the table by excluding certain columns or rows. For example, if the instructor is not concerned about students learning IRC section numbers, delete the "Code §" column. Other columns to consider deleting, given the instructor's learning objectives, were discussed earlier. Besides considering deletion of a column or two, rows pertaining to tax provision not covered in the course could be deleted.

Which phaseout provisions are relatively more important to cover in a course? "Effects of Phaseouts on MTR: Some Are Minor and Some Are Major" in [Section 8](#), used in conjunction with the estimated number of taxpayers in a relevant AGI phaseout range (see the first column of [Table 2](#)), provides guidance to instructors on what the more important phaseouts are. The larger the increase in MTR and the larger the number of estimated taxpayers affected, the more important the provision. From the former perspective, the more important provisions to cover have already been mentioned in [Section 8](#). They are provisions 1, 4, 5, 6, 7, 8, and 12. From the latter perspective, the other important provisions to cover are the phaseouts of the dependent care credit, qualified student loan interest deduction, 10% floor for medical deductions, 2% floor for miscellaneous deductions, itemized deductions, and exemption deductions (provisions 2, 9, 15, 16, 19, and 20, respectively), each of which impact at least 1 million taxpayers. Deleting the other seven provisions not mentioned cuts [Table 2](#) and its footnotes down from seven pages to five pages.

The remainder of the discussion in this section addresses optional (i.e., additional) coverage of MTR topics in a tax course. If an instructor chooses to cover "What Is MTR When Change in Income Is Taxed at the Long-Term Capital Gain Rate?" (i.e., [Section 5](#)), the proper timing is after the minimum recommended coverage above has been completed. If an instructor covers the LTCG tax rate earlier in the semester, then the instructor should revisit the LTCG tax rate after the minimum recommended coverage and point out that STR is  $STR_{LTCG}$  when a transaction under consideration will change income by changing the net LTCG for the year. In addition, the instructor should point out that to compute MTR if a deduction is phased out, do not use the formula  $STR_{LTCG} \times Ded$ , but instead use the formula  $STR_{LTCG} + [(STR_{ordinary} \times Ded) - STR_{ordinary}]$ .

If an instructor chooses to cover "What Is MTR When the Individual Taxpayer Is Subject to AMT?" (i.e., [Section 6](#)), the proper timing is after the minimum selected coverage above has been completed and right after completing coverage of the AMT exemption deduction, since this is the deduction subject to phaseout. The objective is for students to recognize that the MTR is one-quarter higher than the 26% or 28% statutory AMT rate when a taxpayer is subject to AMT and the transaction being considered changes the amount of Alternative Minimum Taxable Income (before the AMT exemption deduction) and this amount is in the phaseout range.

If an instructor chooses to cover "Types of Phaseouts: Smooth and Stair-Step" (i.e., [Section 7](#)), the proper timing is after the minimum selected coverage above has been completed and right after completing coverage of the provision that phases out in a stair-step fashion—the dependent care credit (2), the child credit (12), the mortgage insurance premiums deduction (18), or the exemption(s) deduction phaseout (20). An example of a child credit phaseout is in [Section 12.1](#).

To summarize, students' gaining the ability to distinguish between when an individual's STR bracket is not the same as the individual's MTR due to a provision being partially phased out is an important learning objective because it is common and/or can have a significant impact on tax paid. The earlier illustrations in [Tables 1 and 3](#) as well as the illustrations in the following section and in [Appendix A](#) address both why and how MTR can exceed STR while providing instructors with plenty of material for covering this learning objective both inside and outside of the classroom.

**Table 5**

Survey of students about using table of phaseouts (i.e., Table 2) in first federal income tax course.

Questions	Strongly Agree (%)	Agree (%)	Neither Agree nor Disagree (%)	Disagree (%)	Strongly Disagree (%)
(1) The Table of Phaseouts for Individuals efficiently summarized the income tax laws that have “phaseouts” in the course	32	52	7	6	3
(2) The Table of Phaseouts for Individuals was relevant to the course’s learning objective of understanding the role of taxes in evaluating decisions confronted by individual taxpayers	45	50	3	2	0
(3) The Table of Phaseouts for Individuals was relevant to the course’s learning objective of properly applying federal income tax laws	48	46	4	1	1
(4) The Table of Phaseouts for Individuals improved my understanding of the individual federal income tax laws that benefit, typically by a tax credit or deduction, some taxpayers but are either not allowed or are only partially allowed for other taxpayers	41	42	11	5	1
(5) The Table of Phaseouts for Individuals improved my understanding of when an individual’s Marginal Tax Rate can be a different percentage than their Statutory tax rate percentage (of either 0%, 10%, 15%, 25%, 28%, 33%, or 35%)	38	36	14	10	2
(6) Overall, the Table of Phaseouts for Individuals is an effective learning tool in this course	39	48	7	5	1
(7) The instructor should continue to use the Table of Phaseouts for Individuals in the future in this course. (note: only 2 choices)	–	93	–	7	–

## 12. Application problems for students

Instructors should choose whichever of the following problems they believe are valuable to the students’ learning. The next subsection presents what is used in a 75-min class in addition to the minimum recommended coverage discussed earlier. In an [Appendix A](#) to the paper are additional assessment materials. Specifically, [Appendix A](#) includes problems that can be used for graded homework and problems that can be used on an exam or quiz.

### 12.1. Three in-class illustrations

[Tables 1 and 3](#) contain two illustrations that are both modeled in class to show students how to compute MTR by comparing the refund amount (or amount owed) before and after a change in income. The purpose of the problems in [Tables 1 and 3](#) is twofold: first, to show all of the steps in determining a taxpayer’s MTR by going through the individual tax formula before and after the income change (i.e., the first column and the second column, respectively); second, to show how using the phaseouts table ([Table 2](#)) is a shortcut to such MTRs. Specifically, once taxable income is determined in the first column, no more work is necessary if AGI is in the phaseout range and the transaction causes both AGI to remain in the phaseout range and taxable income to remain in the same tax rate bracket (i.e., STR). Instead of continuing the work to complete the table, students input the STR determined from the first column’s taxable income amount into the appropriate “Effective MTR” formula in [Table 2](#) to compute the MTR.

The following are three more illustrations that can be presented in the same class:

(1) Taxpayers whose MTR differs from STR because of two deduction phaseouts

Assumptions: Year is 2013; status is married filing jointly; there are no dependents:

Total Exemption Deductions =  $(3900 \times 2) = \$7800$ ; and

Adjusted Gross Income = 115,000.

Itemized Deductions:

- Medical Expenses (before AGI limitation) \$13,000
- Taxes, Mortgage Interest, and Charity 12,700

Question: What is the MTR on the next \$2000 of income?

*Solution: Taxpayers are in the 25% STR bracket, but as income increases:*

– Medical expense deduction (after limitation) declines by \$200

Taxable income will increase by  $(\$2000 + \$200) = \$2200$

and Tax will increase by  $(\$2200 \times 25\%) = \$550$ .

$MTR = \text{Change in tax} \div \text{Change in income} = \$550 \div \$2000 = \mathbf{27.5\%}$

*Alternatively, for a shortcut to compute 27.5%, use the phaseouts table.*

*Since the taxpayer has more than one deduction in a phaseout range, to determine MTR, increase STR by the combination of the percentages in the relevant MTR formulas:*

$MTR = STR \times 1.10 = 0.25 \times 1.10 = 0.275$

(2) A follow-up example

Assumptions: Year is 2013 and Filing Status is Single:

Exemption Deduction = \$3900

Adjusted Gross Income (AGI) = 55,000

Itemized Deductions:

- Medical Expenses (before AGI limitation) 5000
- Miscellaneous Expenses (before AGI limitation) 1000
- Taxes, Mortgage Interest, and Charity 3650

Standard Deduction 6100

Question: What is the marginal tax rate on the next \$1000 of income?

Before answering the question, consider that deductible expenditures in the medical category increase total itemized deductions only to the extent the total amount for the category exceeds 10% of AGI. The phaseout is complete (i.e., none of the category's amount increases total itemized deductions) when the deductible amount for an itemized deduction category subject to phaseout is less than or equal to AGI multiplied by the percentage cutoff for that category. If the phaseout is complete, then the MTR is not different from STR.

*Solution: Taxpayer's taxable income = \$45,000 (\$55,000 income – \$6100 standard deduction – \$3900 exemption deduction), which is in the 25% STR bracket.*

*When income increases by \$1000, the amount of medical deduction included in total itemized deductions is still \$0. In other words, when AGI was \$55,000, the \$5000 of medical deductions were all cut off (i.e., 10% of AGI = \$5500).*

*Since the taxpayer is not in any phaseout range,  $MTR = STR = 25\%$ .*

(3) Taxpayers whose MTR differs from STR because of child tax credit phaseout

Assumptions: Married taxpayers have two dependent children under 17 years old in 2013; AGI is \$110,000; taxpayers take the standard deduction instead of itemizing deductions.

(continued on next page)

Question: What is the marginal tax rate if income increases by \$2000?

Solution: Reviewing the child credit (12) in the phaseouts table, the married couple's AGI of \$110,000 is at the beginning of the credit's phaseout. If AGI increases, the married couple does not receive the full tax credit. See table below for computation of tax before and after income increases by \$2000.

		<u>Additional</u> <u>Income of \$2,000</u>	<u>Change in</u> <u>Tax</u>
Adjusted Gross Income	\$110,000	\$112,000	
Standard Deduction	– 12,200	– 12,200	
Personal & Dependent Exemptions	– <u>15,600</u>	– <u>15,600</u>	
Taxable Income	<u>\$82,200</u>	<u>\$84,200</u>	
Tax (from Tax Rate Schedule)	\$12,408	\$12,908	\$500
Child Credit	– <u>2,000</u>	– <u>1,900</u>	<u>\$100</u>
<Refund> or Amount Owed	<u>\$10,408</u>	<u>\$11,008</u>	<u>\$600</u>

$MTR = \text{Change in Tax} \div \text{Change in Income} = \$600 \div \$2000 = 30\%$

There is a shortcut to compute 30%. Under the 2013 tax rate schedule, a married couple filing jointly with taxable income over \$72,500 but not over \$146,400 is in the 25% STR bracket. Provision 12's "Effective MTR" formula in the phaseouts table is the following:

$$MTR = \text{Statutory rate} + 5\% = 25\% + 5\% = 30\%.$$

### 13. Feedback from students

One advantage of using [Table 2](#) in class is having all of the details of the phaseouts and their impact on MTR in one place. It is recommended that the students refer to the table every time a new phaseout provision is covered in the course. At the end of the fall semesters in 2011 and 2012, the instructor posted a seven-question survey about the phaseouts table on Blackboard and requested that the students in the "Federal Income Tax" course (required for undergraduate accounting majors) complete it. Out of 159 students, 111 completed the survey. A summary of the responses is in [Table 5](#). Eighty-seven percent of the students either agreed or strongly agreed that the Phaseouts for Individuals table (i.e., [Table 2](#) in this article) is an effective learning tool (in response to question 6). Ninety-three percent of the students agreed that the table should continue to be used in the future (in response to question 7).

### 14. Limitations

Theoretically, all taxes based on an individual's income should be incorporated into STR and MTR. For simplicity, state and local income taxes and payroll taxes based on an individual's employment are ignored and this article focuses only on the federal income tax.

[Table 2](#) does not include either the deduction for higher education expenses (section 222), which is scheduled to go out of the law after 2013, or the retirement saver's credit (section 25B). Even though the former can also be lost as AGI increases, it contains two equal-sized cliffs. Even though the latter can also be lost as AGI increases, it contains two cliffs and two smaller steps. Specifically, for both provisions a \$1 increase in AGI above a threshold amount causes the tax benefit (i.e., deduction or credit) to be cut in half. Then, for the higher education expenses deduction, at an even higher AGI threshold, a \$1 increase in income causes the deduction to drop to zero. For the retirement saver's credit, at an even higher AGI threshold, a \$1 increase in income causes the credit to drop from 50% to 20%. As AGI continues to rise, the credit drops to 10% and then to zero. This deduction phaseout and this credit phaseout are not in [Table 2](#) because it would be misleading to express them with an effective MTR formula like those in [Table 2](#) because they are neither smooth nor steady stair-steps.



Table 2 ignores the phaseout of the exclusion of employer-provided adoption assistance. For simplicity, provision 14 in the table focuses only on the adoption credit.

The MTR calculated in both Tables 1 and 3 as well as the first and third in-class illustrations in Section 12.1 are consistent with Table 2's Effective MTR column only because AGI both before and after the given increase in income is inside the phaseout's relevant AGI range. Tailoring examples so that the change in income is entirely inside a phaseout's AGI range is a limitation of this article. To broaden student learning, the second in-class illustration in Section 12.1 finds that MTR equals STR instead of being higher than STR because at the given AGI amount the deduction subject to phaseout is totally phased out. The other scenario where MTR will equal STR is when a change in income is entirely below a phaseout's AGI range so the full tax break is allowed. The only other possible scenario, not illustrated in this article until now, is a change in income that is partly inside and partly outside of a phaseout provision's relevant AGI range. If such were the facts in any of the earlier illustrations, the correct MTR would be higher than STR but not as high as the Effective MTR formula in Table 2. For example, assume that income in the first column of Table 1 is \$57,000, instead of \$60,000, and that the increase in income in the second column is by \$6000 (to \$63,000), instead of by \$1000 (to \$61,000). Reviewing the relevant provision (9) in Table 2, half of the increase in income is inside the relevant AGI range (i.e., above \$60,000) and half is not. Taxable income would become \$44,500 in column 1 and \$51,000 in column 2 because \$500 of student loan interest is phased out. Calculating tax on these two taxable income amounts, it turns out that the increase in tax of \$1625 ( $=\$8679 - \$7054$ ) divided by the increase in income of \$6000 equals 27.1%, halfway between the taxpayer's STR of 25% and the MTR of 29.2% in Table 1. Such examples are not included in the article because the potential number of such illustrations is infinite.<sup>10</sup>

Another limitation is that the MTR formulas for credits that are nonrefundable (provisions 2, 3, 8, and 14) or partially nonrefundable (provisions 7 and 12) implicitly assume that the nonrefundable amount of such credits before any of the nonrefundable amount is phased out does not exceed tax on the Form 1040. In other words, no nonrefundable credit is lost because the credit exceeds the amount of tax. This assumption means that the entire amount of the credit phased out changes the "bottom line" amount on Form 1040 (i.e., decreases the amount refunded and/or increases the amount owed).

"AGI" was used throughout this article as a general term to include the particular AGI amounts as modified by any phaseout provision. For simplicity, modifications to AGI are discussed in endnote 3 instead of being explored in detail in the text of the article.

A limitation of Table 2 is how often the assumption is made that the deduction, credit, or contribution is the maximum allowed under the law if not for the phaseout. The reason for this assumption is that the Effective MTR would be lower than listed in Table 2 if the expenditure is less than the maximum. For example, assume that the specific tax break is the lifetime learning credit (8), that the taxpayer files single, and that AGI is \$56,000 (i.e., 30% of the way into the phaseout range). The phaseout formula works as follows:

<sup>10</sup> When an individual taxpayer is contemplating a transaction that affects income tax, the most practical method to determine MTR is to perform "what-if" analysis using individual income tax return preparation (i.e., 1040) software. To do this, input into the software the taxpayer's filing status, dependents, income, deductions, gains, losses, credits, and any other relevant information, and then save this first file. Next, using that same file, input a change to the tax return assuming a potential transaction occurs. Then, save this as the second file. If there are no potential transactions under consideration by the taxpayer, then increase ordinary income by \$100 instead. Finally, compare the "bottom-line" tax (i.e., amount of refund or amount owed) of the two tax return files. The change in "bottom-line" tax divided by the change in the income or deduction item from the potential transaction, or divided by \$100 if there is no potential transaction, is the MTR. The 1040 software was used to perform the analysis in Tables 1 and 3. The first file saved contains the facts and the amounts in the first column. The second file is the second column, which is the same as the first file except for the addition of \$1000 of ordinary income. The difference in the "bottom-line" tax on the two tax return files is the last amount in the third column. Dividing this difference by the change in the income of \$1000 is the MTR. Every year, 1040 software is available for purchase before the end of November, even though Form 1040 cannot be filed until after the year ends, so such "what-if" analysis can be performed before the year ends. The 1040 software makes it easy to compute MTR and is the tool to use when a taxpayer is considering one or more potential transactions and wants to know the change in tax if the transaction or transactions occur.

$$\begin{aligned}\text{Percentage of Credit Lost} &= [\text{AGI} - \text{Phaseout Begins}] \div [\text{Phaseout Ends} - \text{Phaseout Begins}] \\ &= [56,000 - 53,000] \div [63,000 - 53,000] = 3000 \div 10,000 = 30\%\end{aligned}$$

Assuming the credit is only \$800 before considering the phaseout, the individual's allowable credit is \$560 (i.e., \$800  $\times$  70% credit allowed). Note that the "Effective MTR" in Table 2 for provision 8 is not applicable to this example because the credit before the phaseout is below the maximum of \$2000. Given these facts, the proper adjustment to the MTR formula follows:

$$\begin{aligned}\text{MTR} &= \text{Statutory rate} + 20\% [\text{credit before phaseout} \div \text{maximum credit}] \\ &= \text{Statutory rate} + 20\% [800 \div 2000] = \text{Statutory rate} + 8\%\end{aligned}$$

To summarize, besides the lifetime learning credit (8), assuming that the credit or deduction before the phaseout is below the maximum for the American opportunity credit (7), the student loan interest deduction (9), or the adoption credit (14), the proper adjustment to the MTR formula is computed the same way as in this example. The result is a lower actual MTR than is listed in Table 2's "Effective MTR" column. Similarly, if less than the maximum qualifying expenses are paid for the dependent care credit (2), or less than the maximum contribution is made to an IRA (5), or less than the maximum contribution would have been made to either a Roth IRA (6) or a Coverdell education savings account (11), or if the rental real estate loss (12) before the phaseout is less than the maximum, actual MTR is lower than Table 2's MTR formula.

## 15. Concluding comments

Phaseouts of tax breaks increase the tax base. This is a much less visible way to increase tax collections compared to increasing the rates in the tax rate schedule. Phaseouts affect tens of millions of individual income taxpayers each year. Although many phaseout ranges have changed, most of the phaseout provisions in Table 2 were in the law back in 1998 when the JCT published its original report on the effect of phaseouts on MTRs. The House Ways and Means Committee Chair at that time, Bill Archer (R-TX), called these provisions "sneak attack tax hikes akin to false advertising by the government" because they increase effective MTRs without modifying the published tax rate schedules (Tax Analysts, 1998). Archer's comment about phaseouts remains true today. In its 2008 report, the National Taxpayer Advocate wrote, "Phaseouts...reduce the effectiveness of tax incentives" and reminded Congress that "the point of a tax incentive...is to encourage certain types of economic behavior [but] taxpayers will only respond to incentives if they know they exist and understand them." The phaseouts table (Table 2) in this article is a tax education tool. Students studying federal income taxation of individuals will more fully understand phaseouts and will become more skilled at tax planning after applying this tool.

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## Appendix A. Assessment materials

Below are five homework problems. The first three homework problems focus on the shortcut (i.e., using the phaseouts table) to compute the MTR. The last two homework problems focus on situations where the MTR equals the STR because the taxpayer's AGI does not place the taxpayer inside a phase-out range.



- (1) Anna is age 26, files single, has no dependents, and is not a full-time student. It is November 8, 2013. For 2013, Anna expects total wages of \$12,000. Anna has no other income or deductions. Anna expects her Form 1040 for 2013 to be the following:

Adjusted Gross Income (AGI)	\$ 12,000
Standard Deduction	– 6,100
Personal Exemption	<u>– 3,900</u>
Taxable Income	<u>\$ 2,000</u>
TAX (using 10% statutory rate [see above])	<u>\$ 200</u>

Given the facts, Anna qualifies for the Earned Income Credit (EIC).

**Questions:**

- (a) On November 8, 2013, Anna's employer says that if Anna works overtime through the rest of the year, she will receive \$1000 more wages. What is Anna's federal marginal tax rate on the additional \$1000 of wage income? (Ignore FICA taxes and state income tax.) (Hint: Review (1) in the phaseouts table.)
- (b) Use the federal marginal tax rate percentage determined in part (a) to compute Anna's after-tax income on the \$1000 of additional wages (i.e., on \$1000 of additional before-tax income).

*Solutions:*

- (a) According to the Phaseout of earned income credit, No Children (i.e., (1) in Table 2), Effective marginal tax rate = "statutory rate plus 7.65 percentage points."  
Since the statutory rate is 10 percentage points (because taxable income is greater than \$0 and less than \$8925 in 2013), A's marginal tax rate is 17.65%.
- (b) Before-tax income – Tax paid = After-tax income.  
 $1000 - (17.65\% \times 1000) = \$823.50$
- (2) In 2013, a single individual expects to have AGI = \$59,000. Near the end of the year, the taxpayer could sell an asset and recognize a \$17,000 gain so AGI would become \$76,000. The taxpayer takes the standard deduction and has one (personal) exemption deduction. The only other deduction the taxpayer has is from paying \$2400 of student loan interest in 2013. (Hint: For both (a) and (b) below, review (9) (Phaseout of student loan interest deduction) in the phaseouts table.)

**Questions:**

- (a) If the taxpayer has AGI of \$59,000 for 2013, how much is the student loan interest deduction?
- (b) If the taxpayer has AGI of \$76,000 for 2013, how much is the student loan interest deduction?

*Solutions:*

- (a) The full \$2400 is deductible because AGI is not above \$60,000 (see phaseouts table below).
- (b) \$0 is deductible because AGI is above \$75,000 (see phaseouts table below).

<i>Provision</i>	<i>Effective MTR</i>	<i>How Phaseout Works</i>	<i>Relevant Adjusted Gross Income (AGI) Range by Filing Status</i>
(9) <i>Phaseout of qualified student loan interest deduction</i>	<i>Statutory rate × 1.167 (assuming maximum deduction of \$2500)</i>	<i>Percentage of interest phased out: (AGI – \$60,000) ÷ \$15,000</i>	<i>Single: \$60,000–\$75,000</i>

- (3) Assume an individual attends a private university part-time and works full-time during 2013. The part-time student takes two courses in the spring semester, one course in the summer semester, and two courses in the fall semester. Total tuition and fees for these five courses is more than \$10,000 and all of it is paid during 2013. The student’s lifetime learning tax credit is \$2000, the maximum allowable.

The part-time student’s AGI is \$53,000 but he/she has an opportunity to work extra hours beginning “finals week” of the fall semester, which will increase income by \$1000 for 2013 so that AGI ends up as \$54,000. Before making this decision, the student talks to a friend who wisely recommends that the student consider how much of the additional \$1000 of income remains after taxes. (For simplicity, ignore all taxes except the federal income tax.) (Hint: Review provision 8, “Phaseout of lifetime learning credit,” in the phaseouts table.)

		<u>Increase</u> <u>Income by \$1,000</u>	<u>Change in</u> <u>Tax</u>
Adjusted Gross Income	\$53,000	\$54,000	
Standard Deduction	– 6,100	– 6,100	
Personal Exemption	– <u>3,900</u>	– <u>3,900</u>	
Taxable Income	<u>\$43,000</u>	<u>\$44,000</u>	
Tax (from Tax Rate Schedule)	\$6,679		
Lifetime Learning Credit	– <u>2,000</u>		
Tax after Credit	<u>\$ 4,679</u>		

**Question:** Determine the marginal tax rate (MTR) when AGI is increased by \$1000 (from \$53,000 to \$54,000). (Completing the table above is not necessary if the phaseouts table is used.)

*Solution: Use the following from the phaseouts table:*

<i>Provision</i>	<i>Effective MTR</i>	<i>Percentage of credit phased out:</i>	<i>Relevant Adjusted Gross Income (AGI) Range by Filing Status</i>
(8) <i>Phaseout of lifetime learning credit</i>	<i>Single or HH: Statutory rate + 20% (assuming maximum credit of \$2000 if not for phaseout)</i>	<i>(AGI – \$53,000) ÷ \$10,000</i>	<i>Single or HH: \$53,000–63,000<sup>i</sup></i>

$MTR = \text{Statutory tax rate} + 20\% = 25\% + 20\% = 45\%$

Statutory tax rate of 25% is based on taxable income being \$43,000 (or \$44,000 if the extra hours are worked). Under the 2013 tax rate schedule, a single individual with taxable income over \$36,250 but not over \$87,850 is in the 25% STR bracket.

Alternatively, if a tax return were completed for the increase in income of \$1000, the completed tax return would show the following:

		<i>Increase</i>	
		<u><i>Income by</i></u>	<u><i>Tax</i></u>
		<u><i>\$1,000</i></u>	<u><i>Increase</i></u>
<i>Adjusted Gross Income</i>	\$53,000	\$54,000	
<i>Standard Deduction</i>	– 6,100	– 6,100	
<i>Personal &amp; Dependent Exemptions</i>	– 3,900	– 3,900	
<i>Taxable Income</i>	<u>\$43,000</u>	<u>\$44,000</u>	
<i>Tax (from Tax Rate Schedule)</i>	\$6,679	\$ 6,929	\$250
<i>Lifetime Learning Credit</i>	– 2,000	– 1,800	\$200
<i>Tax after Credit</i>	<u>\$ 4,679</u>	<u>\$ 5,129</u>	<u>\$450</u>

$MTR = \text{Change in Tax after Credit} \div \text{Change in Income} = \$450 \div \$1000 = 45\%$

- (4) Hermione Herr files single and qualifies for a \$2500 student loan interest deduction. Assume Herr’s taxable income places her in the 15% statutory tax rate bracket.

Adjusted Gross Income (AGI)	\$43,000
(before above-the-line deduction)	
Student Loan Interest Deduction	– 2,500
Standard Deduction	– 6,100
Personal Exemption	<u>– 3,900</u>
Taxable Income	<u>\$30,500</u>
Tax (top statutory rate is 15% (per table))	<u>\$ 4,129</u>

**Question:** What is the marginal tax rate (MTR) if AGI increases by \$1000?

*Solution:* Taxable income places the taxpayer in the 15% statutory tax rate bracket. Herr is not in any phaseout ranges. The 15% rate is both the STR and the MTR.

*Note:* The student loan interest deduction phaseout range does not begin until AGI exceeds \$60,000.

- (5) Joe Professor and his wife, Jan Professor, are both full-time faculty members employed by Brainy University. They are both active participants in and covered by their employer’s qualified retirement plan. Joe contributed \$5500 to an IRA. Their AGI for 2013 is expected to be \$183,000 until Joe sells a stock at the end of December that he bought a few weeks earlier and recognizes a \$100 short-term capital gain, so AGI would end up at \$183,100 for the year.

The Professors do not itemize deductions. Their standard deduction for the year is \$12,200 and exemption deductions for the year are \$7800.

**Question:** What is the marginal tax rate (MTR) on the \$100 short-term capital gain?

*Solution:* Taxable income of \$163,100 (i.e., \$183,100 AGI – 12,200 standard deduction – 7800 exemptions deduction) places taxpayers in the 28% statutory tax rate bracket. Taxpayers are not in any phaseout ranges. The 28% rate is both the statutory tax rate bracket and the marginal tax rate.

*Note:* The IRA contribution is not deductible (either before or after the \$100 of additional income). The deduction is fully phased out because AGI is  $\geq$  \$115,000 (see below). The phaseout range below is correct because Joe Professor is an active participant in (i.e., covered by) his employer's retirement plan.

Provision	Effective MTR	How Phaseout Works	Relevant Adjusted Gross Income (AGI) Range by Filing Status
(5) Phaseout of maximum contribution to IRA eligible for a deduction <sup>e</sup>	Joint: Statutory rate $\times$ 1.275 (assuming maximum contribution for under age 50 of \$5500 by one spouse)	Maximum deductible contribution: \$5500 $\times [1 - (AGI - \$95,000) \div \$20,000]$	Joint: \$95,000–\$115,000

<sup>e</sup> Assumes the individual is an employee who is an “active participant,” which means that the employee is covered by an employer-sponsored qualified retirement plan.

Below are six exam problems:

1. Look at provisions 4 (the phaseout of the exclusion of social security benefits) and 12 (the phaseout of the child credit) in the phaseouts table. Which of the following statements is TRUE for these two tax law provisions?

- (a) Taxpayers in these phaseout ranges have a marginal tax rate that is *higher* than their statutory tax rate bracket.
- (b) Taxpayers in these phaseout ranges have a marginal tax rate that is *lower* than their statutory tax rate bracket.
- (c) Taxpayers in these phaseout ranges have a marginal tax rate that is *equal* to their statutory tax rate bracket since their statutory tax rate bracket does not change.
- (d) Taxpayers in (12) have a marginal tax rate that is *higher* than their top statutory tax rate bracket. Taxpayers in (4) have a marginal tax rate that is *lower* than their top statutory tax rate bracket.

*Solution:* (a). Taxpayers in these phaseout ranges have a marginal tax rate that is higher than their statutory tax rate bracket.

In (4),  $MTR = STR \times$  either 1.5 or 1.85. In (12),  $MTR = STR + 5\%$ .

2. Molly and Ron, both ages 30, file jointly and they itemize deductions. Their AGI is \$110,000 and their taxable income is \$91,874—which puts them in the 25% statutory tax rate bracket. Molly's qualifying higher education expenditures this year included \$11,213 to the university's Master of Accounting degree program. Other than these expenditures, they have no other expenditures, receipts, exclusions, or credits that are partially phased out. If they earn an additional \$1000 of income (i.e., AGI becomes \$111,000), their federal income tax will increase by how much?

(Hint: Review “Education Related” section of the phaseouts table.)

- (a) \$250
- (b) \$300
- (c) \$350
- (d) \$375
- (e) \$450

*Solution: (c). Taxpayers are in the phaseout range for the lifetime learning credit (i.e., (8) in the phaseouts table). Since the taxpayers are married filing jointly, MTR is ten percentage points higher than STR. Since STR is 25%, MTR is 35% and \$1000 of additional ordinary income increases tax by \$350, \$250 more income tax and \$100 less tax credit.*

3. Mr. and Mrs. Smith, both age 40 and both full-time employees, each want to make the \$5500 maximum contribution to an IRA or a Roth IRA for 2013. Mr. Smith is an active participant in a 401(k) plan, but Mrs. Smith is not an active participant in any qualified retirement plan through her employer. The couple files a joint return. If their AGI is \$300,000 before any IRA contributions, which of the following statements is true? (Hint: Review provisions 5 and 6 in the phaseouts table including the footnotes.)

- (A) Mr. Smith can contribute \$5500 to his Roth IRA. Mrs. Smith can contribute \$5500 to her Roth IRA.
- (B) Mr. Smith cannot contribute to his Roth IRA. Mr. Smith can contribute \$5500 to his traditional IRA, but it will not be deductible. Mrs. Smith can contribute \$5500 to her Roth IRA.
- (C) Neither can contribute to their Roth IRAs. They can each contribute \$5500 to their traditional IRA, but none of the \$11,000 total contributions is deductible.
- (D) Mr. Smith can contribute \$5500 to his traditional IRA, but it will not be deductible. Mrs. Smith can contribute \$5500 to her traditional IRA, and it is deductible.

*Solution: (C). Neither can contribute to their Roth IRAs because AGI is greater than \$188,000 (i.e., the end of the relevant AGI range for provision 6). Each can contribute \$5500 to their traditional IRA. Unfortunately, AGI is too high according to provision 5 (i.e., for husband—greater than \$115,000, and for wife—greater than \$188,000 per footnote j), so none of the \$11,000 of total contributions to their traditional IRAs is deductible.*

4. Anna is age 26, is single, has no dependents, is not a full-time student, and is an employee of ABC Co. Anna has no income other than her salary and does not itemize her deductions. At the beginning of 2013, Anna's gross salary is \$60,000, and she plans to contribute \$5000 to her 401(k) retirement account. Anna will pay exactly \$2500 of interest on student loans this year. Anna expects her Form 1040 for 2013 to be the following (see Single Tax Rate Schedule attached to exam):

Gross Income	\$55,000
Student Loan Interest Deduction	– 2,500
Standard Deduction	– 6,100
Personal Exemption	– <u>3,900</u>
Taxable Income	<u>\$42,500</u>
Tax (her top statutory tax rate is 25%)	<u>\$ 6,554</u>

### Questions:

- (a) What is Anna's after-tax cost of the student loan interest? (Hint: Before-tax cost minus Tax savings = After-tax cost.)
- (b) Change one fact. Instead of contributing to her 401(k), Anna decided to have \$5000 withheld from her paycheck during the year and put into her Roth 401(k). Thus, Anna's gross income will increase from \$55,000 to \$60,000 for 2013.
- (c) Consult the phaseouts table to answer the following question: What is Anna's marginal tax rate on the additional \$5000 of income?
- (d) Continue with the facts in (b), but assume Anna's gross salary for 2013 is \$80,000 instead of \$60,000. What is Anna's after-tax cost of the student loan interest now?

**Solutions:**

- (a) \$1875. *Before-tax cost of interest paid – Tax savings on interest deduction = After-tax cost of interest paid.*  $\$2500 - (25\% \times \$2500) = \$2500 - 625 = \$1875$ .
- (b) 25%. *According to provision 9 of the phaseouts table, “Phaseout of deductibility of interest on qualified student loans,” the marginal tax rate is “1.167 times statutory rate (assuming maximum deduction of \$2500 if not for phaseout)” if AGI is inside the \$60,000–\$75,000 range. However, Anna’s increase in income from \$55,000 to \$60,000 is not inside the phaseout range, so her statutory tax rate of 25% also equals her marginal tax rate. Note that none of Anna’s student loan interest paid is phased out.*
- (c) \$2500. *The student loan interest deduction is now \$0 (i.e., completely phased out) and produces no tax savings since AGI is greater than \$75,000 (i.e., \$75,000 is the end of the threshold of the phaseout range if filing single).*

*Thus, Before-tax cost of interest paid – Tax savings on interest deduction = After-tax cost of interest paid:  $\$2500 - \$0 = \$2500$ .*

5. For 2013, Tanya provides a household for both herself and her 7-year-old dependent son. The filing status on her federal income tax return is “Head of household.” This year, she earned \$27,150 of wages. Note that she qualifies for the Earned Income Tax Credit.

The following is a computation of her federal income tax:

Earned income (which is the same as Adjusted Gross Income)	\$27,150
Standard Deduction	– 8,950
Exemption Deductions	<u>– 7,800</u>
Taxable Income	<u>\$10,400</u>
Federal Income Tax	<u>\$ 1,040</u>

**Question:** What is the taxpayer’s marginal tax rate (MTR) if her wage income increases by \$100?

- (A) 10%
- (B) 18%
- (C) 26%
- (D) 28%
- (E) 31%

*Solution: (C). 26%.*

*If income increases by \$100, then tax will increase by \$10. In addition, the earned income credit will decline by \$16.*

$$MTR = \text{Change in tax} \div \text{Change in income} = (10 + 16) \div 100 = 26 \div 100 = 26\%$$

6. The taxpayers are married filing jointly and take the standard deduction instead of itemizing deductions. They paid more than \$10,000 of qualifying tuition and fees pursuing a Master’s degree at Private University of St. Louis. (See Lifetime Learning Credit in the phaseouts table.)

	Scenario #1		Scenario #2		Scenario #3	
		<u>If income is \$4,000 higher</u>		<u>If income is \$4,000 higher</u>		<u>If income is \$4,000 higher</u>
AGI	\$102,000	\$106,000	\$122,000	\$126,000	\$142,000	\$146,000
Standard Deduction	- 12,200	- 12,200	- 12,200	- 12,200	- 12,200	- 12,200
Exemptions	- <u>7,800</u>	- <u>7,800</u>	- <u>7,800</u>	- <u>7,800</u>	- <u>7,800</u>	- <u>7,800</u>
Taxable Income	<u>\$82,000</u>	<u>\$86,000</u>	<u>\$102,000</u>	<u>\$106,000</u>	<u>\$122,000</u>	<u>\$126,000</u>
Tax	\$12,358	\$13,358	\$17,358	\$18,358	\$22,358	\$23,358
Lifetime Learning Credit	- <u>2,000</u>	- <u>2,000</u>	- <u>?</u>	- <u>?</u>	- <u>?</u>	- <u>?</u>

The marginal tax rate on the additional income in Scenario #1 =  $(13,358 - 12,358) / 1000 = 10\%$ . The increase in “bottom-line” tax (i.e., amount owed or refund) in Scenarios #2 and #3 might or might not equal exactly \$1000.

**Questions:**

- (a) Compute marginal tax rate on the additional income in Scenario #2 = \_\_\_\_\_
- (b) Compute marginal tax rate on the additional income in Scenario #3 = \_\_\_\_\_

*Solutions:*

- (a) 35%. For a shortcut to compute MTR, use provision 8 in the phaseouts table for the status of married filing jointly:

Statutory rate + 10% = 25% + 10% = 35%.

In Scenario #2, \$4000 of additional income increases tax by \$1000 and reduces the credit by \$400 (from \$500 to \$100).

Specifically, when AGI equals \$122,000, 75% of the \$2000 credit (i.e., \$1500) is not allowed, so the allowable credit is \$500. The 75% was determined by the following formula:

$$\frac{\text{AGI} - \text{Phaseout begins}}{\text{Phaseout ends} - \text{Phaseout begins}} = \% \text{ of credit phased out}$$

$(122,000 - 107,000) \div (127,000 - 107,000) = 15,000 \div 20,000 = 75\%$  phaseout.

When AGI equals \$126,000, 95% of the \$2000 credit (i.e., \$1900) is not allowed, so the allowable credit is \$100 (i.e., the 5% of the \$2000 credit not phased out).

Marginal tax on the additional income in Scenario #2, thus, =  $1400 \div 4000 = 35\%$ .

- (b) 25%. Marginal tax rate on the additional income in Scenario #3 =  $1000 \div 4000 = 25\%$ . Since AGI exceeds \$127,000, the lifetime learning credit is \$0 both before and after the additional income.

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