Estimated Future Tax Evasion under the Income Tax System and Prospects for Tax Evasion under the FairTax: New Perspectives

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March 1, 2017

Abstract

Using a variety of data sources in this study we estimate both the Individual Income Tax Gap and the Gross Tax Gap for years 2017 through 2026. According to IRS estimates, currently, actual income tax non-compliance (evasion) rates are above 16%. Those who don't pay what they owe in taxes, ultimately shift the tax burden to those who properly meet their tax obligations. Our estimated Gross Tax Gap for the period 2017 through 2026 lies within the range of $6.24 trillion (based on a growth rate that matches the average inflation rate) to $9.17 trillion (based on the historical growth rate of the Gross Tax Gap). Furthermore, our estimates indicate that the average household will be assessed a *de facto* annual "surtax" that lies in a range between $4,276 to $8,526 annually (in current dollars) from 2017-2026. This annual "surtax" will enable the federal government to raise the same level of revenue it would collect if all taxpayers were to report their income and pay their taxes in full. Moreover, the estimated ten-year gross tax burden for the average household from 2017-2026 lies in a range between $46,623 and $68,328 and is comparable in size to both the annual median and annual mean U.S. household income. Our estimates indicate that on average, in one out of the ten years ahead, each household will be working solely to pay off the 10-year accumulated "surtax"— arguably a heavy burden for every American household. This study also introduces the perspective that tax evasion under the FairTax would be a complex and difficult endeavor, especially if tax evasion penalties are strong. It is shown that the transactions costs of tax evasion under a FairTax regime would render tax evasion a challenging and complicating undertaking, one sufficiently onerous that evasion efforts would be very limited.

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Executive Summary

Context

This study seeks to provide estimates of the aggregate magnitude in the U.S. of future unreported and under-reported income, and the resulting future lost tax revenue during the next decade, if the current Income Tax System (Internal Revenue Code) remains in place. It also seeks to provide insights into the prospects for tax evasion under the "FairTax."

We adopt the "AGI-Gap" approach to estimating unreported and underreported income to the IRS. The "AGI-Gap" approach compares the aggregate Adjusted Gross Income (AGI) reported to the IRS on annual income tax returns to the aggregate AGI as computed using the National Income and Product Accounts (NIPA). The difference between these two figures is the AGI Gap.

After estimating the baseline AGI Gap for year 2016 under each of the three methods, we used those baseline figures to estimate the AGI Gap for years 2017 through 2026. In addition, by multiplying the AGI Gap estimates by the average effective federal tax rate, we obtained the Individual Income Tax Revenue Gap for years 2017 through 2026.

In addition to the above income tax gap estimates, the IRS has conducted studies every three to five years to estimate the Gross Tax Gap. The last three studies correspond to tax years 2001, 2006 and 2008-2010; unfortunately, no other more current studies by IRS exist to date. Nevertheless, based on the Jan 6, 2012 IRS News Release, IRS estimates that the tax gap in TY2006 was $450 billion, as compared to $345 billion in TY2001. The most recent estimates, allude to a Gross Tax Gap of $458 billion in TY2008-2010. The 2001 study showed deterioration in tax compliance among individual taxpayers, as compared to the previous study, which was conducted in 1988. Interestingly, the 2001 study reveals that individual under-reporting noncompliance is the largest component of the tax gap.

According to the 2012 IRS Release, individual under-reporting accounts for more than 80 percent of the total Gross Tax Gap, with non-filing and underpayment at about 10 percent each. The individual income tax is the single largest source of the Gross Tax Gap, accounting for about

two-thirds of it.[1] Using Gross Tax Gap data for available years, under each of the three growth rate assumptions: inflation, GDP growth rate and historical tax gap growth rate, we estimated the Gross Tax Gap for years 2017 through 2026.

The Policy Problem

So far, actual income tax compliance rates are above 80%, according to IRS estimates. But those who don't pay what they owe in taxes ultimately shift the tax burden to those who properly meet their tax obligations. In this study, empirical testing of BEA data reveals that the Individual Income Tax Gap is nonstationary, meaning that it trends upwards over time. This raises the extent to which the budget deficit and national debt increase, which in turn act to elevate long-term interest rates and reduce investment in new plant, equipment, and technology. It also thereby reduces employment growth and wage growth.

Major Findings

Our estimated Tax Gap for the *individual income tax* for the period 2017 through 2026 lies within a range of between $3.8 trillion and $6.8 trillion.

Our estimated Gross Tax Gap for the period 2017 through 2026 lies within the range of $6.24 trillion to $9.17 trillion. Our findings suggest that at best, the percentage of gross tax evasion compared to gross tax revenues from 2017 to 2026 will persist above the 14% level, and in the worst case scenario, which is the less conservative and yet more likely to occur scenario based on historic trends, this percentage will increase from year to year starting at 20.2% in 2017 and reaching 23.6% of gross tax revenues by 2026.

Our findings suggest that at a minimum, the percentage of income tax evasion compared to income tax revenues from 2017 to 2026 will persist above the 16% level, whereas in the worst case scenario, which is the more likely to occur scenario based on historic trends, this percentage will increase from year to year starting at 29.3% in 2017, and exceed one third of income tax revenues (34.2%) by 2026.

Dividing each of the estimated gross tax gaps for years 2017-2026 under our three growth

[1] Additional IRS findings include: (i) For individual under-reporting, more than 80 percent comes from understated income, not overstated deductions. (ii) Most of the understated income comes from business activities, not wages or investment income. (iii) Compliance rates are highest where there is third-party reporting or withholding. (iv) Less than 1.5 percent of wages and salaries are misreported.

rate scenarios with the corresponding projected households, our estimates indicate that the average household will be assessed an annual "surtax" that varies from $4,276 (lowest) to $5,075 (highest) annually (in current dollars) under the most conservative scenario, to $5,365 (lowest) and $8,526 (highest) annually (in current dollars) for the third scenario. This annual "surtax" between $4,276 and $8,526 will effectively enable the federal government to raise the same level of revenue it would collect if all taxpayers were to report their income and pay their taxes in full.

Moreover, the annual gross tax burden amounts to a total estimated burden shift of between $46,623 and $68,328 per household for the ten-year period from 2017-2026, which is comparable in size, if not greater, under the third scenario, to both the median and mean household income in the U.S. in 2015. Differently stated, the 10-year accumulated Gross Tax Burden shifted to the average household due to tax evasion is comparable in size to both the annual median and annual mean household income from 2017-2026, indicating that on average, in one out of the 10 years ahead each household will be working solely to pay off the 10-year overall "surtax"—a real heavy burden for every American household.

Future Trends and Policy Implications - The FairTax

After addressing the income tax evasion issue, this study turns its focus to the case of a potential replacement for the Internal Revenue Code, the "FairTax Act of 2017", HR25/S18. The study introduces the perspective that tax evasion under the FairTax would be a complex and difficult endeavor, especially if tax evasion penalties are strong. Significant transactions costs would exist for buyers and for sellers of goods and services that would be taxable under the FairTax. It is shown that the transactions costs of tax evasion under a FairTax regime would render tax evasion a challenging and complicating undertaking, one sufficiently onerous that evasion efforts would be very limited.

Estimated Future Tax Evasion under the Income Tax and Prospects for Tax Evasion under the FairTax: New Perspectives

1. Introduction

Income tax evasion, which can take alternative forms, principally consists of taxable income that is either unreported or underreported to the IRS. There have been numerous studies of income tax evasion behavior for the U.S. These studies essentially fall into three rather distinct categories.

First, there are the principally theoretical models of tax evasion behavior, such as Allingham and Sandmo (1972), Falkinger (1988), Klepper, Nagin, and Spurr (1991), Das-Gupta (1994), Pestieau, Possen, and Slutsky (1994), Caballe and Panades (1997), and Gahramanov (2009). These studies provide analytical frameworks, in which various types of tax-paying/non-paying behavior attempt to provide insights into the tax-evasion decision-making process.

Second, there are several studies that have endeavored to provide insights into the tax-evasion decision-making process by using questionnaires or conducting experiments, such as Spicer and Lundstedt (1976), Spicer and Thomas (1982), Baldry (1987), Alm, Jackson, and McGee (1992), Thurman (1991), and Alm, McClelland, and Schulze (1999). Evidence from random audit studies and controlled laboratory experiments indicates evasion behavior is affected by a myriad of factors including opportunity (Bloomquist, 2006), social norms (Alm, Sanchez, and de Juan, 1995), prior audit experiences (Erard, 1992), knowing someone who evades successfully (Vogel, 1974), and awareness of enforcement efforts (Plumley, 1996). Agent–based computational modeling approaches in the early 2000s set the ground for a new paradigm – multiagent-based simulation (MABS) modelling in tax evasion (Bloomquist, 2006). MABS were made possible by advances in software (e.g., SWARM and NetLogo), which continue to facilitate to this date the creation of more advanced computational tools to handle such complexities in evasion behavior, particularly for a population of heterogeneous taxpayers, responding to changes in tax policy, and other variables. A review of the first category of MABS models can be found in Bloomquist (2006), which includes a comparative study of multi agent-based tax evasion models found in Mittone and Patelli (2000), Davis *et al*. (2003) and Korobow *et al*. (2007).

Third, there are those studies that use what is referred to as "official data," such as Tanzi (1982, 1983), Clotfelter (1983), Carson (1984), Long and Gwartney (1987), Pyle (1989),

Feinstein (1991), Erard and Feinstein (1994), Feige (1994), Cebula (2001, 2004), Ali, Cecil, and Knoblett (2001), Ledbetter (2004, 2007), Cebula and Coombs (2009), and Alm and Yunus (2009). In this literature, it is widely believed that the degree of federal personal income tax evasion in the economy as a whole is positively affected by income tax rates (Tanzi 1982; Clotfelter 1983; Feige 1994). This perspective is simple: the higher the income tax rate, the greater the benefit (in terms of a reduced tax liability) from not reporting taxable income, *ceteris paribus*. It is also widely accepted that the *greater* the risk associated with tax evasion, the *lower* the degree to which economic agents will choose either to not report, or to underreport their taxable income (Alm, Jackson, and McKee, 1992; Errard and Feinstein, 1994; Cebula and Coombs, 2009).

In any event, while many of these studies attempt to identify empirically which factors influence tax evasion, some have attempted to measure the extent of income that is unreported or under-reported to the IRS (Tanzi, 1982, 1983; Feige, 1994; Cebula and Feige, 2012; Ledbetter, 2004, 2007). With the latter four of these studies as background, along with certain IRS studies, this study seeks to provide estimates of the aggregate magnitude in the U.S. of future unreported and under-reported income, and the resulting future lost tax revenue during the next decade, if the current Income Tax System (Internal Revenue Code) remains in place. It also seeks to provide insights into the prospects for tax evasion under the "FairTax."

2. Measurement of Tax Evasion

2.1. Estimates of the Degree of Unreported and Under-Reported Income

As observed above, several studies have focused on the degree of unreported or under-reported income and the degree of tax evasion in the U.S. Among the earliest studies were those derived by Tanzi (1982; 1983). Given the vintage of these estimates, however, they cannot reasonably be used to throw contemporary insights into the issue at hand. On the other hand, working on behalf of the BEA, Ledbetter (2004) provides yearly estimates from 1959 through 2001 of *aggregate* unreported adjusted gross income (AGI) as a percent of "actual" aggregate adjusted gross income. In a subsequent study, Ledbetter (2007) provides what are described by the author as revised and somewhat updated estimates of this series for 1990-2005.[2] These data

[2] The BEA provides these data for the period 1950-2005. See Table 2 of this study.

are obtained using the "AGI-Gap" approach, which compares the aggregate AGI as computed using the National Income and Product Accounts (NIPA) with the aggregate AGI reported to the IRS. The excess of the former over the latter constitutes AGI that was not reported to the IRS. Dividing this figure for each year by the "actual" aggregate AGI obtained from the NIPA yields the *percentage* of actual AGI that may not have been reported to the IRS. These data, which find that 8.4% to 14.8% of reportable AGI is not reported to the IRS, are provided in Table 1 under the column labeled "BEA."

An alternative series was developed by Feige (1994; 2012) and reported in a very user-friendly summary form in Cebula and Feige (2012, Table B:2) for the period 1960-2008. This series adopts a refined version of Feige's General Currency Ratio (GCR) model to estimate the ratio of unreported AGI to actual AGI, as a percentage. This time series finds that as much as 14.6% to 24.9% of total reportable income may not be properly reported to the IRS. These data are also provided in Table 1 under the column labeled "Feige/Cebula." Thus, Table 1 provides estimates of the AGI Gap from both the BEA and Feige/Feige-Cebula. The latter figures are substantially higher on the average than the former, roughly 72%. In the interest of focusing upon a more broadly recognized data source, the Bureau of Economic Analysis, this study focuses principally upon the data generated by the BEA.

Table 1. Estimates of the AGI Gap from BEA and Feige/Feige-Cebula

Tax Year	BEA*	Feige/Cebula**
1959	10.7	NA
1960	10.9	16.1
1961	10.4	15.47
1962	10.6	15.86
1963	10.3	16.44
1964	10.6	15.88
1965	10.7	14.62
1966	10.1	14.86
1967	8.4	15.36
1968	8.4	15.21
1969	8.5	15.32

Tax Year	BEA*	Feige/Cebula**
1970	9.3	16.3
1971	9.3	16.04
1972	9.5	16.16
1973	10.6	16.27
1974	9.8	17.47
1975	9.5	18.81
1976	9.8	20.17
1977	10.6	20.37
1978	11.2	20.63
1979	11.4	21.14
1980	11.8	22.84
1981	12.1	22.25
1982	11.7	22.93
1983	12.7	21.46
1984	13.5	21.86
1985	12.4	21.11
1986	13.0	18.89
1987	11.1	17.42
1988	9.8	18.74
1989	10.8	21.06
1990	10.3	21.06
1991	10.2	21.39
1992	11.3	19.04
1993	12.3	17.7
1994	12.7	17.98
1995	12.0	20.01
1996	11.8	18.64
1997	10.9	18.66
1998	11.5	18.3
1999	10.7	20.55
2000	10.7	22.29
2001	11.9	22.73
2002	13.5	23.94
2003	14.2	23.17
2004	13.9	21.57
2005	14.8	21.98
2006	NA	23.85
2007	NA	24.9
2008	NA	23.94

Tax Year	BEA*	Feige/Cebula**

* Sources: U.S. Department of Commerce, Bureau of Economic Analysis: Ledbetter (2004; 2007).
**Sources: Feige, (1994, 2012); Cebula and Feige (2012).

A reasonable beginning to the data analysis is to verify what appears obvious, namely, that the AGI Gap according to the BEA's Ledbetter (2004; 2007) are "nonstationary over time," which means that they trend upwards rather than being "mean reverting," i.e., that they vary over time, but do not return to the mean. "Nonstationarity" is a characteristic of time-series data over time. If a given time-series is nonstationary, then its value grows/trends (positively or negatively) over time and does not return to its long-term average. By contrast, if a time-series is stationary, its value may change over time, upwards and downwards, but ultimately it trends back to its long-term average. The AGI Gap is growing over time. Formal empirical testing of the AGI Gap data in levels using a standard technique known as the Augmented Dickey-Fuller (ADF) test indicates that the series is growing in value over time. This evidence is provided in Table 2 in Appendix 1. In particular, based on the available BEA data (12 years old), the AGI Gap is growing over time; it is drifting upwards from its long-term average.

Further evidence of the upward trending over time of the AGI Gap data is revealed for both of these datasets in Tables 4A and 4B in Appendix 1, where both series are found to be positively related to a linear trend variable (rejecting the null hypothesis (H_0) at the 99% confidence level). Moreover, as shown in Tables 5A, 5B, and 5C, both series are found to be stationary with a linear trend for either much, or all of the period following the enactment of the Tax Reform Act of 1986.

Table 2 below provides an update and extension of the AGI Gap study period by the BEA that runs from 1950 (rather than 1959) through 2005. To calculate the Adjusted Gross Income (AGI) Gap, Ledbetter (2004; 2007) finds the difference between the AGI as revealed in the NIPA accounts generated by the Bureau of Economic Analysis (BEA) and the AGI reported on tax returns to the IRS. The BEA used to publish a comparison of BEA's measure of personal income and the Internal Revenue Service (IRS) measure of adjusted gross income (AGI); both are widely used measures of household income. In any event, this comparison in Table 2 features the "AGI Gap," which is the difference between BEA-derived estimates of adjusted gross

income and the IRS estimate of adjusted gross income.[3]

Table 2. Total Adjusted Gross Income Estimated from National Income and Product Accounts (NIPA) and as Reported on Individual Income Tax Returns per Statistics of Income (SOI), Tax Years 1950-2005

[All figures are estimates—money amounts are in billions of dollars]

Tax year	Adjusted gross income (AGI)		Difference	
	Total (per NIPA) [1]	Reported on tax returns (per SOI) [2]	Amount [3=1-2]	Percentage of total (per NIPA) [4=3/1]
	(1)	(2)	(3)	(4)
1950	202.5	179.1	23.4	11.6
1951	229.3	202.3	27.0	11.8
1952	241.6	215.3	26.3	10.9
1953	256.1	228.7	27.4	10.7
1954	257.3	229.2	28.1	10.9
1955	278.7	248.5	30.2	10.8
1956	299.4	267.7	31.7	10.6
1957	312.6	280.3	32.3	10.3
1958	315.8	281.2	34.6	11.0
1959	341.8	305.1	36.7	10.7
1960	354.0	315.5	38.5	10.9
1961	368.0	329.9	38.1	10.4
1962	390.0	348.7	41.3	10.6
1963	411.0	368.8	42.2	10.3
1964	443.9	396.7	47.2	10.6
1965	480.6	429.2	51.4	10.7
1966	521.2	468.5	52.7	10.1
1967	551.3	504.8	46.5	8.4
1968	605.6	554.4	51.2	8.5
1969	659.8	603.5	56.3	8.5
1970	696.4	631.7	64.7	9.3
1971	742.8	673.6	69.2	9.3
1972	824.5	746.0	78.5	9.5
1973	925.0	827.1	97.9	10.6
1974	1,003.5	905.5	98.0	9.8
1975	1,046.8	947.8	99.0	9.5
1976	1,168.0	1,053.9	114.1	9.8
1977	1,296.1	1,158.5	137.6	10.6
1978	1,466.4	1,302.4	164.0	11.2
1979	1,654.1	1,465.4	188.7	11.4

[3] For more information about the source data and the methodologies that are used to prepare BEA-derived estimates of AGI and the AGI gap, see Mark A. Ledbetter, "Comparison of BEA Estimates of Personal Income and IRS estimates of Adjusted Gross Income," SURVEY OF CURRENT BUSINESS 84 (April 2004): 8–22.

[All figures are estimates—money amounts are in billions of dollars]

Tax year	Adjusted gross income (AGI)		Difference	
	Total (per NIPA) [1]	Reported on tax returns (per SOI) [2]	Amount [3=1-2]	Percentage of total (per NIPA) [4=3/1]
	(1)	(2)	(3)	(4)
1980	1,830.3	1,613.7	216.6	11.8
1981	2,016.3	1,772.6	243.7	12.1
1982	2,098.6	1,852.1	246.5	11.7
1983	2,225.6	1,942.6	283.0	12.7
1984	2,472.6	2,139.9	332.7	13.5
1985	2,631.6	2,306.0	325.6	12.4
1986	2,853.2	2,481.7	371.5	13.0
1987	3,121.1	2,773.8	347.3	11.1
1988	3,411.9	3,083.0	328.9	9.6
1989	3,649.7	3,256.4	393.3	10.8
1990	3,798.4	3,405.4	393.0	10.3
1991	3,856.8	3,464.5	392.3	10.2
1992	4,092.0	3,629.1	462.9	11.3
1993	4,245.4	3,723.3	522.1	12.3
1994	4,473.7	3,907.5	566.2	12.7
1995	4,759.8	4,189.4	570.4	12.0
1996	5,144.5	4,536.0	608.5	11.8
1997	5,578.0	4,969.9	608.1	10.9
1998	6,120.2	5,416.0	704.2	11.5
1999	6,553.5	5,855.5	698.0	10.7
2000	7,125.4	6,365.4	760.0	10.7
2001	7,005.0	6,170.6	834.4	11.9
2002	6,976.8	6,033.6	943.2	13.5
2003	7,234.9	6,207.1	1,027.8	14.2
2004	7,886.4	6,788.8	1,097.6	13.9
2005	8,708.4	7,422.5	1,285.9	14.8

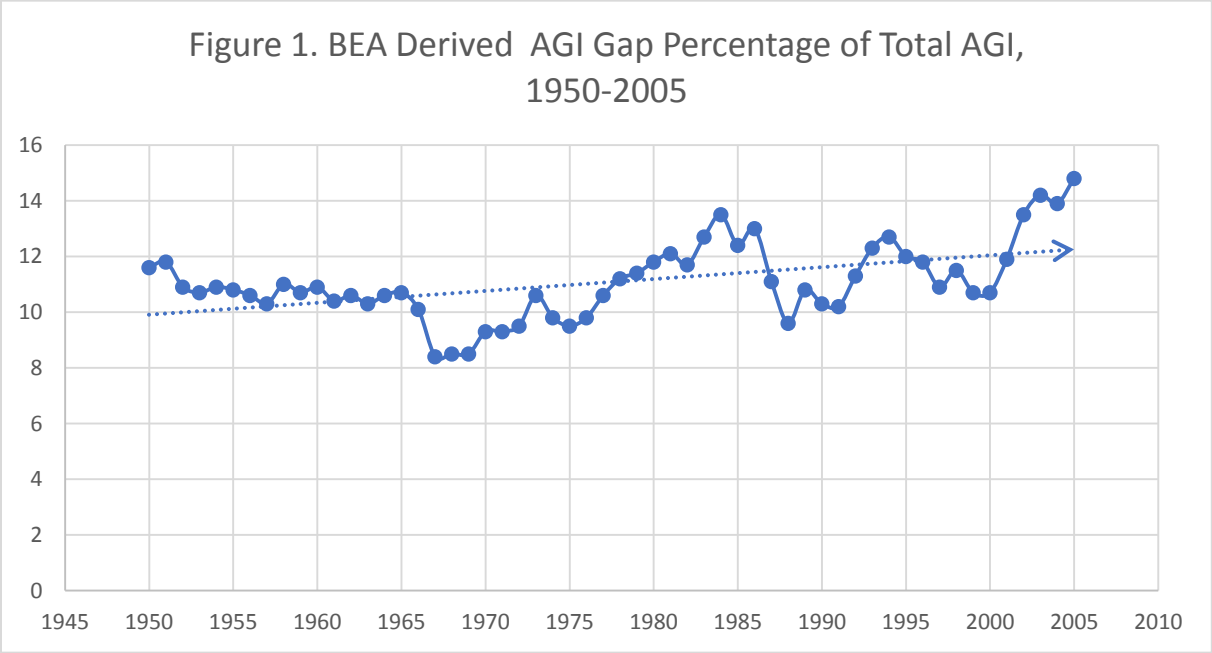
[1] Reflects changes made to data as part of the 2003 Comprehensive Revision of the National Income and Product Accounts (NIPAs). For details of this revision, see the Bureau of Economic Analysis Web site at http://www.bea.gov/bea/dn/2003benchmark/CR2003content.htm.

[2] Data for years 1987 and after are not comparable to pre-1987 data because of major changes in the definition of "adjusted gross income" (AGI).

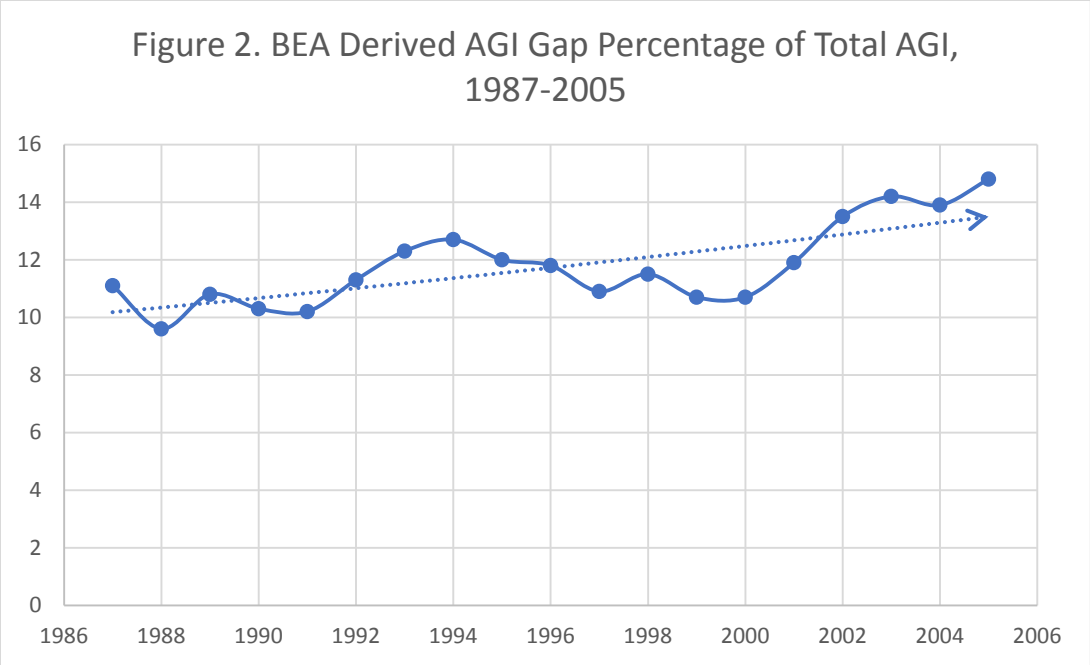
NOTES: Detail may not add to totals because of rounding. All amounts are in current dollars. Most of the data are subject to sampling error. Tax law and tax form changes affect the year-to-year comparability of the data. Percentages shown in this table are based on dollar amounts rounded to the units indicated in the specific table heading. Therefore, they may not be as precise as percentages based on the fuller dollar amounts found in tables contained in the source publications or articles which underlie the historical tables presented in this section of the Bulletin.

SOURCE: Data on "adjusted gross income" (AGI) (per NIPAs) are from U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts (NIPAs), Table 7.19: Comparison of Personal Income in the National Income and Product Accounts with Adjusted Gross Income as Published by the Internal Revenue Service. This table appears periodically in the Survey of Current Business and can also be accessed online at: http://www.bea.gov/bea/dn/nipaweb/index.asp. Data on "adjusted gross income" (AGI) (per SOI) are from Statistics of Income—Individual Income Tax Returns, appropriate years.

The time series in the last columns of Table 2 is plotted in the Figure 1 below.



As it can be seen in Figure 1, the period following enactment of the Tax Reform Act of 1986, is characterized by an overall upward trend, which was confirmed by our unit root test results (see Appendix 1). Data for years 1987 and after are not strictly comparable to pre-1987 data because of major changes in the definition of "adjusted gross income" (AGI). Figure 2 captures only the 1987-2005 time series of the BEA derived AGI Gap as percentage of the total AGI, and clearly shows an upward trend.



As shown in Table 6 in Appendix 1 of this study, the data analysis reveals that the longer time series, i.e., 1950-2005, in Table 2 above, also exhibits a very strong upward trend over time.

In our analysis, three different methods of forecasting the AGI Gap series were adopted, with estimations shown in Table 3 for years 2006-2016, and in Table 4 for years 2017-2026. The first AGI Gap estimation method provides the most conservative, plausible estimates of the AGI Gap in current dollars that could reasonably be considered. This method adopts the average annual percentage growth rate of CPI (consumer price index) in the period following enactment of the Tax Reform Act of 1986 through the year 2016 as the factor according to which the AGI Gap would grow over time.

In the first column of Table 3, starting with the AGI Gap figure of $1,285.9 billion for year 2005, we used actual inflation rates (calculated as annual growth rates of the average annual CPI from the Bureau of Labor Statistics CUUR0000SA0 Series, containing all items) for years 2006-2016 (see Table 1 in Appendix 2) to estimate the AGI Gap for years 2006-2016. Our choice to use actual inflation data for the first part of the estimates was influenced not only by data availability, but also because the period 2008 through 2015 was characterized by a combination of both disinflation and very low inflation rates, presumably attributable at least in part to the so-called Great Recession. The inflation figure for year 2016 is based on data merely from January-November 2016, as December data for CPI have not been yet released by BLS.

In the first column of Table 4, following Holtzblatt and McGuire (2016), the average actual inflation rate (the growth rate of CPI) over the post 1986 period, i.e., 1987 through 2016 (Bureau of Labor Statistics, see Table 1 in Appendix 2) was computed; its value of 2.703% was then applied as an average annual percentage growth rate to the estimated 2016 AGI Gap in column 1 of Table 3, namely $1,579.4 billion, and every consecutive AGI Gap estimate found similarly, to yield the forecasted values of the AGI Gap for each year from 2017 through 2026. The sum of AGI Gap for 2017-2026 is computed to be $18,343.25 billion ($18.34 trillion) current dollars' worth of unreported income to the IRS for the decade 2017-2026, which is comparable to the size of GDP in 2015-2016 ($18.04 - $18.45 trillion in current dollars).

The second method follows the *de facto* IRS guideline that the Tax Gap and AGI Gap follow the movement of the economy, i.e., follow the percentage growth rate (%GR) of GDP: the tax gap typically moves with the economy (IRS, 1996, p. 9; IRS, 2016, p. 2). Given the relatively low average real GDP (gross domestic product) growth rate of only 2.6% from 1987-2015, and given the fact that the AGI Gap series are expressed in nominal terms, the second method uses the average annual nominal GDP growth rate from 1987-2015, which can be thought of as the *sum* of the real GDP growth rate and the rate of inflation, serving as a proxy for the volume of all transaction, or the volume of all economic activity in the economy, to compute estimated AGI Gap figures for the 2017-2026 period.

In the second column of Table 3, starting with the AGI Gap figure of $1,285.9 billion for year 2005, we used actual nominal GDP growth rates (Bureau of Economic Analysis) for years 2006-2016 (see Table 2 in Appendix 2) to estimate the AGI Gap for years 2006-2016. Our choice to use actual GDP growth data for the first part of the estimates was influenced not only by data availability, but especially since the period 2008-2010 was characterized by low or negative growth rates due to an extraordinary Great Recession time. The GDP growth figure for year 2016 is based on data from the first three quarters, because fourth quarter data have not been yet released by BEA.

Based upon the average annual GDP growth rate of 4.85% in the post-Tax Reform Act of 1986 years, (Table 2 in Appendix 2), the second set of AGI Gap forecasts are found in the second column of Table 4. The 4.85% average annual growth rate is applied to the estimated 2016 AGI Gap in column 2 of Table 3, namely $1,813.8 billion, and every consecutive AGI Gap estimate found similarly to yield the forecasted values of the AGI Gap for each year from 2017

through 2027. The sum of AGI Gap for 2017-2026 is computed to be $23,753.37 billion ($23.75 trillion) current dollars' worth of unreported income to the IRS for the decade 2017-2026, which is 28.7%-31.7% larger than the size of GDP in 2015-2016 ($18.04 - $18.45 trillion in current dollars).

The third method of estimating future AGI Gaps adopts the average annual percentage growth rate of the amount of the AGI Gap found in the BEA estimates in the period following enact of the Tax Reform Act of 1986 through the year 2005, namely, 7.034% (see Table 3 in Appendix 2). Given the fact that the last year of AGI Gap data is 2005, unlike the inflation and GDP growth rates, in order estimate the AGI Gap series for years 2006-2016, as done with the other two methods, we had to make some assumptions. First, as previously discussed, due to the presence of the Great Recession, we were hesitant to use the 7.034% growth rate for the entire 2006-2016 period, especially for years 2008-2010. The most recent IRS study of the Gross Tax Gap finds little growth in the Gross Tax Gap from Tax Year 2006 to Tax Year 2008-2010. Given that the Individual Income Tax Gap estimated in this study constitutes a large portion of IRS Gross Tax Gap (which in addition to the individual income tax gap, includes the corporation income tax gap, the employment tax gap, the estate tax gap and the excise tax gap), it makes sense to assume slower than normal growth of the AGI Gap amount for the period 2006-2010. The Individual Income Tax Gap moves with the pace of aggregate economic activity; therefore, when less economic activity is generated, the smaller the Individual Income Tax Gap. However, one counter-argument could be that when GDP falls, individual income tax evasion increases, as people are faced with tougher economic times and are more inclined to not file or underreport, all else equal. Thus, the net effect could be ambiguous. The IRS estimates for TY2008-2010 find the Gross Tax Gap to be $458 billion, only up by $8 billion from TY2006, despite an average growth rate of the Gross Tax Gap amount from TY2001-TY2006 of over 6%. These results can be seen as supportive of the idea of an overall small positive net effect for the period 2006-2010. In absence of other data, we decided to use the actual nominal GDP growth rates for years 2006-2010 and apply the 7.034% rate for years 2011-2016. Years 2011-2013 had the highest nationwide unemployment rates since the Great Depression. Research has shown that a higher unemployment rate is positively associated with tax evasion (Cebula and Feige, 2012), and one could argue that tougher economic times are also positively associated with tax evasion. For these reasons, we decided to use a conservative approach only for years 2006-2010, and relax the

assumption of slower than average growth of the AGI Gap for the following years. In the third column of Table 3, starting with the AGI Gap figure of $1,285.9 billion for year 2005, we used the actual nominal GDP growth rates (Bureau of Economic Analysis) for years 2006-2010 (see Table 2 in Appendix 2) and the AGI Gap average growth rate of 7.034% for years 2011-2016 (see Table 3 in Appendix 2).

Beginning with the 2016 figure of $2,209.7 billion shown in column 3 of Table 3, and allowing that figure to grow at the annual rate of 7.034% through the year 2026 yields the current dollar value of the AGI Gap by year shown in column (3) of Table 4. The *sum* of these current dollar figures for the next decade from now, i.e., for the period 2017 through 2026, is also shown in column (3) of Table 4. That figure is shown to be $32,730.3 billion ($32.73 trillion) current dollars' worth of unreported income to the IRS for the decade 2017-2026, which is 77.4%-81.4% larger than the size of GDP in 2015-2016 ($18.04 - $18.45 trillion in current dollars).

Table 3. New Estimates of the AGI Gap in Current Dollars Using Alternative Actual Annual Percentage Growth Rates (% GRs), 2005-2016

Tax Year	Inflation	NGDP GR	AGI Gap GR/ NGDP GR
2005	1,285.90	1,285.90	1,285.90
2006	1,327.40	1,360.80	1,360.80
2007	1,365.20	1,421.80	1,421.80
2008	1,417.60	1,445.50	1,445.50
2009	1,412.60	1,416.00	1,416.00
2010	1,435.70	1,469.60	1,469.60
2011	1,481.10	1,524.00	1,573.00
2012	1,511.70	1,586.60	1,683.60
2013	1,533.80	1,639.20	1,802.10
2014	1,558.70	1,708.10	1,928.80
2015	1,560.60	1,771.30	2,064.50
2016	1,579.40	1,813.80	2,209.70

Sources: BLS, BEA and BEA's Ledbetter (2004; 2007)

Table 4. New Estimates of the AGI Gap in Current Dollars Using Alternative Actual Annual Percentage Growth Rates (% GRs), 2017-2026

Tax Year	Inflation (2.703%)	NGDP GR (4.850%)	AGI Gap GR (7.034%)
2017	1,622.10	1,901.80	2,365.10
2018	1,665.90	1,994.00	2,531.50
2019	1,711.00	2,090.70	2,709.60
2020	1,757.20	2,192.10	2,900.20
2021	1,804.70	2,298.40	3,104.20
2022	1,853.50	2,409.90	3,322.50
2023	1,903.60	2,526.80	3,556.20
2024	1,955.10	2,649.30	3,806.30
2025	2,007.90	2,777.80	4,074.10
2026	2,062.20	2,912.50	4,360.70
2017 to 2026	**$18,343.30**	**$23,753.40**	**$32,730.30**

Sources: BLS, BEA and BEA's Ledbetter (2004; 2007)

2.2. Estimates of the Extent of Income Tax Evasion

In this section of the study, the estimated annual Tax Gap for the individual income tax for the period 2017-2026 is derived using the AGI Gap estimates in Table 4, along with the average federal income tax rate in the range of 20.65% to 20.667% (IRS, 1996, p. 9; 2016, p. 2), namely, 20.66% (thereby adopting the same average effective federal personal income tax rate used by the Internal Revenue Service), namely, 20.667%.[4] Interestingly, in the same document, i.e., on p. v, of the 1996 IRS report, it is stated that: "Our estimates of the gross individual income tax gap for tax year (TY) 1992 range from $93.2 to $95.3 billion." Ledbetter (2007, Table 3), of the BEA, estimates the magnitude of the AGI Gap for 1992 as $462.9 billion. Dividing $94.25 by $462.9 yields 0.2036 or 20.36%, essentially the very same effective tax rate used in our study.

[4] In order to understand the source of this figure, consider the following. The IRS (1996, p. 9) stated that: "Estimated overall underreported income for TY 1992 ranges from $277.0 to $283.7 billion, generating an estimated gross tax gap of $57.2 to $58.6 billion. Underreported net business income ranges from $184.7 to $188.5 billion for TY 1992, or two-thirds of the total, while estimates of underreported non-business income range from $92.3 to $95.2 billion." Dividing 57.9 by 280.35 yields 0.2065+ or 20.65+%, i.e., reveals that the IRS itself estimates the average effective income tax rate on unreported/under-reported income to be 20.65%.

To begin this process, we applied a 20.66% effective federal personal income tax rate was applied to the AGI Gap estimates for the 2017-2026 period found in the column (1) computations in Table 4. Thus, for each of these years, the AGI Gap from the corresponding column of estimates in Table 4 is converted to its corresponding Tax Gap value as shown in Table 5.1. Furthermore, the cumulative Tax Gap estimate is shown to be *$3.7897* trillion in column (1) of Table 5.1. In other words, using the most conservative estimation approach, the sum of the 2017 through 2026 Tax Gaps translates into lost tax revenue to the IRS on the order of nearly 3.8 trillion current dollars.

Next, the Tax Gap is computed using the more standard and somewhat less conservative approach to estimating the AGI Gap, i.e., the percentage nominal GDP growth rate. In particular, the AGI Gap estimates for this 2017-2026 period by year and as a sum after applying a 20.66% effective federal personal income tax rate yields the second set of figures as shown in column (2) of Table 5.1. Thus, for each of these years, the AGI Gap from the counterpart column of estimates in Table 4 is converted to its corresponding Tax Gap value as shown in Table 5.1. At the bottom of column (2), the ten-year sum of the lost IRS revenue in current dollars is shown to be *$4.9074* trillion current dollars.

The third set of AGI Gap conversions to Tax Gaps involves the last column of figures in Table 5.1, which correspond to the years 2017 through 2026. Applying the 20.66% tax rate to these figures yields the third set of computations found in column (3) of Table 5.1. As shown in the last column of Table 5.1, the Tax Gap by year is obtained and the ten-year sum thereof is also computed, namely, *$6.7621* trillion current dollars. Thus, expressed in terms of trillions of *current* dollars, the anticipated Individual Income Tax Gap to be faced by the IRS falls in the range of between 3.8 trillion and nearly 6.8 trillion dollars.

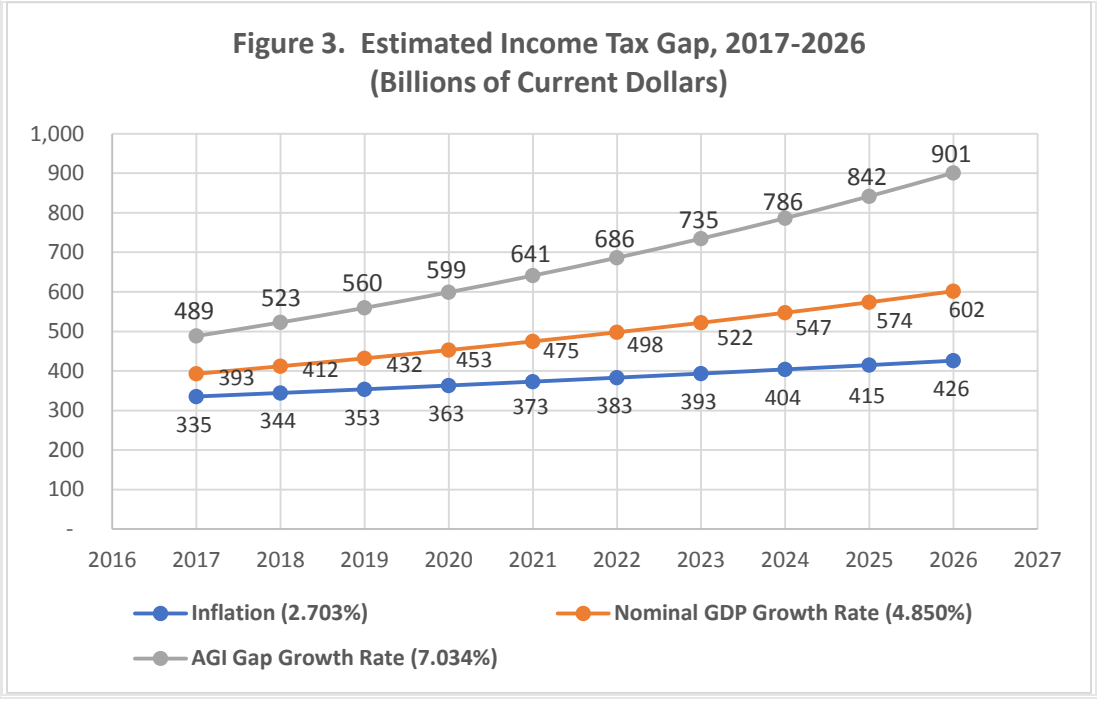
Clearly, a major implication of the above Individual Income Tax Gap estimates is that the national debt will be correspondingly higher over the next decade so long as the current Internal Revenue Code is in place and serves as the principal source of revenue for the U.S. Treasury. Note that, as shown in Table 6 and Table 7 and explained below, even when these Individual Income Tax Gap figures are expressed in constant (2017) dollars, i.e., real dollars, the IRS revenue losses do not differ significantly from the figures provided in Table 5.1.

Table 5.1 Estimated Income Tax Gap, 2017-2026,
Billions of Current Dollars
Federal Income Tax Rate = 20.66%*

Tax Year	(1) Inflation (2.703%)	(2) NGDP GR (4.850%)	(3) AGI Gap GR (7.034%)
2017	335.1	392.9	488.6
2018	344.2	412.0	523.0
2019	353.5	431.9	559.8
2020	363.0	452.9	599.2
2021	372.9	474.9	641.3
2022	382.9	497.9	686.4
2023	393.3	522.0	734.7
2024	403.9	547.4	786.4
2025	414.8	573.9	841.7
2026	426.0	601.7	900.9
2017 to 2026	**$3,789.7**	**$4,907.4**	**$6,762.1**

*Sources: Table 9; IRS (1996, p. 9; 2016, p. 2)

Figure 3 illustrates the estimation results shown in Table 5.1.



The Congressional Budget Office (CBO) has published its estimates of projected

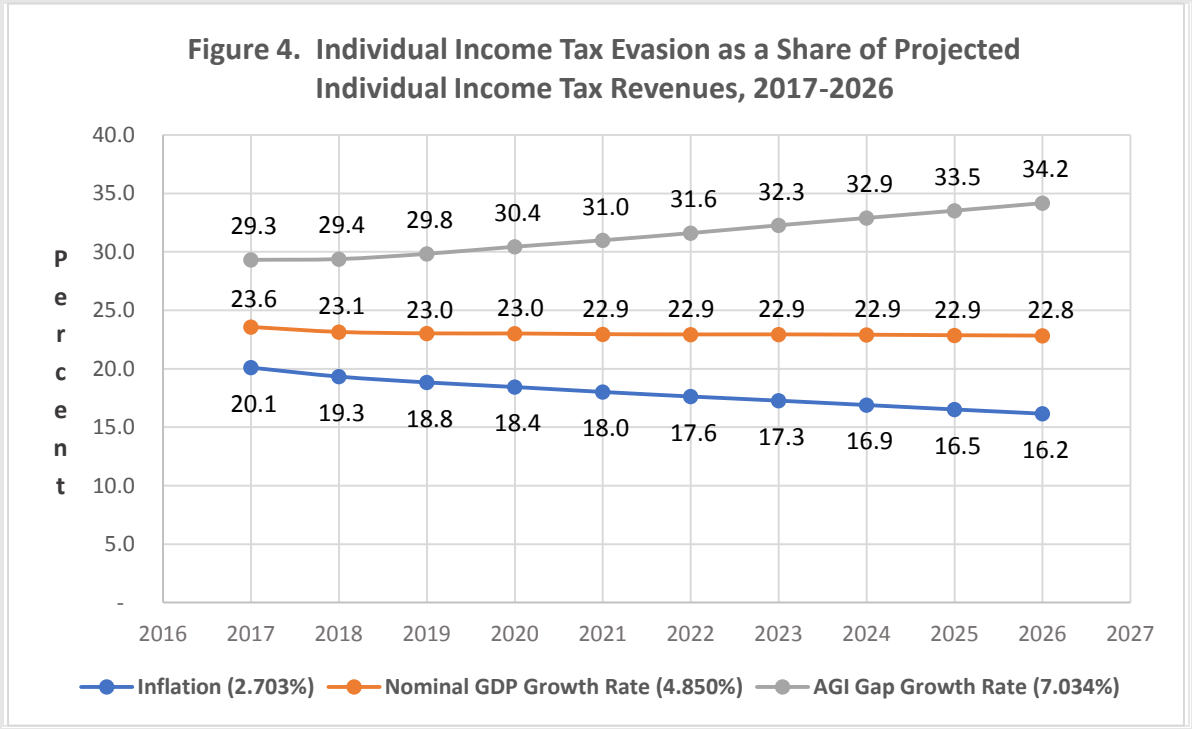
revenues for years 2017-2026, as shown in Appendix 3.[5] We used the Individual Income Tax estimates to compute for each year from 2017 to 2026 in Table 5.1 the percentage of the projected Individual Income Tax Revenue that Individual Income Tax Evasion constitutes. The computed shares (percentages) are shown in Table 5.2 below, along with the CBO's projected Individual Income Tax Revenues (last column). As revealed in Table 5.2, on average, the annual share varies from 16.2% to 34.2% for the time period from 2017-2026. While in the first scenario this share decreases with time, in the second scenario it decreases only slightly, whereas in the third scenario it increases from a projected 29.3% in 2017 to 34.2% in 2026. These findings suggest that at a minimum, the percentage of income tax evasion compared to income tax revenues from 2017 to 2026 will persist above the 16% level, whereas in the worst case scenario, which is the more likely to occur scenario based on historic trends, this percentage will increase from year to year starting at 29.3% in 2017, and exceed one third of income tax revenues (34.2%) by 2026.

Table 5.2 Individual Income Tax Evasion Share of Projected Individual Income Tax Revenues Under Alternative Scenarios (%) and Projected Individual Income Tax Revenues ($ Billions)

Tax Year	Individual Income Tax Evasion Share of Projected Individual Income Tax Revenues: Various Growth Rates			CBO Projected Individual Income Tax Revenues
	(2.703%)	**(4.850%)**	**(7.034%)**	
2017	20.1	23.6	29.3	1,666.8
2018	19.3	23.1	29.4	1,780.2
2019	18.8	23.0	29.8	1,876.7
2020	18.4	23.0	30.4	1,968.5
2021	18.0	22.9	31.0	2,069.4
2022	17.6	22.9	31.6	2,172.0
2023	17.3	22.9	32.3	2,276.7
2024	16.9	22.9	32.9	2,390.4
2025	16.5	22.9	33.5	2,511.0
2026	16.2	22.8	34.2	2,636.7
2017 to 2026	**17.8%**	**23.0%**	**31.7%**	**21,348.4**

[5] www.cbo.gov/publication/52370

Figure 4 illustrates the Table 5.2 estimation results.



To convert our estimates in Table 5.1 into constant (2017) dollars, we calculated the present value of our Individual Income Tax Gap estimates, using the interest rate yield on 10-year treasury notes to compute the discounting factor. Each of our Tax Gap estimates was multiplied by the discounting factor $\frac{1}{(1+yield)^n}$, where *n* represents the number of years, increasing by 1 and varies from 0 (in 2017, the current year) to 9 (in 2026).

The U.S. Treasury Department data for daily nominal yield rates for 10-year treasury bills[6] were used to find the average daily rate in 2016 to be 1.79%, the minimum rate to be 1.37% and the maximum to be 2.45%. Due to the rising/upward trend in the yield observed through 2016 and early 2017, and based on the expectations that interest rates in general would continue to slowly increase throughout 2017, we only used the 2016 average daily yield, and the 2016 maximum daily yield in our estimates in Table 6, and Table 7 respectively, in order to provide a reliable yield interval for these preliminary estimates.

[6] https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2016

Table 6. Estimated Constant Dollar Tax Gap, 2017-2026, Discounted Present Values* Federal Income Tax Rate of 20.66%**

Tax Year	Growth Rates		
	2.703%	4.850%	7.034%
2017	335.1	392.9	488.6
2018	338.1	404.7	513.8
2019	341.2	416.9	540.3
2020	344.2	429.4	568.1
2021	347.3	442.3	597.4
2022	350.4	455.6	628.2
2023	353.6	469.3	660.5
2024	356.7	483.4	694.5
2025	359.9	498.0	730.3
2026	363.2	512.9	768.0
2017 to 2026	**$3,489.8**	**$4,505.5**	**$6,189.7**

*Expressed in terms of billions of 2017 dollars using the interest rate yield on 10-year treasury notes. As a proxy for the yield, the 2016 average daily yield of 1.79% was used in this table.
**Sources: Table 4 above; IRS (1996, p. 9; 2016, p. 2)

Table 6 shows that, in comparison to the 3.8 trillion to nearly 6.8 trillion current dollars shown in Table 5, the anticipated Individual Income Tax Gap to be faced by the IRS falls in the range of between 3.5 and 6.2 trillion dollars, *when expressed in constant 2017 dollars*.

Table 7 shows that in contrast to the nearly 3.8 trillion to nearly 6.8 trillion current dollars shown in Table 5, the anticipated Individual Income Tax Gap to be faced by the IRS falls in the range of between 3.4 trillion and 6 trillion dollars, *when expressed in constant 2017 dollars*.

Table 7. Estimated Constant Dollar Tax Gap, 2017-2026, Discount Present Values*, Federal Income Tax Rate = 20.66%**

Tax Year	Growth Rates		
	2.703%	4.850%	7.034%
2017	335.1	392.9	488.6
2018	336.0	402.1	510.5
2019	336.8	411.5	533.3
2020	337.6	421.2	557.2
2021	338.4	431.0	582.1
2022	339.3	441.1	608.2
2023	340.1	451.5	635.4

2024	341.0	462.0	663.8
2025	341.8	472.9	693.5
2026	342.6	483.9	724.6
2017 to 2026	**$3,388.8**	**$4,370.2**	**$5,997.3**

*Expressed in terms of billions of 2017 dollars using the interest rate yield on 10-year treasury notes. As a proxy for the yield, the highest 2016 daily yield of 2.45% was used in this table.
**Sources: Table 4 above; IRS (1996, p. 9; 2016, p. 2)

3. Estimates of the Gross Tax Evasion

About every three to five years, the IRS has conducted studies to estimate the Gross Tax Gap. The last three studies correspond to tax years 2001, 2006 and 2008-2010. Unfortunately, there is a lack of annual data prior to 2010 and no data post 2010 from the IRS.

In this section, we discuss additional Tax Gap series to the ones in BEA's Ledbetter (2004; 2007), namely the Gross Tax Gap, as originally estimated by the IRS. Using statistical methods that have changed over the years, IRS has computed the Gross Tax Gap,[7] which is composed of three components: nonfiling, underreporting, and underpayment. The Gross Tax Gap estimates include tax evasion from the individual income tax, corporation income tax, employment tax, estate tax and excise tax, and is thus a wider gap than the Individual Income Tax Gap used in our study, using the "AGI-Gap" approach.

Table 8. Summary of IRS Gross Tax Gap Estimates: Tax Years 2001, 2006, and 2008-2010

	TY 2001	TY2006	TY2008-2010
Total Tax Liabilities	$2,112.00	$2,660.00	$2,496.00
Gross Tax Gap	**$345.00**	**$450.00**	**$458.00**
Voluntary Compliance Rate	83.7%	83.1%	81.7%
Enforcement and Late Payments	$55.00	$65.00	$52.00
Net Tax Gap	**$290.00**	**$385.00**	**$406.00**
Net Compliance Rate	86.3%	85.5%	83.7%
Under-reporting Gap	**$285.00**	**$376.00**	**$387.00**
Percent of Total Tax Gap	82.6%	83.6%	84.5%
Individual Income Tax	$197.00	$235.00	$264.00

[7]The IRS Gross Tax Gap is the difference between true tax liability for a given tax year and the amount that is paid on time. It is comprised of the nonfiling gap, the underreporting gap, and the underpayment (or remittance) gap.

Table 8. Summary of IRS Gross Tax Gap Estimates: Tax Years 2001, 2006, and 2008-2010

	TY 2001	TY2006	TY2008-2010
Percent of Under-reporting Gap	69.1%	62.5%	68.2%
Corporation Income Tax	$30.00	$67.00	$41.00
Employment Tax	$54.00	$72.00	$81.00
Estate Tax	$4.00	$2.00	$1.00
Underpayment Gap	**$33.00**	**$46.00**	**$39.00**
Percent of Total Tax Gap	**9.6%**	**10.2%**	**8.5%**
Individual Income Tax	$23.00	$36.00	$29.00
Percent of Underpayment Gap	**69.7%**	**78.3%**	**74.4%**
Corporation Income Tax	$2.00	$4.00	$3.00
Employment Tax	$5.00	$4.00	$6.00
Estate Tax	$2.00	$2.00	$1.00
Excise Tax	$0.50	$0.10	< $0.50
Nonfiling Gap	**$27.00**	**$28.00**	**$32.00**
Percent of Total Tax Gap	**7.8%**	**6.2%**	**7.0%**
Individual Income Tax	$25.00	$25.00	$26.00
Percent of Nonfiling Gap	**92.6%**	**89.3%**	**81.3%**
Self-Employment Tax	NA	NA	$4.00
Estate Tax	$2.00	$3.00	$2.00

The Net Tax Gap estimates by IRS adjust for IRS tax collections after the due date. Table 8 summarizes the IRS Gross and Net Tax Gaps for the last three tax periods for which IRS has published them: TY2001, TY2006, and TY2008-2010.

The Under-reporting Gap constitutes most of the IRS Gross Tax Gap, between 82.6% and 84.5% of Gross Tax Gap in TY 2001, TY 2006 and TY 2008-2010, while the Individual Income Tax Gap component constitutes between 62.5% and 69% of the Under-reporting Gap.

Looking at Table 9 below, the Net Tax Gap growth more than doubled the Total Tax Liability growth rate from TY2001 to TY 2008-2010. The Net compliance rate declined by 3% from TY2001 to TY 2008-2010. IRS states that this is in large part due to new and improved statistical methods used; however, if both the voluntary compliance rate and the net compliance rate have remained nearly unchanged or slightly declined throughout the 2000s, this sets a strong signal that these rates have remained at best in the 81.7%-83.7% range throughout 2016. It further suggests that they will continue to remain at those levels throughout 2026, if not further

decrease. Earlier IRS estimates of the voluntary compliance rate for years 1973-1992 are in the 81%-87% range.

Table 9. Percent Growth in IRS Gross Tax Gap

	%GR 2001 - 2006	%GR 2006-2010	%GR from 2001-2010
Total Tax Liabilities	25.9	-6.2	**18.2**
Gross Tax Gap	**30.4**	**1.8**	**32.8**
Voluntary Compliance Rate	-0.7	-1.7	**-2.4**
Enforcement and Late Payments	18.2	-20.0	**-5.5**
Net Tax Gap	**32.8**	**5.5**	**40.0**
Net Compliance Rate	-0.9	-2.1	**-3.0**

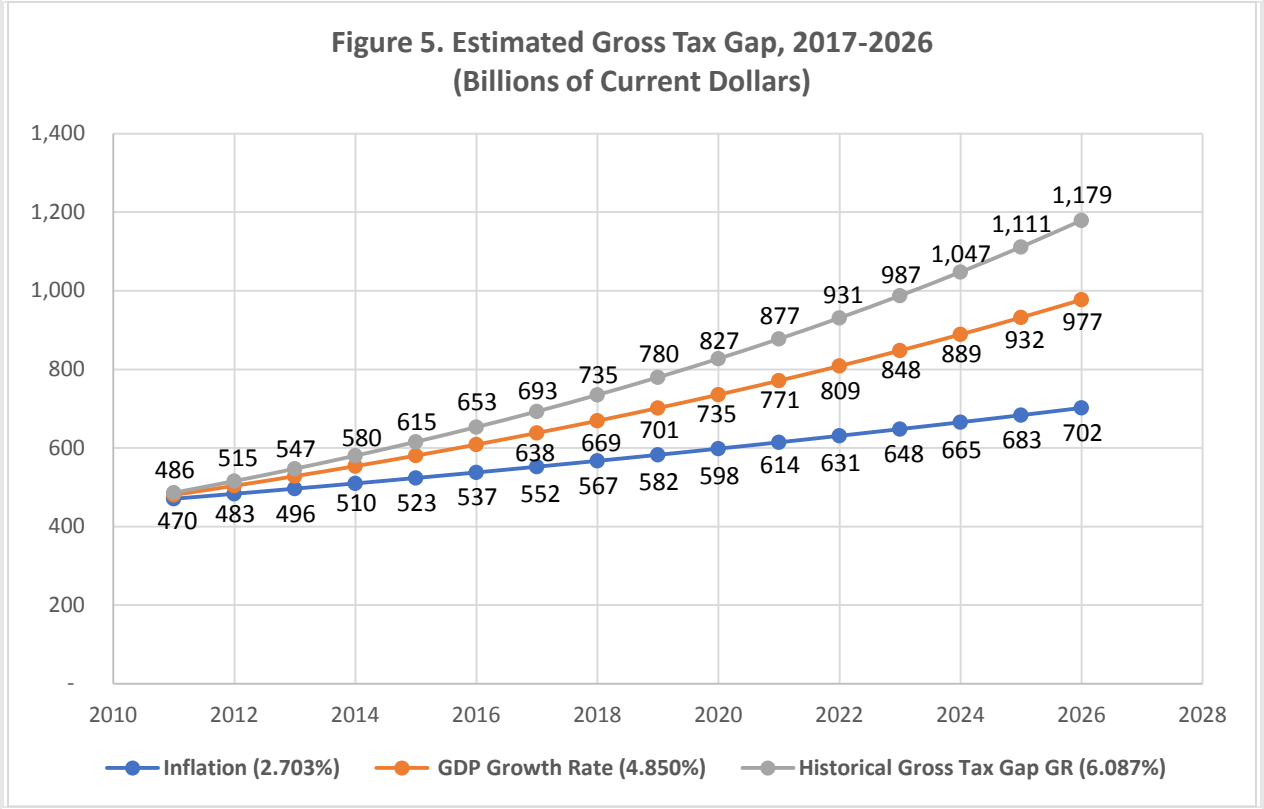
IRS defines the Gross Tax Gap as the amount of tax liability faced by taxpayers (sole proprietors, small corporations, large corporations, and individual income taxpayers) that is not paid on time. Both gross and net tax gaps consist of three main components: nonfiling, underreporting, and underpayment. The nonfiling gap is the amount of tax liability owed by taxpayers who do not voluntarily and timely file returns. The underreporting gap is the amount of tax liability not voluntarily reported by taxpayers who do file returns. The underpayment gap is the amount of tax liability that individuals report on their tax returns, but do not pay voluntarily and timely.

We calculated the average growth rate of the Total Gross Tax Gap estimated by IRS over the 5-year span from 2001 to 2006 to be 6.087%. The period 2007-2016 corresponds to a ten-year frame, so by 2016 approximately, we should expect the tax gap to have grown by over 12%. However, given that IRS estimates for TY 2008-2010 are available (subject to any further revisions), and given the fact that the Great Recession was officially over in June 2009, using a more conservative approach, we started our estimates for year 2011 using the total tax gap estimate of $458 billion for the previous year and the average growth rate of 6.087%. Our estimates are shown in Table 10 below. Two other estimates, similar to the ones used in Tables 3-5, were used in Table 10, respectively the annual percentage growth rate of the economy (nominal GDP) and the rate of inflation (growth of CPI). Estimates in Table 10.1 indicate that the IRS Gross Tax Gap from years 2017 – 2026 will amount to nearly $***9.2 trillion***.

Table 10.1 Estimated Gross Tax Gap, 2017-2026
(Billions of Current Dollars)

Tax Year	Inflation	Annual Percentage GDP Growth Rate	Historical Gross Tax Gap Growth Rate
	(2.703%)	**(4.850%)**	**(6.087%)**
2011	470.4	480.2	485.9
2012	483.1	503.5	515.5
2013	496.2	527.9	546.8
2014	509.6	553.5	580.1
2015	523.3	580.4	615.4
2016	537.5	608.5	652.9
2017	552.0	638.0	692.6
2018	566.9	669.0	734.8
2019	582.3	701.4	779.5
2020	598.0	735.4	827.0
2021	614.2	771.1	877.3
2022	630.8	808.5	930.7
2023	647.8	847.7	987.4
2024	665.3	888.8	1,047.5
2025	683.3	931.9	1,111.2
2026	701.8	977.1	1,178.9
2017 to 2026	**$6,242.3**	**$7,969.2**	**$9,166.8**

Figure 5 illustrates the estimation results in Table 10.1.

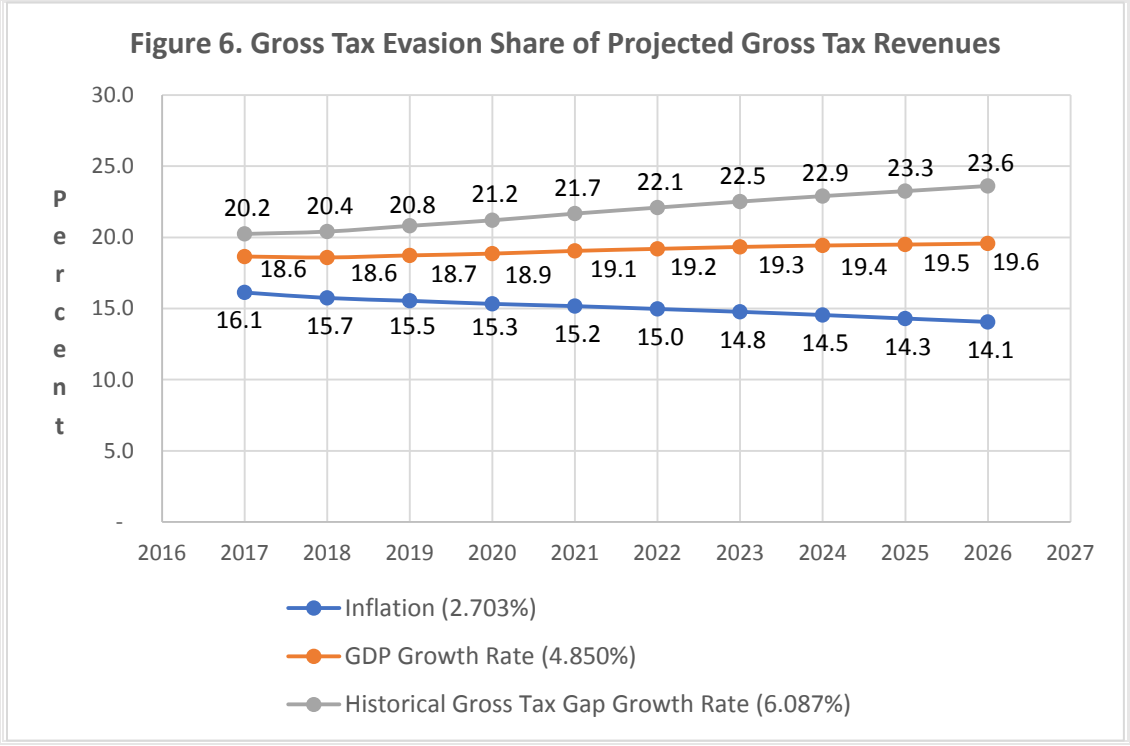


We used the Gross Tax Gap estimates to compute, for each year from 2017 to 2026 in Table 10.1, tax evasion as a percentage of CBO's projected Gross Tax Revenue. The computed shares (percentages) are shown in Table 10.2 below, along with the CBO's projected Gross Tax Revenues (last column). On average, this share lies between 14.1% to 23.6%. While in the first scenario this share decreases with time by about 2% annually, in the second scenario it increases slightly, and in the third scenarios it increases by more than 3% annually from 2017 to 2026. These findings suggest that at best, gross tax evasion as a percentage of gross tax revenues from 2017 to 2026 will persist above the 14% level. In the worst case scenario, which is the less conservative and yet more likely to occur scenario based on historic trends, this percentage will increase from year to year starting at 20.2% in 2017 and reaching 23.6% of gross tax revenues by 2026.

Table 10.2 Gross Tax Evasion Share of Projected Gross Tax Revenues Under Alternative Scenarios (%) and Projected Gross Tax Revenues, Billions of Current Dollars

Tax Year	Gross Tax Evasion Share of Projected Gross Tax Revenues			Projected Gross Tax Revenues (CBO)
	(2.703%)	(4.850%)	(6.087%)	
2017	16.1	18.6	20.2	3,421.2
2018	15.7	18.6	20.4	3,599.9
2019	15.5	18.7	20.8	3,745.1
2020	15.3	18.9	21.2	3,900.4
2021	15.2	19.1	21.7	4,047.7
2022	15.0	19.2	22.1	4,212.4
2023	14.8	19.3	22.5	4,385.4
2024	14.5	19.4	22.9	4,574.0
2025	14.3	19.5	23.3	4,779.2
2026	14.1	19.6	23.6	4,992.5
2017 to 2026	**15.0**	**19.1**	**22.0**	**41,658.0**

Figure 6 illustrates the estimation results in Table 10.2.



Using population projection data from the Census Bureau,[8] and an estimate of 2.53 people per household,[9] we estimated the projected number of households in the U.S. from 2017-2026, as shown on the last two columns of Table 10.3 below. Given the downward trend in people per household from the 1940s to 2010, using the projected figure of 2.53 for the last year available, renders conservative estimates of our household projections in Table 10.3, and consecutively it produces conservative estimates of the average Tax Burden per household shifted from tax evaders to tax compliant households.

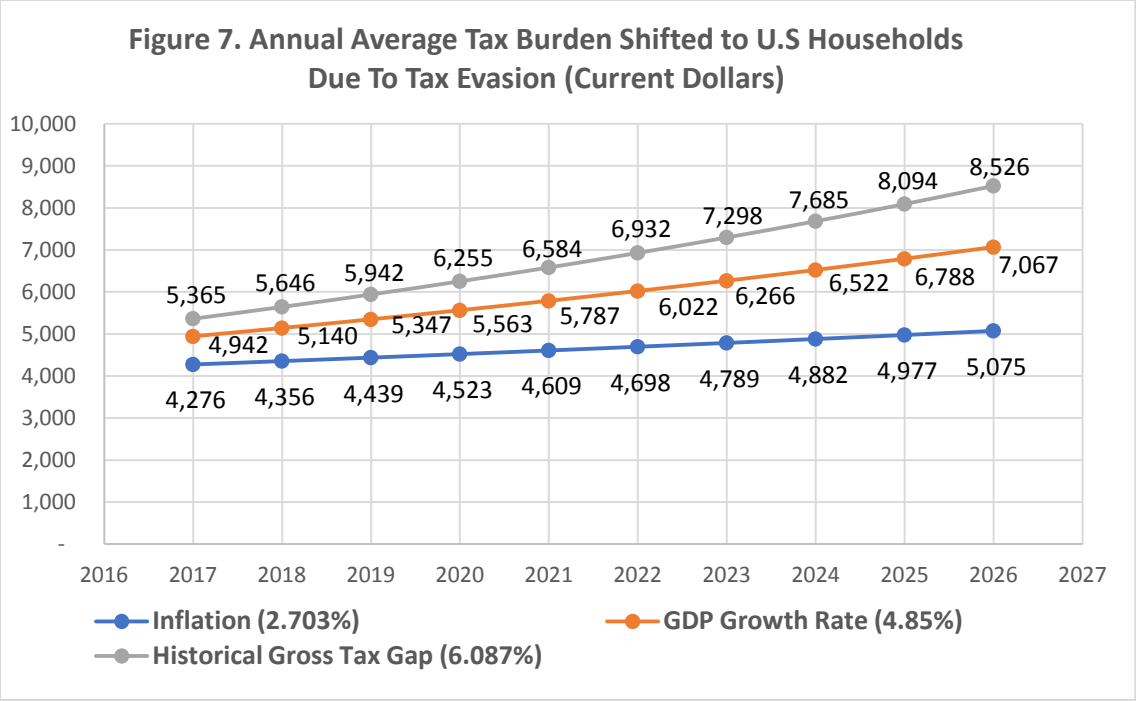
Table 10.3. Annual Tax Burden Shifted to U.S. Households Due to Tax Evasion, Current Dollars

Tax Year	Gross Tax Burden per Household (2.703%)	Gross Tax Burden per Household (4.850%)	Gross Tax Burden per Household (6.087%)	Projected Population in Millions	Projected Households in Millions
2017	4,275.8	4,942.1	5,365.0	326.6	129.1
2018	4,356.3	5,140.4	5,646.1	329.3	130.1
2019	4,438.6	5,347.1	5,942.4	331.9	131.2
2020	4,522.9	5,562.5	6,254.7	334.5	132.2
2021	4,609.2	5,787.2	6,584.1	337.1	133.2
2022	4,697.8	6,021.6	6,931.7	339.7	134.3
2023	4,788.5	6,266.3	7,298.4	342.3	135.3
2024	4,881.6	6,521.7	7,685.5	344.8	136.3
2025	4,977.2	6,788.3	8,094.1	347.3	137.3
2026	5,075.3	7,066.9	8,525.7	349.8	138.3
2017 to 2026	**46,623.3**	**59,444.2**	**68,327.7**		

Figure 7 below illustrates the estimation results in Table 10.3.

[8] https://www.census.gov/population/projections/data/national/2014.html

[9] See Table F (page 10) of the *Current Population Report: Projections of the Number of Households and Families in the United States: 1995 to 2010.* https://www.census.gov/prod/1/pop/p25-1129.pdf



Generally speaking, dividing the tax gap estimate by the number of households in the United States suggests that the average household is being assessed an annual "surtax" to enable the federal government to raise the same level of revenue it would collect if all taxpayers were to report their income and pay their taxes in full.[10] Dividing each of the estimated gross tax gaps for years 2017-2026 under the three scenarios in Table 10.1 with the corresponding projected households (last column in Table 10.3) produces the main estimates in Table 10.3. Figure 7 displays the estimated surtax under the three growth rate scenarios. Our estimates indicate that such "surtax" varies from $4,276 to $5,075 per year under the most conservative scenario, to between $5,365 and $8,526 per year for the third scenario. Moreover, the cumulative tax burden shifted from tax scofflaws to compliant taxpayers amounts to a total estimated burden of between $46,623 and $68,328 over the ten-year period from 2017-2026, which is comparable in size, if not greater, under the third scenario, to both the median and mean household income in the U.S. in 2015.

Household income in the U.S. depends on several demographic characteristics, including geographic location, level of education, race, ethnicity and age of householder, and can be measured in various ways. One key measure of household income is the real median level, which

[10] National Taxpayer Advocate, 2011 Annual Report to Congress, "Executive Summary", Dec. 31, 2011, page 3.

according to the Federal Reserve was $56,516 in 2015.[11] The Census Bureau estimated real median household income in 2015 to be $55,775.[12] Congressional Budget Office combined Census and IRS income data to analyze household income, finding that in 2011 the gross median household income, adjusted for inflation, was $75,200.[13] Unlike the Census measure of household income, the CBO showed income before and after taxes, considering household size and using a much broader definition of income, including in kind transfers as well as all monetary transfers from the government.

Another common measurement of household income is mean household income. Unlike the median household income, which divides all households in two halves, the mean income is the average income earned by American households. In the case of mean income, the income of all households combined is divided by the number of all households. The mean tends to be higher than the median income, with the top earning households boosting it (i.e., pulling the mean). Overall, the mean household income in the United States, according to the U.S. Census Bureau, Current Population Survey, 2016 Annual Social and Economic Supplement, in 2015 was $79,263.[14] In 2011, according to CBO's estimates, average household market income—a comprehensive income measure that consists of labor income, business income, capital income (including capital gains), and retirement income—was approximately $81,000.[8]

Summarizing, given the size of the median household income in the U.S. in 2015, corresponding to a real monthly median income between $4,648 (using Census Bureau data) and $4,710 (using Federal Reserve data), we can see how the annual "surtax" which lies between $4,276 and $8,526 in current dollars to be comparable in size to anywhere between 1-2 months worth of monthly median household income, once adjusting for the inflation of the annual "surtax" is accounted for.

In addition, given the size of the mean household income in the U.S. in 2015, corresponding to a monthly mean income of $6,605 (using Census Bureau data) we can see how the annual "surtax" which lies between $4,276 and $8,526 in current dollars to be anywhere between 65% to 130% of the monthly mean household income, once adjusting for the inflation of the annual "surtax" is accounted for.

[11] https://fred.stlouisfed.org/series/MEHOINUSA672N
[12] http://www.census.gov/content/dam/Census/library/publications/2016/demo/acsbr15-02.pdf
[13] https://www.cbo.gov/publication/49440
[14] https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-hinc/hinc-06.html

Differently stated, the 10-year accumulated Gross Tax Burden shifted to the average household due to tax evasion is comparable in size to both the annual median and annual mean household income from 2017-2026, indicating that on average, in one out of the 10 years ahead each household will be working solely to pay off the 10-year overall "surtax"—a real heavy burden for every American household.

To convert our estimates in Table 10.1 into constant (2017) dollars, we calculated the present value of our Gross Tax Gap estimates, using the interest rate yield on 10-year treasury notes to compute the discounting factor in a similar way as it was done in Tables 6 and 7. Table 11 uses as a proxy for the interest rate yield on 10 Year Treasury Notes, the 2016 average daily yield of 1.79%.

Table 11. Estimated Constant Dollar Gross Tax Gap, 2017-2026, Discounted Present Values*

Tax Year	Growth Rates		
	2.703%	**4.850%**	**6.087%**
2017	552.0	638.0	692.6
2018	557.0	657.2	721.9
2019	562.0	677.0	752.3
2020	567.0	697.3	784.1
2021	572.1	718.3	817.2
2022	577.2	739.9	851.7
2023	582.4	762.1	887.7
2024	587.6	785.0	925.1
2025	592.9	808.6	964.2
2026	598.2	832.9	1004.9
2017 to 2026	**$5,748.3**	**$7,316.4**	**$8,401.7**

*Expressed in billions of 2017 dollars using the interest rate yield on 10-year treasury notes. As a proxy for the yield, the 2016 average daily yield of 1.79% was used in this table.

Table 12 uses as a proxy for the interest rate yield on 10 Year Treasury Notes, the 2016 average daily yield of 2.45%.

Table 12. Estimated Constant Dollar Gross Tax Gap, 2017-2026, Discounted Present Values**

Tax Year	Growth Rates		
	2.703%	**4.850%**	**6.087%**
2017	552.0	638.0	692.6
2018	553.4	653.0	717.2
2019	554.7	668.3	742.7
2020	556.1	683.9	769.0
2021	557.5	700.0	796.3
2022	558.9	716.4	824.6
2023	560.2	733.1	853.9
2024	561.6	750.3	884.2
2025	563.0	767.9	915.6
2026	564.4	785.9	948.1
2017 to 2026	**$5,581.9**	**$7,096.7**	**$8,144.3**

*Expressed in billions of 2017 dollars using the interest rate yield on 10-year treasury notes. As a proxy for the yield, the highest 2016 daily yield of 2.45% was used in this table.

4. Recent Perspectives

There have been several studies conducted by IRS every three to five years to estimate the Gross Tax Gap. The last three studies correspond to tax years 2001, 2006 and 2008-2010. Based on the Jan 6, 2012 IRS News Release, IRS estimates that the tax gap in TY2006 was $450 billion, compared to $345 billion in TY2001. The most recent estimates point at a Gross Tax Gap of $458 billion in TY2008-2010. The 2001 study showed deterioration in tax compliance among individual taxpayers compared to the previous study, which was conducted in 1988. Moreover, the 2001 study reveals that individual under-reporting noncompliance is the largest component of the tax gap. According to the 2012 IRS Release, individual underreporting accounts for more than 80 percent of the total Gross Tax Gap, with non-filing and underpayment at about 10 percent each, with the individual income tax being the single largest source of the Gross Tax Gap, accounting for about two-thirds of it.[15]

[15] Additional IRS findings include: (i) For individual under-reporting, more than 80 percent comes from understated income, not overstated deductions. (ii) Most of the understated income comes from business activities, not wages or investment income. (iii) Compliance rates are highest where there is third-party reporting or withholding. (iv) Less than 1.5 percent of wages and salaries are misreported.

So far, actual compliance rates are above 80% according to IRS estimates (see 2001, 2006 and 2008-2010 IRS Releases), which is higher than those predicted by the Allingham and Sandmo (1972) model, due to voluntary compliance, not necessarily due to IRS's ability to narrow the tax gap. In fact, year after year the Gross Tax Gap has remained the same, or increased. IRS states that the increase in the Gross Tax Gap is partially due to improved estimation methods, but there is another part (statistically insignificant) of this increase that cannot be explained. In particular, to ensure taxpayer faith and fairness in the tax system, a high level of *voluntary* tax compliance is critical. Those who don't pay what they owe ultimately shift the tax burden to those who properly meet their tax obligations. Research has shown that when people do not trust their government they will evade more. The fact that in several IRS reports a high rate of non-compliance (15% or higher) has existed for several decades, is not a guarantee or a stable condition that voluntary tax compliance will remain the same due to mainly its *voluntary* nature in future years. Especially for the case of individual income taxes, data show the AGI Gap series to be nonstationary over time, and such an increasing trend in the AGI Gap and the Tax Gap has severe negative consequences for our national debt, whose magnitude already is a serious concern in 2017.

For example the higher national deficit will imply higher long-term interest rates, and consequently, reduced spending on new plant and equipment and reduced purchases of new residential housing, and therefore reduced job growth and real GDP growth (Carlson and Spencer, 1975; Cebula, 1978; 2008).

Many factors contribute to differences over time in both the Gross Tax Gap and the voluntary compliance rate. These include factors such as: 1) the overall level of economic activity, 2) changes in the composition of economic activity with shifts toward those with higher or lower compliance rates, 3) changes in tax law and administration, 4) updated data and improved methodologies, and 5) changes in underlying compliance behavior on the part of taxpayers and preparers.

Future Factors

Decreases in the Tax Gap

I. Alm and Soled (2016) point at three external forces that could cause the tax gap to

narrow over time: the rise of electronic commerce, information availability via computerization, and a shifting labor force. To date, there is little empirical information that directly supports the proposition that these three trends are closing the tax gap. If their role significantly increases in the near future, then the tax gap may decrease, not so much from IRS enforcement efforts per se but from these technological and economic trends. In particular, Alm and Soled (2016) state that the use of electronic means of payment will almost certainly reduce the extent of the underground economy because individuals who once routinely hid their transactions via cash will now be stripped of this luxury. Every electronic payment leaves an indelible mark. These "marks" enable IRS auditors to accurately access income flows. To minimize their taxable income (e.g., the underreporting gap), taxpayers may continue to overstate their deductions and expenses (for which auditors can demand substantiation), but their income can no longer be readily hidden or camouflaged. However, one problem here is for the foreseeable future, cash will remain a pillar of the nation's economy. And depending on when the importance of cash diminishes, the tax gap should correspondingly narrow in size.

II. As the labor force shifts to becoming increasingly self-employed (instead from being employed by 2nd parties), the usage of Schedule C - Profit or Loss from Business will be increasingly important in magnitude. Schedule C provides a much easier vehicle for not reporting income, than does W-2 income.

Increases in the Tax Gap

I. New tax evasion schemes could be found, as old ones are detected, giving rise to new creative ways to hide income. The 2006 Gross Tax Gap, i.e. the difference between the tax owed and the tax paid on time, was estimated at $450 billion (IRS 2006). The Government Accountability Office (GAO) further estimates that $91 billion of this tax gap can be attributed to income hidden in tax shelters composed of multiple ''pass-through'' entities, such as partnerships, S corporations and trusts.[16] Financial and legal enterprises scour the tax code in search of ambiguities in order to discover and promote abusive tax shelters. Such illegal tax avoidance strategies use complex transactions within networks of tax entities that are designed to reduce and obscure the tax liabilities for their individual shareholders. While tax auditors have historical examples of tax schemes to help guide examination efforts, tax shelter promoters often adapt their strategies as existing schemes are uncovered and/or when changes are made to the

[16] http://www.gao.gov/products/GAO-16-363

existing tax regulations. One notable example is the so-called BOSS tax shelter (Bond and Options Sales Strategies) that was widely promoted yet was ultimately disallowed. While audit changes were implemented to detect BOSS they were not able to detect the newly emerged variant ‘‘Son of BOSS’’ (Wright, 2013). This is typical of the “arms race” between tax evaders and tax auditors

II. Hacking and smart theft online is a new trend. Cyber security issues in the new digital era.

III. The inability of IRS to prosecute at full scale. There are two significant challenges to IRS enforcement efforts against tax evasion schemes that arise from two primary sources: (1) the complexity of the tax code, and (2) dispersed, sensitive and obfuscated data.

IV. If the federal government continues to underfund the IRS, more taxpayers will likely join the ranks of the noncompliant, because with fewer IRS agents there would be reduced capacity to engage in face-to-face audits. On average, the IRS audits about one percent of individuals each year. The chance of being audited, however, varies depending on individual characteristics. For example, individuals who are self-employed and not subject to third-party withholding on their business income have an overall audit rate closer to three percent.[17] But even for individuals that are audited, however, it is by no means certain that the IRS will detect unreported income.

V. Globalization and the associated factor mobility (especially capital mobility) mean that some forms of income are increasingly mobile and may more easily be masked.

VI. The presence of complicated tax laws also can create supposed platforms of legal tax avoidance methods that sometimes transform into illegal tax evasion.

Discussion

Objectively speaking, no one can definitively predict whether income tax evasion will become a more severe problem. A variety of factors influence income tax evasion. For example, income tax evasion tends to be greater when the tax rates are higher. In addition, the greater the ability to avoid taxes, the less the degree of tax evasion. For example, the higher the tax-free interest rate on municipal bonds, the lower the degree of tax evasion. (Cebula, 2004).

In addition, the greater the public’s job approval of the President, the less the degree of income tax evasion (e.g., the greater the trust in government, or the less the resentment of the IRS). Furthermore, the higher the IRS face-to-face audit rate the lower the degree of income tax

[17] U.S. GAO, GAO-07-1014, TAX GAP: THE STRATEGY FOR REDUCING THE GAP SHOULD INCLUDE OPTIONS FOR REDUCING SOLE PROPRIETOR NONCOMPLIANCE, REPORT TO THE SENATE FINANCE COMMITTEE 12 (2007).

evasion. Several studies have shown that higher audit rates reduce tax evasion; we need not hire tens of thousands of auditors. Simply raising the audit rate back to 2% and raising it slowly over time with lots of publicity will not cure the problem, but will significantly diminish it.

Moreover, the higher the IRS penalties on detected tax evasion, the lower the degree of tax evasion. (Cebula, 2008) Increasing the interest and penalties have also been shown in various studies to reduce tax evasion. In our view this is the easiest route to follow. It too will not cure the problem but will diminish it.

One could also argue that people with an established pattern of tax evasion over time may continue with this established "habit." Even if tax rates decline, tax cheats will face a large tax increase when they start to accurately report income, since they now pay a tax rate of 0% on unreported income.

Naturally, all these factors will vary over time, thereby making precise forecasting extremely difficult, if not impossible. First, we have the problem that noncompliance not only exists in the social fabric, but for decades it has not decreased, despite IRS efforts to lower noncompliance rates by increasing funding in different programs. Second, to fix the problem, has proven not only costly, but not effective. As of now, no reports indicate that the Gross Tax Gap has narrowed. Even if it will narrow in the future due to the three factors discussed in Alm and Soled (2016), a myriad of other factors could increase it, so that the net effect might be at best ambiguous in the foreseeable future, but most likely the net effect will be a continuous increase as experienced in the last several decades. Third, the tax code is too complex. At its root it is not designed to stop non-compliance - focusing more on social engineering rather than ease of compliance. Fourth, due to some negative sentiment against IRS, behaviorally, the problem we are trying to solve might need a different approach, at least in part because people might be more supportive of a consumption tax, which does not require detailed income reporting compared to an income tax. Fifth, the three factors that Alm and Soled (2016) propose as having an influence on the tax evasion landscape in the near future are trends that, interestingly, will help minimize tax evasion in the presence of a FairTax system, basic analytics for which are provided in the following section.

In conclusion, our Individual Income Tax Gap estimates and our estimates of the IRS Gross Tax Gap provide wide estimation intervals, and depending on the interaction of the factors listed above, their relative sizes, and overall net effect, we are confident that the actual estimates

of the Individual Income Tax Gap and Gross Tax Gap will fall somewhere within our estimated intervals.

5. The FairTax

The FairTax is a potential alternative to the income tax system. The basis for the FairTax is the imposition of a progressive, national retail sales tax by the federal government. This tax would be a *de facto* sales tax on newly produced goods and services. The FairTax Act of 2017 (H.R. 25/S.18) is intended to: eliminate all personal and business income taxes, payroll, estate and capital gains taxes; create jobs and restore the *Made in America* label by making U.S. products more competitive; raise real wages; save Americans billions of dollars wasted annually in complying with 74,000+ pages of tax regulations;; capture taxes from the underground economy; provide monthly "prebate" payments to all legal American households to offset taxes on necessities; end the sale of tax favors to the rich, politically connected, and special interest lobbying groups; grow the economy by 100s of billions of dollars; add trillions of U.S. and foreign dollars to our economy by making America *the* place to invest; provide secure funding for Social Security and Medicare with a larger, more stable tax base; raise the same revenue as the current system; lower production costs by removing business taxes, compliance costs, and avoidance expenses; and eliminate the IRS and have taxes be collected by the states[18].

5.1. Well-Being Maximization with No Effort to Undertake FairTax Evasion and No Actual Participation in Tax Evasion under the FairTax

In order to understand the complexity of tax evasion under the umbrella of a broad-based FairTax on the purchase of all *new* goods and services, it is helpful to consider the representative individual or household, A. Individual A seeks to maximize his/her utility subject to his/her budget constraint. For simplicity, let us consider a rudimentary framework. For example, A seeks to maximize a utility function such as:

(1) $U = U(X1, X2, X3,\ldots,XN)$

where U is A's utility or well-being level, and X1 through XN are A's consumption of

[18] Americans For Fair Taxation website, www.fairtax.org

commodities X1 through XN. The greater A's consumption of any Xj, j = 1,2,3,…,N, the greater A's utility level or well-being.

A's budget constraint, which essentially is a rudimentary measure of his/her current, liquid purchasing power, depends on his/her spendable income, YS, and the quantities purchased of commodities along with their respective prices, Pj, j = 1, 2, 3,…,N.

If the FairTax Rate is represented by FTR, expressed in decimal form, then the budget constraint is given by:

$$(2)\ YS = \sum_{j=1}^{N}[Xj*Pj(1+FTR)] = X1*P1(1+FTR) + X2*P2(1+FTR) +\ldots+ XN*PN(1+FTR)$$

Maximizing (1) subject to (2) involves neither evasion of the FTR nor an effort to evade FTR. Thus, under these conditions, the *FULL* price of any commodity j reflects the market-determined price (Pj) times unity plus the FTR (in decimal form):

(3) Pj*(1 + FTR)

For example, in the absence of FTR evasion and any effort to undertake FTR evasion, if the FTR = 20%, the FULL unit price of commodity Xj with the tax included is 1.2 Pj.

5.2. Constrained Utility Maximization When Either Seeking to Evade the FairTax or Actually Engaging in FairTax Evasion

Any effort to evade the FairTax involves at least four "transactions cost" dimensions. First, individual A should expect that he/she must expend time and energy, and quite possibly funds, in seeking to find a person or person employed with an establishment willing to participate in tax evasion. Refer to the quantification of this expected cost factor as TE%. Second, individual A, although pondering a potential effort to evade taxation by the FairTax, may also recognize that to the extent he/she is successful, the action is not only illegal but immoral. This may impose a transactions cost in the form of a "conscience cost." We refer to the quantification of this cost as CONSC%. Clearly, for some people, this cost may be sufficiently high as to preclude any tax evasion effort, whereas for others, it is possible that CONSC% = 0. Third, individual A, if successful in finding a colluder in the tax evasion scheme, would logically expect to be exposed to potential penalties from the tax collection authority, ranging from a fine

to a fine plus imprisonment. Refer to the quantification of this expected cost factor as PEN%. Fourth, if individual A is able to recruit a person or establishment with whom or which to collude in the tax evasion scheme, that second party will extract a price, i.e., a share of the benefits (a share of the evaded taxes) in exchange for the collaboration. Refer to this bribe premium above the market-determined price of the commodity as BRIBE%. This bribe premium will clearly reflect A's would-be collaborator's own expected/perceived risk of fines and imprisonment to himself/herself, as well as an expected economic profit above that expected risk/cost.

Let us, for simplicity of exposition, express TE%, CONSC%, PEN%, and BRIBE% as decimals. Accordingly, if individual A should wish to potentially undertake tax evasion under the FairTax regime, the price of commodity j becomes:

(4) Pj*(1 + TE + CONSC)

Next, if in fact individual A seeks and finds a collaborator, and if in fact that collaborator bargains for his/her compensation, the price of commodity j becomes:

(5) Pj*(1 + TE + CONSC + PEN + BRIBE)

For the collaborator, designated here as part B, BRIBE consists of B's transactions costs (including B's potential penalties from the tax collection authority if detected thereby) plus B's expected economic gain from the collaboration with would-be tax-evader A.

5.3. Constrained Utility Maximization and the Calculus of the FairTax Evasion

Decision For individual A, the decision will be to *not* even attempt to evade the FairTax if the following condition holds:

(6) Pj*(1 + TE + CONSC) > Pj*(1 + FTR)

In this circumstance, the *expected transactions costs* of the *search process per se* plus the *conscience cost* are sufficiently high as to make the tax evasion impractical. This circumstance may be very common; indeed, with most small transactions, this might be the rule more than the exception simply due to either the transactions cost of the search process or the transactions cost of the conscience cost (as suggested above). In the former case, the transactions cost of prospecting for a tax evasion route makes the search for a collaborator simply not even worth the effort. Similarly, if the transactions costs involving the search process and conscience plus the expected penalties are sufficiently high, tax evasion is also discarded as an option.

(7) Pj*(1 + TE + CONSC + PEN) > Pj*(1 + FTR)

People who are very risk averse would likely fall into this category.

Finally, if the would-be collaborator costs also are included in the decision calculus, evasion of the FairTax may prove to be even more impractical. Thus, the overall assessment of FairTax evasion is that if the following condition holds, representative individual A will abandon the tax evasion effort so long as the following holds:

(8) Pj*(1 + TE + CONSC + PEN + BRIBE)≥ Pj*(1 + FTR)

Stated differently, individual A will seek to engage in evasion of the FairTax only if the following condition holds:

(9) Pj*(1 + TE + CONSC + PEN + BRIBE) < Pj*(1 + FTR)

5.4. Practical Considerations

The FairTax Plan is a comprehensive proposal that replaces all federal income and payroll based taxes with an integrated approach including a progressive national retail sales tax, a pre-bate to ensure no American pays federal taxes on spending up to the poverty level, dollar-for-dollar federal revenue replacement, and, through companion legislation, the repeal of the 16th Amendment. This nonpartisan legislation (HR25/S18) abolishes all federal personal and corporate income taxes, gift, estate, capital gains, alternative minimum, Social Security, Medicare, and self-employment taxes and replaces them with one simple, visible, federal retail sales tax – administered primarily by existing state sales tax authorities. The IRS is disbanded and defunded. The FairTax taxes individuals only on what they choose to spend on new goods or services, not on what they earn. While the tax on imports can be captured at the border, business-to-business consumption is not taxable under the FairTax – only personal consumption at final retail sale is subject to taxation. Exports are not taxable. Used goods are not taxable. Hence, the vast amount of Internet sales is simply not of enforcement concern.

Given the scope of the tax base under the FairTax, only the final sales of *new* goods and services will be subject to taxation. In reality, there is a formal record, i.e., a *de facto* "paper trail," that accompanies the purchases of new goods and services. 45 states plus the District of Columbia impose sales taxes on new goods and services. These states account for about 98% of U.S. population. Hence, for example, all transactions in retail stores involving *new* goods and services will be recorded at the state level and subsequently reported to *existing state sales tax*

authorities. These records thereby provide a formal record of transactions and the FairTax payments due, along with state and local sales tax payments. It is expected that state and national sales tax collection will be combined on a single report, because the state sales tax agency will be administering the tax.

Whether representative individual A makes purchases of new commodities at grocery stores, auto dealerships, appliance stores, pharmacies, sporting goods stores, hair stylists, dry cleaners, lawn service, etc., records will be generated as to the magnitude of new commodity sales and the attendant FairTax liabilities associated therewith. Of course, no tax system is perfect, and some service providers will ask to be paid in cash, just as they do under the income tax. Similarly, there will be a host of public records involving new homes. It is within this environment of detailed *recorded sales*, that the would-be FairTax evader applies the decision calculus described in sub-sections (a) through (c) above.

Small retail businesses are often viewed as more likely to evade taxes since the owner, and beneficiary of tax evasion, is more likely to also be responsible for keeping the books and filing the tax returns. However, two factors reduce the importance of this consideration. First, it is very likely that those small businesspersons who are inclined to cheat on their sales tax, are already cheating on their income tax and would be inclined to do so under any tax systems. Second, the economic importance of small firms in the retail sector is usually grossly overstated. Table 13 shows that while small businesses make up 64.7% of wholesale and retail trade corporations, their combined business receipts represent only 2.1% of total wholesale and retail trade business receipts. Since the gross receipts of wholesalers would typically not be subject to tax, the actual amount of overall evasion associated with small businesses will likely be a small scale problem.

Furthermore, the number of taxpayers in a FairTax system will be reduced from about 160 million tax filers (individuals and businesses) to about 25 million allowing a much higher audit rate for a given expenditure.[19]

[19] 2015 IRS Data Book, Table 2.

Table 13. Distribution of Wholesale and Retail Trade Corporations by Size of Business Receipts, 2012

Size of Business Receipts	Total Returns	Business Receipts	Percent of Returns	Percent of Receipts
(Money amounts thousands of dollars and size of business receipts is in whole dollars)				
Under $25,000	147,400	$784,540	15.40%	0.00%
$25,000 to $100,000	106,865	$6,104,331	11.10%	0.10%
$100,000 to $250,000	145,023	$24,100,652	15.10%	0.30%
$250,000 to $500,000	126,027	$45,284,628	13.10%	0.60%
$500,000 to $1,000,000	121,775	$86,165,220	12.70%	1.10%
Small Business Subtotal	**647,090**	**162,439,371**	**67.40%**	**2.10%**
$1,000,000 to $2,500,000	137,559	$219,076,744	14.30%	2.80%
$2,500,000 to $5,000,000	73,809	$259,165,989	7.70%	3.30%
$5,000,000 to $10,000,000	42,293	$297,656,068	4.40%	3.80%
$10,000,000 to $50,000,000	45,979	$954,027,758	4.80%	12.20%
$50,000,000 to $100,000,000	7,111	$497,301,653	0.70%	6.40%
$100,000,000 to $250,000,000	3,741	$557,800,877	0.40%	7.10%
$250,000,000 or more	2,167	$4,862,482,246	0.20%	62.30%
Total Active Corporations	**959,749**	**7,809,950,706**	**100.00%**	**100.00%**

Source: Calculations based on IRS, RETURNS OF ACTIVE CORPORATIONS, Table 5--Selected Balance Sheet, Income Statement and Tax Items, by Sector, by Size of Business, Tax Year 2012. All figures are estimates based on samples.

Given the challenges facing the would-be tax evader, in contrast to the federal income tax system currently in place in the U.S., the opportunities to evade the fair tax will involve significant transactions costs. As the reader can observe, these transaction costs are the heart of the framework developed above. The extent of successful evasion, especially if the FairTax statute includes non-trivial fines and other consequences for detected Fair tax evaders, will elevate the effective total transactions costs to an extent that makes evasion largely impractical. Indeed, the State of California Board of Equalization (BOE) has found sales tax evasion to be minimal (California State Board of Equalization, 2014; 2016). In particular, the BOE found that more than 98 percent of California businesses are operating with the correct permits. Noncompliance contributes to more than $2 billion in uncollected sales and use taxes that make up part of the state's "tax gap" – the difference between the amount of taxes owed and the amount paid, negatively impacting all state taxpayers. Of all the sales and use tax revenue, 93% comes from voluntary compliance, 2% comes from compliance activities (audits, collections,

etc.), and 5% goes unreported and/or unpaid[12]. This means that although 98% of California sellers have the correct permits, total sales and use taxes paid in California amount to 95% of taxes owed.[20]

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Appendix 1

Appendix 1 – Unit Root Test Results

Tables 1A and 1B provide unit root tests that affirm that the AGI Gap data in Ledbetter (2004; 2007) are non-stationary for the periods 1959-2005 and 1959-2001. This series is also non-stationary for the period following the enactment of the Tax Reform Act of 1986 [enacted in October, 1986), which altered the definition of adjusted gross income (AGI).Table 2: Tests for Stationarity/Unit Root, BEA Series, in Levels

Table 1A.

Null Hypothesis: AGI_GAP_BEA has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.940173	0.7665
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

*MacKinnon (1996) one-sided p -values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(AGI_GAP_BEA)
Method: Least Squares
Date: 11/23/16 Time: 11:28
Sample: 1959 2005
Included observations: 47

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AGI_GAP_BEA(-1)	-0.077677	0.082620	-0.940173	0.3521
C	0.937609	0.918271	1.021059	0.3127

R-squared	0.019264	Mean dependent var	0.080851
Adjusted R-squared	-0.002530	S.D. dependent var	0.774495
S.E. of regression	0.775474	Akaike info criterion	2.370937
Sum squared resid	27.06121	Schwarz criterion	2.449667
Log likelihood	-53.71702	Hannan-Quinn criter.	2.400564
F-statistic	0.883925	Durbin-Watson stat	1.710205
Prob(F-statistic)	0.352149		

Appendix 2 Tables

Table 1. CPI and Inflation, 1986-2015

Year	CPI	Inflation (%)
1986	109.6	
1987	113.6	3.650
1988	118.3	4.137
1989	124.0	4.818
1990	130.7	5.403
1991	136.2	4.208
1992	140.3	3.010
1993	144.5	2.994
1994	148.2	2.561
1995	152.4	2.834
1996	156.9	2.953
1997	160.5	2.294
1998	163.0	1.558
1999	166.6	2.209
2000	172.2	3.361
2001	177.1	2.846
2002	179.9	1.581
2003	184.0	2.279
2004	188.9	2.663
2005	195.3	3.388
2006	201.6	3.226
2007	207.3	2.848
2008	215.3	3.840
2009	214.5	-0.356
2010	218.1	1.640
2011	224.9	3.157
2012	229.6	2.069
2013	233.0	1.465
2014	236.7	1.622
2015	237.0	0.119
Average Inflation Rate from 1987-2015		**2.703%**

Source: BLS, Consumer Price Index; All Urban Consumers; Series Id: CUUR0000SA0; U.S. city average, Base Period: 1982-1984 = 100; All items

Table 2. GDP and GDP Growth Rate, 1986-2015

Year	GDP in billions of current dollars	GDP growth rate
1986	4,590.2	
1987	4,870.2	6.100
1988	5,252.6	7.852
1989	5,657.7	7.712
1990	5,979.6	5.690
1991	6,174.0	3.251
1992	6,539.3	5.917
1993	6,878.7	5.190
1994	7,308.8	6.253
1995	7,664.1	4.861
1996	8,100.2	5.690
1997	8,608.5	6.275
1998	9,089.2	5.584
1999	9,660.6	6.287
2000	10,284.8	6.461
2001	10,621.8	3.277
2002	10,977.5	3.349
2003	11,510.7	4.857
2004	12,274.9	6.639
2005	13,093.7	6.671
2006	13,855.9	5.821
2007	14,477.6	4.487
2008	14,718.6	1.665
2009	14,418.7	-2.038
2010	14,964.4	3.785
2011	15,517.9	3.699
2012	16,155.3	4.108
2013	16,691.5	3.319
2014	17,393.1	4.203
2015	18,036.6	3.700
Average GDP growth rate 1987-2015		**4.850%**

Source: Bureau of Economic Analysis, Last Release Dec 22, 2016. Data for fourth quarter of 2016 are missing.

Table 3. AGI Gap and AGI Gap Growth Rate, 1986-2005

Year	AGI Gap Amount	AGI Gap % GR
1986	371.5	
1987	347.3	-6.514
1988	328.9	-5.298
1989	393.3	19.580
1990	393	-0.076
1991	392.3	-0.178
1992	462.9	17.996
1993	522.1	12.789
1994	566.2	8.447
1995	570.4	0.742
1996	608.5	6.680
1997	608.1	-0.066
1998	704.2	15.803
1999	698	-0.880
2000	760	8.883
2001	834.4	9.789
2002	943.2	13.039
2003	1027.8	8.969
2004	1097.6	6.791
2005	1285.9	17.156

Average AGI Gap GR from 1987-2005 = 7.034%

Sources: BEA; Ledbetter (2004; 2007)

Appendix 3

Federal Tax Revenues Projected in CBO's January 2017 Baseline

Federal Tax Revenues Projected in CBO's January 2017 Baseline

Billions of Dollars

	Actual, 2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Total 2017-2026
Individual Income Taxes	1,546	1,651	1,781	1,871	1,957	2,052	2,148	2,249	2,355	2,470	2,590	22,671
Payroll Taxes	1,115	1,150	1,190	1,230	1,265	1,312	1,364	1,417	1,468	1,525	1,583	14,618
Corporate Income Taxes	300	320	340	352	382	377	381	385	396	408	422	4,063
Other	306	283	293	280	274	278	284	295	308	322	336	3,258
Total	3,267	3,404	3,604	3,733	3,878	4,019	4,176	4,346	4,527	4,724	4,931	44,609

Source: Congressional Budget Office.