Benefits and Values of the LG Tax Simplification for Federal Government, Companies and Taxpayers

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Abstract: Taxpayers and companies prefer a simple and efficient federal tax system. This paper provides benefits and values by comparing existing federal tax calculation system and its linear and gradual (LG) tax simplification for withholding tax, income tax, tax return, analysis, projection, fiscal note, tax evasion, tax fraud, and tax reform. The federal tax system can be simplified by matching and reducing existing 7 tax brackets to 3 and eliminating existing 21-page Withholding Tables and 224 (7×4×8) formulas. Also existing 12-page Tax Table can be optional. They can be matched and replaced by 2 simple linear formulas and 1 existing formula practically. Most taxpayers with standard deductions and tax credits may do not need to do normal tax returns with the tax simplification, which would help federal tax administration and reduce related costs. The research finds benefits and values of the LG tax simplification, which may help our federal government or other national governments to evaluate and adopt the simplification, to benefit companies, taxpayers, and their government for reducing related costs. The saving values may be billions of dollars.

Key words: tax simplification, federal income tax, linear and gradual tax system

JEL codes: G18, H21, H25, H71, C02

1. Introduction and Literature Review

Our existing federal personal tax system has two different parts. One has tax withholding schedules, withholding tables and withholding formulas on different filing periods for companies to estimate withholding taxes and payrolls. Another part has tax table and tax computations for taxpayers to file tax returns. Existing federal tax system has 7 tax brackets (up to 56 tax brackets during the past one hundred years[1]), 21-page Withholding Tables, 224 (7×4×8) withholding formulas, and 12-page Tax Table. The Withholding Tables with different filing periods (8), 224 related formulas, and Tax Table are very complex.

The current complexity of the tax system has raised attention for taxpayers and companies to request a process to be simplified to pay taxes. However, the tax system continues to grow more complex because lawmakers may view tax simplicity conflicts with the current policy goal to raise public revenues. A simplified tax system could serve the same purpose of changing revenues. Also it can achieve the goals of fairness, efficiency,

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[1] Available online at: https://taxfoundation.org/historical-income-tax-rates-brackets.

and feasibility to benefit social policy for governments, companies, and individuals. Tax simplicity could lower taxpayers' costs of complying with the tax system in terms of time, process, and rationality. The simplification could also aim to encourage more effective social goals of college, career, investment, and retirement cost savings.

The complexity of the U.S. tax system has created compliance and equity issues according to the Annual Report to Congress of the National Taxpayer Advocate (TAS Executive Summary 2008). The IRS estimated that individuals and businesses have spent 7.6 billion hours a year to comply with the tax filing requirements. It can convert to $193 billion monetary terms or 14 percent of individual and corporate income tax receipts to fulfill the tax collection laws in 2008. Brady (2020) from the National Taxpayers Union Foundation has published the complexity of the U.S. tax system that created compliance burdens and equity issues. The analysis of data from the Office of Information and Regulatory Affairs (OIRA) indicated that, altogether, to comply with the tax code in 2019 consumed a total of 7.854 billion hours for recordkeeping, learning about the law, filling out the required forms and schedules, and submitting information to the Internal Revenue Service (IRS). With the opportunity cost of time burden and out-of-pocket cost, the total net tax compliance burdens have reached $367.3 billion high or 7.8 billion hours spent on tax code compliance in 2019. The U.S. business and individual income tax returns have major net tax compliance burdens. Although, the IRS projections for the 2020 filing season showed that the overall time compliance burden associated with the tax code has fallen for the second straight year after the passage of the historic Tax Cuts and Jobs Act.

Many studies have been devoted to personal taxation simplifications. Diamond and Saez (2011) suggested considering the optimal progressivity of earning taxation and considered whether capital income should be taxed. Freebairn (2012) suggested several personal income taxation reform options and proposed the removal of tax expenditures for some forms of labor remuneration and the increase of more neutral systems of taxation for different forms of capital income. Davis, et al. (2013) indicated that the use of low income tax credits like the Earned Income Tax Credit (EITC) is an important indicator of tax progressivity. In combination with a flat or only nominally graduated rate structure, they pointed out that these tax breaks can sometimes create an unfair result due to the highest income taxpayers paying less of their income taxes than middle-income taxpayers.

Kao and Lee (2013) proposed a linear and gradual tax system to simplify the existing US personal income tax system. The current complex Tax Rate Schedules and Withholding Tables may be simplified and replaced by using a simpler way to calculate the tax rates and taxes. Kao and Lee (2014a) developed the LG tax system to simplify current U.S. federal and state corporate income taxation from up to 10 tax brackets to 2. Kao and Lee (2014b) suggested the tax system to be used to simplify current state individual income systems practically. Kao and Lee (2021) provided the benefits and values to match and simplify state multi tax brackets (up to 12), multi formulas (up to 216) and multi-page withholding tables (up to 80 pages) by 2 or 3 brackets and formulas.

The Tax Filing Simplification Act of 2019 (Warren, et al., 2019) makes several commonsense changes to simplify the tax filing process for millions of American taxpayers and lower their costs. One of the Act would allow eligible taxpayers with simple tax situations to choose a new return-free option, which provides a pre-prepared tax return with income tax liability or refund amount already calculated. It amended the IRS Code of 1986 to establish a free online tax preparation and filing service and programs that allow taxpayers to access third-party provided tax return information. This bill requires the IRS to establish and operate the programs free of charge online tax preparation and filing software and provide technical assistance and disclose federal income tax return information to states that provide or seek to provide state-level tax filing and preparation software. Unfortunately, the Bill was not passed.

In the study of TPC (2020), another benefit of making taxes simpler could improve compliance by reducing inadvertent nonpayment of taxes. In some occasions, people do not pay taxes because of the complexity of tax law. The problem could extent to tax evasion if they consider the unfairness of the tax rules exist. The taxpayers may consider the tax system unfairness benefits could occur in the tax process. For reducing the discrepancies of economic activities and taxpayers' characteristics, the simplified code could reduce both taxpayers' compliance and governmental administrative costs (Kao & Lee, 2017).

This paper provides benefits and values of the LG tax simplification for federal withholding tax, tax return, analysis, projection, fiscal note, evasion, fraud, and tax reform, which can help federal government to evaluate and adopt the tax simplification. Then federal government, taxpayers, and companies can reduce related costs.

2. Benefits and Values of the LG Tax Simplification

2.1 The Existing Personal and Corporate Tax Systems and Simplification

Existing U.S. federal personal tax calculation system has 7 tax brackets (up to 56 during the last 100 years), 21-page Withholding Tables, 224 (7×4×8) formulas, and 12-page Tax Table, which are complex. They are also often changed yearly. Tax reforms involve several factors including tax brackets, tax rates, taxable income ranges, and tax revenue. In 2017, the five federal tax bills with the different tax brackets (3-7) were discussed. The final tax bill is at https://docs.house.gov/billsthisweek/20171218/CRPT-115HRPT-%20466.pdf (2018 Tax Cuts and Jobs Act). Federal corporate tax system had 8 tax brackets with 15-35% before reforming to 21% in 2018.

Table 1 shows existing tax calculation system with 7 tax brackets and 5/4 tax statuses (2018). When the linear and gradual (LG) tax simplification is used, the 7 tax brackets are matched and simplified to 3. Withholding Tables (21 pages) and 224 (7×4×8) withholding formulas can be eliminated. Two linear formulas and one existing formula are used simply for 2018, 2019, 2020 or another year, which are explained by our publications at https://taxsimplecenter.net/publication.html (Web links). Companies can use the 3 simple formulas to match and replace the 21-page Withholding Tables and 224 (7×4×8) formulas. The simplification can help federal government, companies and taxpayers to simplify our existing tax system and reduce related time and costs.

YTI is yearly taxable income, which is equal to TI×F. TI is taxable income and F is filing period (1, 2, 4, 12, 24, 26, 52 or 365 on yearly, semi-yearly, quarterly, monthly, semi-monthly, bi-weekly, weekly or daily basis). We use a simple number for a tax status (S) such as 2 for Married filing jointly or Qualifying widow(er), 1 for Single, 1 for Married filing separately or 1.5 for Head of Household. For withholding taxes, standard deductions and credits are used. When F = 1, YTI = TI for yearly withholding taxes and tax returns.

The top tax rate is 37%, which was reduced from the prior 39.6%. Bottom tax rate is the same at 10%. For 2018, A is 1,204,819 from 100,000 to divide (÷) the 1-st tax rate difference (0.183-0.1), C is 2,325,581 from 200,000÷the 2-nd tax rate difference (0.269-0.183) and D is 30,300 from 300,000 to multiply (×) the 3-rd tax rate difference (0.37-0.269) with the 3 tax rate ranges of 0.01-0.183-0.269-0.37. For 2020, A is 1,162,791 from 100,000÷(0.181-0.095) or 1,234,568 from 100,000÷(0.181-0.1), C is 2,352,941 from 200,000÷(0.266-0.181) and D is 31,200 from 300,000×(0.37-0.266). Three tax rate ranges are 10%-18.1%-26.6-37% at TI of 0-$100,000×S-$300,000×S- with 2 linear (slope) and 1 existing formulas. A, C, D, and 0.14 are constants. For 2019, tax rate ranges are 10%-18.17%-26.73%-37%. 10% may be suggested to 9.5% to have neutral tax revenue and help low-end incomers with slightly lower tax rates and taxes according to tax revenue change difference (fiscal note). Neutral or less tax revenue changes are suggested except to increase or decrease tax revenues

purposely.

Table 1 Federal Existing Personal Income Tax Schedules and Simplification

Existing Tax System (2018)			Simplification	
Taxable income (TI)	The tax	Taxable income	The tax rate and tax	Tax rate range
(A) Married Filing Jointly or Qualifying widow(er)		2018		
Not over $19,050	10% of taxable income (TI)	Not over $100,000×S	YTI÷A÷S+0.1)×TI	10%-18.3%
$19,050 - $77,400	$1,905+12% (TI-19,050)	($100,000-300,000)×S	(YTI÷C÷S+0.14)×TI	18.3%-26.9%
$77,400 - $165,000	$8,907+22% (TI-77,400)	Over $300,000×S	(0.37–(D×S÷YTI))×TI	26.9%-37%
$165,000-$315,000	$28,179+24% (TI-165,000)			
$315,000-$400,000	$64,179+32% (TI-315,000)	2019		
$400,000-$600,000	$91,379+35% (TI-400,000)	Not over $100,000×S	(YTI÷A÷S+0.1)×TI	10%-18.17%
Over $600,000	$161,379+37% (TI-600,000)	($100,000-300,000)×S	(YTI÷C÷S+0.1389)×TI	18.17%-26.73%
(B) Heads of Household		Over $300,000×S	(0.37–(D×S÷YTI))×TI	26.73%-37%
Not over $13,600	10% of taxable income (TI)			
$13,600 - $51,800	$1,360+12% (TI-13,600)	2020		
$51,800 - $82,500	$5,944+22% (TI-51,800)	Not over $100,000×S	(YTI÷A÷S+0.095)×TI	9.5%-18.1%
$82,500 - $157,500	$12,698+24% (TI-82,500)	($100,000-300,000)×S	(YTI÷C÷S+0.1385)×TI	18.1%-26.6%
$157,500-$200,000	$30,698+32% (TI-157,500)	Over $300,000×S	(0.37–(D×S÷YTI))×TI	26.6%-37%
$200,000-$500,000	$44,298+35% (TI-200,000)			
Over $500,000	$149,298+37% (TI-500,000)			
(C) Single		(D) Married Filing Separately		
Not over $9,525	10% of taxable income (TI)	Not over $9,525	10% of taxable income (TI)	
$9,525 - $38,700	$952.5+12% (TI-9,525)	$9,525 - $38,700	$952.5+12% (TI-9,525)	
$38,700 - $82,500	$4,453.5+22% (TI-38,700)	$38,700 - $82,500	$4,453.5+22% (TI-38,700)	
$82,500-$157,500	$14,089.5+24% (TI-82,500)	$82,500-$157,500	$14,089.5+24% (TI-82,500)	
$157,500-$200,000	$32,089.5+32% (TI-157,500)	$157,500-$200,000	$32,089.5+32% (TI-157,500)	
$200,000-$500,000	$45,689.5+35% (TI-200,000)	$200,000-$300,000	$45,689.5+35% (TI-200,000)	
Over $500,000	$150,689.5+37% (TI-500,000)	Over $300,000	$80,689.5+37% (TI-300,000)	

A simple tax status number (such as 1, 2 or 1.5) is used. When Married Filing Jointly or Qualifying widow(er) (S = 2) or for Married Filing Separately (S = 1), existing tax formulas are converted into tax rate and tax formulas by the LG tax simplification. Tax rates between existing tax schedules and the LG tax simplification have very minor or no difference, which are shown in Figure 1.

2018: 161,379+37% (YTI-600,000) = 0.37 YTI - 60,621 = (0.37-(D×2÷YTI))×YTI   (S = 2)

80,689.5+37% (TI-300,000) = 0.37 YTI - 30,310.5 = (0.37-(D×1÷YTI))×YTI   (S = 1)

Federal corporate tax system is simpler than federal personal tax system. Eight tax brackets (15-35%) were used before reforming to a flat tax rate at 21%. A flat tax rate is very simple. But a flat rate can not cover different taxable incomes and small and large companies reasonably. A nice business tax plan is to have a relatively low bottom tax rate, which can encourage more people to start businesses. Small businesses hire many employees to meet social and economic needs for people and economic development. Then mid and large businesses are more stable and pay relatively higher tax rates. Two brackets and two formulas for federal corporate tax calculation system are suggested with two tax rate ranges such as 15%-20%-25% or 15%-21%-28% (Table 2). Taxable income ranges may be adjusted to some easy numbers such as not over and over $120,000/year.
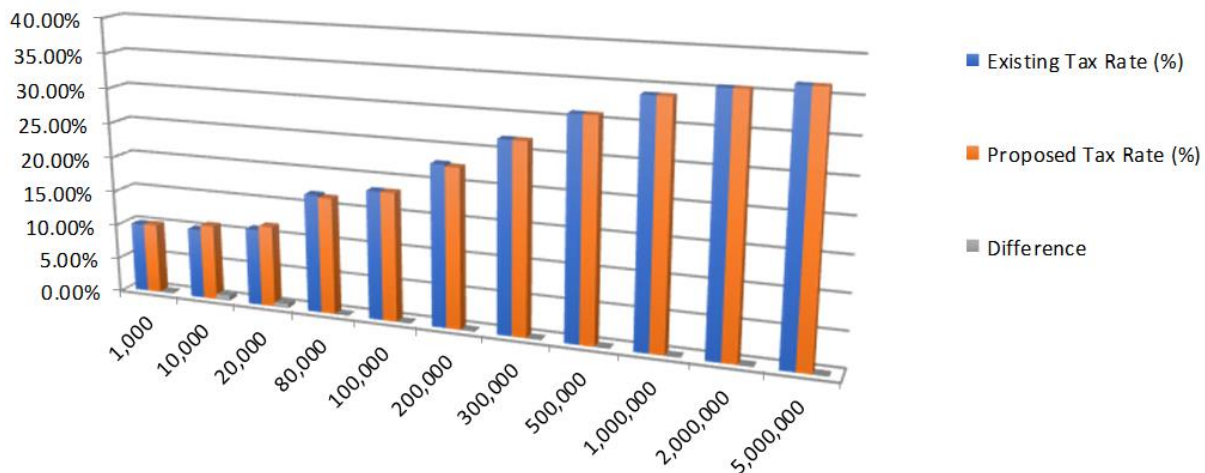
Figure 1   Existing and Simplified Tax Rates (7 brackets are matched and reduced to 3 for MFS)

Table 2   Federal Corporate Tax Calculation Simplification

	Option #1 (15%-20%-25%)		Option #2 (15%-21%-28%)	
Taxable income (TI)	The tax rate and tax	Tax rate range	The tax rate and tax	Tax rate range
Not over $120,000	(YTI÷2,400,000+0.15)×TI	15%-20%	(YTI÷2,000,000+0.15)×TI	15%-21%
Over $120,000	(0.25-6,000÷YTI)×TI	20%-25%	(0.28-8,4000÷YTI)×TI	21%-28%

2.2 Withholding Table and Tax, Income Tax, Tax Table, Tax Return, Evasion, Fraud, and Simplification

For Federal personal tax system, there are 21-pages Withholding Tables at www.irs.gov/pub/irs-pdf/p15t.pdf and 224 (7×4×8) withholding formulas, which are complex. For example, a Married Filing Jointly man's taxable income is $180,000 (yearly), $15,000 (monthly) or $6,923.08 (biweekly) in 2018, his withholding tax calculations involve 4 tax brackets and related formulas or Withholding Tables on different filing periods. There are multi steps to calculate his withholding taxes of $31,779 (yearly), $2,648.25 (monthly) and $1,222.27 (biweekly) from Withholding Tables and related formulas on different filing periods, which take time. When he files tax return for him and his family, his yearly withholding tax (estimation) needs to be corrected.

People are often confused with the difference between marginal tax rates and effective tax rates. Marginal tax rates relate to tax brackets. Effective tax rates are actual tax rates of taxes over taxable incomes. The above cases have the same tax rate at 17.65% from 31,779÷180,000, 2,648.25÷$15,000 or 1,222.27÷6,923.08, which are not shown in the existing tax system. There are also other filing periods. When the tax rate and tax formula from LG tax simplification is used, tax rate and tax are calculated directly on such as monthly, biweekly, yearly or another filing period. Then existing 21-page Withholding Tables and 224 (7×4×8) formulas are not needed.

(TI×F÷S÷A+0.1)×TI=(180,000×1÷2÷1,204,819+0.1)×180,000=0.1747×180,000=$31,446.00   (yearly)

(TI×F÷S÷A+0.1)×TI=(15,000×12÷2÷1,204,819+0.1)×15,000=0.1747×15,000=$2,620.50   (monthly)

(TI×F÷S÷A+0.1)×TI=(6,923.08×26÷2÷1,204,819+0.1)×6,923.08=0.1747×6,923.08=$1,209.46   (biweekly)

The all above 3 calculations have the same tax rate 17.47% on monthly, yearly, biweekly or another basis. Then withholding taxes are calculated simply. Existing tax systems with marginal tax rates have more calculation steps, which do not involve effective tax rates and are in tax format. The LG formula involves tax rate and tax at

the same time. Using this proposed formula, different taxable incomes on different filing periods may have the same tax rate, which can be obtained by one simple formula such as $(TI \times F \div S \div A + 0.1) \times TI$. There is only one step with the simple formula, which is much simpler than the current Withholding Tables or related formulas. The income tax rates of 17.47% and 17.65% are closed each other with very minor difference 0.01 (0.18% ÷ 17.65%).

Existing complex Withholding Tables and 224 (7×4×8) formulas can be eliminated. The LG simple formulas involve both tax rate and tax calculations with different filing periods (F) and tax statuses (S) at the same time. There are the two linear formulas to cover 0-$100,000×S-$300,000×S. For YTI over $300,000×S, there is no tax change because the same formula is used in tax or tax rate and tax format. When one of the 3 formulas is set with Spreadsheet, Excel or software, tax rate, tax, withholding tax and payroll calculations can be calculated repeatedly for companies to do withholding taxes, payrolls and related reports. The math knowledge is very basic. For withholding taxes, standard deductions, exemptions and tax credits are used. Federal standard deductions are $24,800, $12,400 and $18,600 for different tax statuses, which can be simplified with $12,400×S (S = 2, 1 or 1.5).

Most taxpayers use standard deductions and tax credits. When accurate tax information is provided, withholding taxes and income taxes are close or the same. They may use withholding reports (Table 3/W-2) to simplify tax returns with modifications by employees. Then more simplified tax returns can be processed by Internal Revenue Service (IRS) and state revenue departments. Other taxable incomes in Table 3 (A7) may be from taxable interests, S.S. benefits, pensions, annuities, retirements, and others. Income taxes may be calculated with simple pre-prepared formulas for many people. Federal and state tax returns may be simplified together, which is shown at https://taxsimplecenter.net/uploads/8/3/3/9/83395216/wfs_withhodling_report_and_modification3.pdf

Withholding/Income Tax = (Incomes±Adjustments - (Deductions+Exemptions)÷F)×Tax rate - Tax credits÷F

This formula is used to calculate withholding or income tax with tax rate. Existing tax systems are in tax format and not in tax rate format. Adjustable gross income (AGI) is incomes±adjustments. Taxable income is AGI-(deductions+exemptions)÷F. Tax is taxable income × tax rate - tax credits÷F. Filing period (F) is 1, 2, 4, 12, 24, 26, 52 or 365. The bill of 2018 Tax Cuts and Jobs Act combines standard exemptions into standard deductions.

Federal Tax Table has 12 pages to cover taxable incomes up to $100,000. The Tax Table or its one formula is used as one option. The 12-page Tax Table may be reduced to 6 pages to cover $100,000. After the LG tax simplification is used for a period of time and most people prefer to use one formula to replace the 12-page Tax Table, the table may be further simplified or minimized gradually.

Tax evasion and fraud cost billions of dollars to federal government. Existing W-2 forms provide limited information. Employers and employees use different tax system parts for withholding taxes (W-2) and income taxes (tax returns). The two parts have different tax calculation methods. Another reason is related timing problem. When receiving tax returns, federal government has no detail tax information as references to compare and verify these tax returns and send tax refunds within such as 45 days. These reasons give delinquents a chance for possible tax evasion and fraud. When detail reports (similar to Table 3 to replace W-2) are given from employers to individuals and federal and state governments, they can be used as references to verify tax returns, reduce tax evasion and fraud, and help tax compliance.

Table 3   Withholding Report (A, B and D) by Company and Modification by Employee (C and E)

A	B	C	D	E	
Name :	Peter N. Johnson		Employer ID # :	765432198	1
Social security SS #	Payroll	SS tax	Medicare	Retirement	2
234567891	$54,547.06	$4,665.81	$1,091.20	$2,600.00	3
	Federal tax data	Modification	State tax data/KS	Modification	4
Wages, salaries, tips ……	$75,255.00	Same	$75,255.00	same	5
Incomes to tax return	$72,655.00	$72,655.00	$72,655.00	$72,655.00	6
Other taxable incomes ….....	0	$2,300.00	0	$2,300.00	7
Capital gain (or loss)		0		0	8
Adjustments (Additions)	0		0		9
Adjustments (Subtractions)	0	$2,000.00	0	$2,000.00	10
Adjusted gross income (AGI)	$72,655.00	$72,955.00	$72,655.00	$72,955.00	11
Tax status (S) number	1	1	1	1	12
Standard/Itemized deduction	$12,400	$12,400	$3,000	$3,000	13
Exemptions			$2,250	$2,250	14
Taxable income (TI)	$60,255.00	$60,555.00	$67,405.00	$67,705.00	15
Income tax rate formula	TI÷1,234,568÷S+0.1	Same	0.057-457.5×S÷TI	Same	16
Income tax rate	0.14881	0.14905	0.050213	0.050243	17
Within tax rate check range?	0.1-0.181	Yes	0.04785-0.057	Yes	18
Income tax	$8,966.34	$9,025.70	$3,384.59	$3,401.69	19
Non-refundable tax credits	0	0	0	0	20
Tax balance (if <0, enter 0)	$8,966.34	$9,025.70	$3,384.59	$3,401.69	21
Standard tax credits	0		0		22
Child tax credit	0		0		23
Refundable tax credits	0		0		24
Other taxes	0		0		25
Capital gain tax		0		0	26
Donations to Government	0		0		27
Tax withheld (W-2/1099)	$8,966.34		$3,384.59		28
Tax Payment (You Owe)		$59.36		$17.10	29
Tax Refund (-)					30
For Tax Refund: Bank Name	Routing #	Accounting #	Account Name	Bank Phone #	31
					32
Live with you: Child #1 SS#	Child #1 Name	Child #2 SS #	Child #2 Name	Spouse SS #	33
					34
Live with you: Child #3 SS#	Child #3 Name	Child #4 SS #	Child #4 Name	Spouse Name	35
					36
Notes: Item # / Detail	C7 / interests	C10 / IRA			37
					38

2.3 Tax Rate Change Speed, Checking Tool, Tax Status and Simplification

Existing tax rate changes are in non-smooth situations, which mean tax rate change speeds are different. For taxable incomes not over $300,000×S such as Married Individuals Filing Separate or Single, tax rate change speeds are 0 for not over $9,525, $d2/TI2$ for taxable incomes $9,525-$38,700, ……, and $d5/TI2$ for $200,000-$300,000 in 2018. Their tax rate change speeds always change when taxable incomes change from $9,525 to $300,000 with 5 tax brackets. Then some people, who should pay more slightly, pay less and other

people, who should pay less slightly, pay more, which are unfair and complex. After the 4 tax brackets are reduced to 1 for not over $100,000, one linear (slope) tax rate and tax formula (YTI÷C÷S+0.1)×TI is used to replace the existing 128 (4×4×8) formulas with 99% (1-1/128) reduction. Its tax rate change speed is a same constant 1/C. When taxable incomes change between 0-$100,000 or $100,000-$300,000, tax rate change speed is not changed with a constant speed, which is fair and simple. Linear tax rates (for not over a middle taxable income) is the most simple and fair. For over $300,000×S, tax formula within one tax rate range (26.9%-37%) is the same without change.

Existing tax formulas are in tax format. The LG tax simplification is in both tax rate and tax format, in which tax rates can be checked with some narrow ranges as a checking tool. For example, tax rate ranges of 0.1-0.183-0.269-0.37 for taxable incomes at 0-$100,000×S-$300,000×S- in 2018 can be used as a checking tool to check and reduce tax rate (and tax) calculation mistakes. If a calculated tax rate is out of its range, its result is wrong and needs recalculation to within its tax rate range. https://taxsimplecenter.net/federaltaxsimplification.html

Federal tax system has 5 tax statuses. We use simple numbers for tax statuses (S) such as 2 for Married filing jointly or Qualifying widow(er), 1 for Single, 1 for Married filing separately or 1.5 for Head of Household. For comparing Married filing jointly and Married filing separately, their taxable income range rates such as $19,050/9,525, …… and $600,000/300,000 are always 2:1. For comparing Head of Household and Married Filing Separately, their taxable income range rates are 1.43 ($13,600/9,525), 1.34 ($51,800/38,700), …… or 1.67 ($500,000/300,000), which are unstable and favorable for some taxable incomes such as over $500,000, which shall be $450,000. A rate for one tax status shall be fair, stable and constant such as 1.5 for Head of Household. Tax status number can be also used for standard deduction ($12,400×S) and tax rate/tax formula simplifications.

2.4 Tax Analysis, Tax Revenue Difference (Fiscal Note) and Projection

When tax brackets are reduced and withholding tables are eliminated, tax analysis, tax revenue change difference (fiscal note), tax reform, and projection can be simplified. When tax schedules and withholding tax formulas are used, their tax revenue formula contains many (28) equations (Table 1), which are very complex.

2018 Formula (1): Total Tax = 0.1SumYTI1j+Sum(M1+0.12(YTI2j-19,050))+Sum(M2+0.22(YTI3j-77,400)) +Sum(M3+0.24(YTI4j-165,000))+Sum(M4+0.32(YTI5j-315,000))+Sum(M5+0.35(YTI6j-400,000))+Sum(M6+ 0.37(YTI7j-600,000))+0.1SumYTI1h+Sum(N1+0.12(YTI2h-13,600))+Sum(N2+0.22(YTI3h-51,800))+Sum(N3+ 0.24(YTI4h-82,500))+Sum(N4+0.32(YTI5h-157,000))+Sum(N5+0.35(YTI7h-200,000)+Sum(N6+0.37(YTI7h-50 0,000))+0.1SumYTI1g+Sum(P1+0.12(YTI2g-9,525))+Sum(P2+0.22(YTI3g-38,700))+Sum(P3+0.24(YTI4g-82,5 00))+Sum(P4+0.32(YTI5g-157,000))+Sum(P5+0.35(YTI7g-200,000))+Sum(P6+0.37(YTI7g-500,000))+ 0.1SumYTI1m+Sum(Q1+0.12(YTI2m-9,525))+Sum(Q2+0.22(YTI3m-38,700))+Sum(Q3+0.24(YTI4m-82,500)) +Sum(Q4+0.32(YTI5m-157,000))+Sum(Q5+0.35(YTI7m-200,000))+Sum(Q6+0.37(YTI7m-300,000))

Above items can be combined and simplified with A, C, D, YTIa, YTIb and YTIc (3 groups: S = 1, 2 or 1.5). Then total tax formula (1) can be simplified to formula (2). Tax revenue change (fiscal note) can be also obtained.

2018 Formula (2): Total tax=Sum((YTIa÷A÷S+0.1)YTIa)+Sum((YTIb÷C÷S+0.14)YTIb)+Sum(0.37 YTIc-D×S)

Tax revenue change = Formula (2) - Formula (1)

When Formula (1) is simplified to Formula (2), tax analysis, tax revenue difference, tax reform and projection can be simplified significantly. A general total tax format can cover the 3 brackets in a simplified form

with different bottom (B0) and top (T) tax rates.

Total tax = Sum((YTIa÷A÷S+B0)YTIa) + Sum((YTIb÷C÷S+B1)YTIb) + Sum(T×YTIc - D×S)

For corporate tax analysis, tax revenue change (fiscal note), and projection, similar formula can be obtained.

Total tax=Sum((YTIa÷2,400,000+0.15)YTIa) + Sum(0.25 YTIb-6,000)   (15%-25%)

Total tax=Sum((YTIa÷2,000,000+0.15)YTIa) + Sum(0.28 YTIb-8,400)   (15%-28%)

Tax revenue change = Sum((YTIa÷1,200,000)YTIa) + Sum(0.03 YTIb-2,400)

2.5 Tax Reform, Factor and Simplification

Tax reforms need several factors such as tax brackets, tax rates, taxable income ranges, computations, and tax goal. These factors affect each other complicatedly. With existing marginal tax rate systems, more tax brackets mean more smooth tax rates, complex, more cost, and more tax revenue or less tax brackets mean rough tax rate changes, simple, less cost, and less tax revenue relatively. Multi tax brackets increase complexity of tax reforms.

For tax reforms with the LG simplification, lawmakers would need to consider only 3 brackets with 4 tax rates at top, bottom and two middles at $100,000×S and $300,000×S. Tax revenue and inflation are two major factors. Bottom tax rates are usually not changed at 10%. Top tax rates can be changed. Two middle tax rates are often changed slightly. When these tax rates are adjusted, tax revenue will be changed. For 2018, the 3 tax rate ranges are 0.1-0.183-0.269-0.37, A is 1,204,819 from 100,000÷(0.183-0.1), C is 2,325,581 from 200,000÷(0.0269-0.183) and D is 30,300 from 300,000×(0.37-0.269). For 2019, the 3 tax rate ranges are 0.1-0.1817-0.2673-0.37, A is 1,223,990 from 100,000÷(0.1817-0.1), C is 2,336,449 from 200,000÷(0.2673-0.1817) and D is 30,810 from 300,000×(0.37-0.2673). Their bottom and top tax rates are the same at 10% and 37%. For different tax status, S is 1, 2 or 1.5.

2018: Total tax = Sum((YTIa÷1,204,819÷S+0.1)YTIa) + Sum((YTIb÷2,325,581÷S+0.14)YTIb)
        + Sum(0.37YTIc-30,300×S)

2019: Total tax = Sum((YTIa÷1,223,990÷S+0.1)YTIa) + Sum((YTIb÷2,336,449÷S+0.1389)YTIb)
        + Sum(0.37YTIc-30,810×S)

Tax revenue change (fiscal note)= Total tax (2019) - Total tax (2018)

When existing top tax rate is raised to 39.6% and tax rates for taxable incomes not over $400,000 are kept the same, then its tax calculation simplification with 3 brackets is shown in Table 4. At $400,000, tax rate is 29.4224% (80,689.50 +0.37×(400,000-300,000))/400,000) from Table 1. Tax rate ranges are 10%-18.1%-29.4-39.6%. A is 1,234,568 from 100,000÷(0.181-0.1), C is 2,654,867 from 300,000÷(0.294-0.181) and D is 40,800 from 400,000×(0.396-0.294). A, C, D and 0.14333 are constants. Tax status (S) is 1, 2 or 1.5.

Table 4   Federal Personal Tax Reform and Simplification (10%-18.1%-29.4%-39.6%)

If the yearly taxable income is:	The tax rate and tax are:	Tax rate range
Not over $100,000×S	(YTI÷S÷A+0.1) × TI	10%-18.1%
($100,000 - 400,000)×S	(YTI÷S÷C+0.14333) × TI	18.1%-29.4%
Over $400,000×S	(0.396–(D×S÷YTI)) × TI	29.4%-39.6%

2.6 Other Tax Simplification Applications

Besides income tax simplification, there are several other serious tax problems such as Earned Income Tax Credit (EITC), 2020 Stimulus Check calculation, property tax credit, and seniors' tax return simplifications, which can be resolved with one simple linear formula. When 2 rates are set, effective (linear) rates between the 2 rate

points with a straight line are the most fair and simple with a constant rate change speed. Existing flat and curve or step rates with less or more tax brackets are unfair and complex with various change speeds. Some examples are as follows:

Example 1: The Earned Income Tax Credit (EITC) is Federal government's largest refundable tax credit for workers who earn low or moderate incomes. Both EITC and the Child Tax Credit programs have greatly reduced the poverty for working families. These working family credits have assisted an estimate of 9.4 million people out of poverty, including 5 million of children. The complexity of federal EITC Table contains 9 pages. There are two statuses (ES). Employees usually do EITC for tax returns. Many states often use a partial such as 17% of federal EITC to be deducted as state EITC. Linear formulas may be used to match and simplify federal EITC, which are shown in Table 5.

Table 5   Earned Income Tax Credit Rate Simplification to Match EITC Table (9 pages)

Child #	Earned Income (EI) Range	Earned Income(EI)	Earned Income Tax Credit Rate by Linear formula	Rate	Range check	EITC EI*Rate
0	0–(15,000+ES)		0.1 (1- EI÷(15,000+ES))		0.1-0	
1	0–(40,000+ES)		0.4 (1 - EI÷(40,000+ES))		0.4-0	
2	0–(44,000+ES)		0.45 (1 - EI÷(44,000+ES))		0.45-0	
3/more	0–(48,000+ES)		0.5 (1 - EI÷(48,000+ES))		0.5-0	

ES = 0 for Single, HH or qualifying widow(er) or ES = 5,000 for Married Filing Joint (ES:____and Child #:____).

Example 2: For the calculation of 2020 Stimulus Check, the bill lets individuals with AGI at $75,000-99,000 to reduce from $1,200 to 0 by $5 for each $100 earned over $75,000 with 240 steps/brackets (99,000-75,000)÷100. Families with AGI at $150,000-198,000 reduce from $2,400 to 0 by $5 for each $100 earned over $150,000 with 480 brackets (198,000-150,000)÷100. The 240 or 480 brackets (steps) are complex. With the linear tax simplification, the 240/480 brackets can be matched and reduced to 1 (> 99% reduction) with one linear formula of 1,200×S×(1-(AGI÷S-75,000)÷24,000) simply with changes from 1,200×S to 0 (S = 1 or 2) gradually. Its details are at https://taxsimplecenter.net/federaltaxsimplification.html with one formula and bracket.

Example 3: Most seniors have relatively simple situations with such as social security benefits, retirement plans, interests and capital gains. Seniors' tax return form may be designed in a half-page tax return form simply for seniors. For complex tax situations, then additional documents are needed. Its detail simplification is at https://taxsimplecenter.net/uploads/8/3/3/9/83395216/wf_1040sr14.pdf (2 proposals).

2.7 Value and Cost of the LG Tax Simplification

Table 6 shows existing federal income tax system and LG simplification comparisons, which show significant reduction such as 98.7% (1-3/224) reduction for their formula numbers and 89.3% reduction (1-3/28) for total tax calculation equations. These benefits have related cost saving values. For example companies use the simplification with the 3 simple formulas to replace the existing 21-page Withholding Tables and 224 (7×4×8) formulas. If the simplification can help to reduce related cost at $1 for companies and $0.2 for IRS on each 26 biweekly period per employee, then total cost saving may be $4,836 million from 1.2x26x155 million. It is reported that federal employee numbers were more than 155 million in December, 2021, which is shown at www.statista.com/statistics/209123/seasonally-adjusted-monthly-number-of-employees-in-the-us/ (159 million in December, 2022). The IRS data at www.irs.gov/statistics/returns-filed-taxes-collected-and-refunds-issued show 167 million individual tax returns were filed in 2021. The $1.2 covers about 8 areas such as such as (1) designing Withholding Tables, (2) publication, (3) tax numbers with certain Allowances, (4) using calculation formulas for

high taxable incomes and Allowances, (5) checking mistakes and recalculations, (6) filings, (7) software, and (8) data analysis.

Table 6   Existing Income Tax System and LG Simplification Comparisons

Comparison	Brackets	Withholding Tables	Formula #	Tax Table	Status #	Total Tax Calculation
Existing System	7	21 pages	224 (7×4×8)	12 pages	5/4	28 equations
LG Simplification	3	Eliminated	3	Optional	S (1/2/1.5)	3 equations

Table 7 shows related benefits and value estimations with direct and non-direct values, which may need to be evaluated by the IRS. Total direct value may be about $10 billion. Benefits mean less time, less hustle, less mistake, less crime, and less cost. To the IRS, saved value may be about $3 billion. Other countries may have similar situations for their tax systems with related benefits by the LG tax simplification. Their cost saving values depend on tax return and employee numbers and complexity of existing tax systems.

For a tax reform or change, there are related costs involved such as personal tax system is changed from 2018 to 2019. There are related changes such as the tax rate 18.3% at $100,000 in 2018 is changed to 18.17% in 2019. Here is a state cost data for the tax simplification. When KS existing personal tax brackets are simplified to 2 and 48 (6×8) formulas are reduced to 2, KS Division and Budget estimated $61,110 (2018 bill HB 2788) at www.kslegislature.org/li_2018/b2017_18/measures/documents/fisc_note_hb2788_00_0000.pdf or $68,991 (2020 bill HB 2278) at www.kslegislature.org/li_2020/b2019_20/measures/documents/fisc_note_hb2278_00_0000.pdf to implement the tax simplification and to modify the automated tax system. Slight tax revenue (about $5 million/year) would be gained by keeping the original 3.1%-5.7%. We have no cost data for the federal tax simplification, which can be evaluated by the IRS about its tax revenue and cost changes.

Table 7   Benefits and Value of the LG Tax Simplification

Benefits	Value
1. Existing 7 tax brackets are matched and reduced to 3 comparably.	Less time/More simple
2. Lawmakers can do tax reforms and projections with only 4 tax rates.	Less time/hustle
3. Simple formula improvement contributes to Fiscal Notes (by the IRS)	Goal:<$50 million
4. Tax Status (S) is numbered with 1 for Singles, 1 for Married filing separately, 2 for Married filing jointly or 1.5 for Head of Household. Standard Deductions are combined together and simplified by $12,200*S (S = 1, 1.5 or 2). If ((1+0.5) × 155 million):	$233 million
5. Withholding Tables (21 pages) and 224 formulas are eliminated and replaced with 3 simple formulas, filing periods (F) and S. If (1+0.2)/person/period (1.2 × 26 × 155 million):	$4,836 million
6. Tax Table (12 pages) is optional. 3 formulas can be used. If ((1+0.5) × 155 million):	$233 million
7. Combining two existing sub tax systems (5/6) together without time delay (13 Months):	Real & quick tax
8. One non-refundable or one refundable tax credit formula. If (2 × 155 million):	$310 million
9. Many incomers with standard deductions and non-complex tax situations (50%) file simple tax returns or tax withholding report modifications If ((15+5) × 50% × 155 million):	$1,550 million
10. Postcard (or half page) tax return form can be used (50%). If (10+6) × 50% × 155 million):	$1,240 million
11. A checking tool of 3 tax rate ranges (10%-18.3%-26.9%-37%) is provided to check and reduce tax rate and tax calculation mistakes. If ((2+1) × 155 million):	$465 million
12. Tax evasion is inspected and reduced by comparing tax returns and tax withholding reports.	$1 billion
13. Tax refunds with $200 or less are delayed to non-busy season or next year.	Less time/cost
14. Department of Revenue will process less tax returns during the busy tax season and have more time to inspect tax returns for possible more tax.	$0.2 billion
15. The LG tax simplification can be used to simplify tax calculation, payroll, tax analysis, tax reform and projection.	Less time/costs

3. Conclusion

In summary, the LG tax simplification could reduce related costs and increase revenues relatively. It can promote the tax goals of fairness, efficiency, and feasibility to benefit social tax policy for federal government, companies and individuals. A reasonable simplification can adequately reduce tax evasion than traditional enforcement measures. The complexity of the U.S. tax system has created compliance burdens and equity issues. The tax reform options can lower compliance burdens and taxation costs. These reductions can also increase the efficiency of the tax system and mitigate a portion of the tax increased burdens and grow revenues.

The proposed benefits in this paper can match and reduce existing 7 tax brackets to 3 (57% reduction from 4÷7) and 224 (7×4×8) formulas to 3 (98.7% reduction from 1-(3÷224)), eliminate 21-page Withholding Tables, and improve tax returns, tax analyses, projections, fiscal notes, and tax reforms by 2 simple linear formulas and 1 existing formula. Existing tax format is converted into tax rate and tax format. Accurate tax withholding results can be obtained when accurate tax information is provided, which overcome existing two tax system parts for employers and employees differently. Most taxpayers with standard deductions and tax credits do not need to do normal tax returns with simple pre-prepared formulas and tax return form. Their cost saving values depend on tax return and employee numbers and complexity of existing tax systems. This paper can help federal or national government to evaluate and adopt this simplification to benefit lawmakers, IRS, companies, and individual taxpayers to reduce related costs, which may be billions of dollars.

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