The Mortgage Interest Deduction Lessens the Ability to Conduct Monetary Policy

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Abstract
The U.S. tax code’s Mortgage Interest Deduction (MID) allows tax filers to reduce their taxable income by the amount of interest paid on their mortgages. In this article, we study a previously unknown negative externality of the MID: that it curtails the ability of the Federal Reserve to conduct monetary policy. A contractionary increase (decrease) in the Federal Funds Rate triggers expansionary (contractionary) fiscal policy through an increase (decrease) in MID spending. We find strong evidence that a portion of the 2.5% total reduction of the federal tax system’s role as an automatic stabilizer caused by the MID is explained by its mechanical link with monetary policy.


Keywords: Monetary Policy, Progressive Taxation, Mortgage Interest Deduction, Tax Expenditures, Automatic Stabilizers, Federal Funds Rate.

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1 Introduction

The federal government “spends” through the tax code by exempting certain economic activities from taxation. Many of these “tax expenditures” are designed to influence individual behavior (Poterba, 2011). The largest single policy of this type allows tax filers to write off the interest paid on mortgage payments. In theory, this “Mortgage Interest Deduction” (MID) increases social welfare via the positive externalities created through broadening access to homeownership (Glaeser and Shapiro, 2003; Dynarski and Shefrin, 1985). Homeownership is associated with lower crime rates (Hoff and Sen, 2005), increased voter turnout (Besley and Case, 1995), higher participation in local neighborhood activities (Fischel, 2001), and higher levels of investment in education (Green and White, 1997; Boehm and Schlottmann, 1999).

However, widespread concern exists over whether MID expenditures could be better spent elsewhere (Cole et al., 2011; Anderson et al., 2007; Berkovec and Fullerton, 1992). Undisputably, the evidence shows the MID disproportionately benefits America’s high income homeowners (Glaeser and Shapiro, 2003). Furthermore, research suggests that the MID does not incentivize homeownership at all (Hilber and Turner, 2014; Follain and Ling, 1991; Rosen et al., 1984) but merely incentivizes the purchase of more expensive homes (Poterba and Sinai, 2011; Martins and Villaneuva, 2006; Maki, 2001). Finally, we recently showed that the regressive nature of the MID has the undesirable property of reducing the federal tax system’s role as an automatic stabilizer (Kingi and Rozema, 2015). The MID thus reduces the progressivity of the tax system without achieving its primary goal of increasing homeownership. Even though the regressive nature of the MID should be viewed within the wider context of fiscal and monetary policy, most discussions usually revolve narrowly around distributional concerns (Rosen, 1985) and its role in fiscal policy (Kingi and Rozema, 2015). To the best of our knowledge, no research examines the implications of the regressive nature of the MID on monetary policy.

In this article, we investigate the consequences of the MID on the conduct of monetary policy. In theory, a change in the federal funds rate (FFR) is reflected in a change in mortgage interest rates, which in turn alters mortgage interest payments through both preexisting variable rate mortgages and future fixed rate mortgages. This relationship creates a mechanical link between fiscal and monetary policy that has potentially large ramifications for the conduct of monetary policy. A contractionary increase in the FFR, for example, will trigger expansionary fiscal policy through an increase in MID spending. However, incorporated within the simple mechanical story is a number of implicit assumptions about the institutional arrangement of the mortgage market and the behavior of mortgage holders and lenders. Among other things, it assumes that (i) mortgage interest payments vary with the prevailing market interest rates, (ii) home purchasing and refinancing decisions are unaffected by prevailing interest rates, and (iii) the portion of tax payers who itemize deductions and can thus claim the MID is orthogonal to the aggregate economy.

Our main contribution is to introduce and provide evidence of the existence of the relationship of the MID and the ability of the Federal Reserve to conduct monetary policy. To our knowledge, this is an entirely novel idea. We show that the MID dampens the effectiveness of monetary policy by decomposing the destabilizing effect of the MID set out by Kingi and Rozema (2015) into its two distinct channels. First is the direct effect through fiscal policy that we will refer to as the “MID’s automatic destabilizer”: as aggregate income increases
and people shift to higher marginal tax rates, their mortgage deduction increases, thereby reducing the increase in aggregate taxes. Second is the indirect effect through its link with monetary policy and what we call the “MID’s monetary policy obstructer”: total mortgage interest payments fluctuate with the federal funds rate. Using administrative data from the Internal Revenue Service (IRS) and data from the Survey of Consumer Finances (SCF), we find strong evidence that of the 2.5% total reduction of the federal tax system’s role as an automatic stabilizer caused by the MID, a portion is explained by its mechanical link with monetary policy. As no other current or past substantial tax expenditure policy is related to the FFR in this way, this link is unique to the MID.

We begin our analysis on the MID-monetary policy relationship by investigating whether the theoretical link between MID-eligible mortgage interest household spending and monetary policy holds true. We show that while forces exist that could potentially violate these assumptions, the aggregate relationship remains strong. The correlation between the FFR and the size of MID-eligible mortgage interest payments is striking (above 0.5), as suggested below in Figure 1. We then investigate the relationship between estimated MID expenditures and the FFR directly, which—even given the strong relationship between the FFR and MID spending—is not immediately obvious because marginal tax rates are usually lower in recessions. The evidence suggests that the mechanical effect of the FFR clearly dominates any offsetting behavioral or institutional effects.

[Insert Figure 1 about here]

Our findings suggest the attractiveness of the MID, both politically and as a means to increase social welfare, should also be analyzed in light of its relationship with monetary policy. Our findings have particularly novel implications for monetary policy. As any monetary policy regime must crucially depend on the automatic stabilizers built into the economy, its effectiveness necessarily depends on the effectiveness of an economy’s automatic stabilizers. In essence, monetary policy has to do “less work” in an economy with strong automatic stabilizers. With this in mind, it is worth emphasizing that the task of coordinating fiscal and monetary policy usually rests in the hand of the fed because whereas the tax code acts automatically and changes only in the long term the fed is not automatic and acts in the short term. The idea that monetary policy must respond only to the residual fluctuations left over after the built in stabilizers. What is new is that monetary policy causes changes in the size of the tax code’s automatic stabilizing effect through it’s link with the size of the aggregate MID. In this light, an important part of the assessment of the desirability of the MID lies in knowing the magnitude of the change in MID spending with the business cycle. Our paper makes a first attempt at measuring how MID spending correlates with monetary policy.

The paper proceeds as follows. Section 2 provides an extensive background and literature review. Section 3 describes the data and the mortgage deduction in more detail. Section 4 provides the empirical methodology and the results. We conclude in section 5.
2 Background

Our research lies at the intersection of research on tax expenditures and the interaction between monetary and fiscal policy. To make the connection between MID expenditures and the Federal Reserve’s ability to stabilize the economy through the conduct of monetary policy, this section provides a brief background of these fields. First we describe the interaction between monetary and fiscal policy and the workings of monetary policy as it relates to the MID. We then turn to a discussion of the MID literature, mainly focusing on the issues with estimating the size of MID tax expenditures.

2.1 Interaction of Monetary and Fiscal Policy

Modern governments achieve macroeconomic objectives primarily through monetary and fiscal policy. Monetary policy describes the actions of the Federal Reserve whose primary objective is to stabilize fluctuations in the aggregate economy. Fiscal policy refers to taxation and direct spending decisions made by the federal government. Although fiscal policy also aims in part to stabilize the economy, it has a more far-reaching agenda than monetary policy, encompassing matters that range from social security to national defense. The respective goals of fiscal and monetary policy can therefore diverge. Furthermore, the Federal Reserve has operational independence, which means that monetary policy is not constrained by fiscal issues.\footnote{The 1951 Treasury Federal Reserve Accord granted operational independence to the Federal Reserve (Hetzel and Leach, 2001).} Indeed, the premise for central bank independence rests in exactly this idea. By removing short term political motives and political business cycles (Grkaynak et al., 2010; Alesina and Summers, 1993; Drazen, 2000; Kydland and Prescott, 1977; Kramer, 1971; Drazen, 2000), an independent central bank is able to successfully pursue policies that are politically unpopular yet in the public interest.

To achieve a cohesive program of macroeconomic policies, monetary policy must be coordinated with fiscal policy to ensure their respective goals do not conflict. As Canzoneri et al. (2010) put it: “Monetary policy alone does not provide the nominal anchor for an economy.” The economics literature on the explicit coordination of fiscal and monetary policies began with Sargent and Wallace (1981). Since then, a fairly wide range of research has investigated the joint determination of optimal fiscal and monetary policies (Lucas and Stokey, 1983; Leeper, 1991; Gal and Monacelli, 2005; Erceg et al., 2000).

The primary way that fiscal policy stabilizes the economy, and therefore complements monetary policy, is through automatic stabilizers. Automatic stabilizers are the elements of fiscal policy that work to reduce fluctuations in the business cycle without any discretionary action on behalf of the government. They are the laws and regulations that make fiscal revenues and outlays relative to total income change with the business cycle. They are large, estimated by the Congressional Budget Office (2013) to account for $386 of the $1089 billion U.S. deficit in 2012.

The personal income tax system is the classic example of an automatic stabilizer. It is well known that the progressive personal income tax system works to reduce fluctuations

\footnote{Political business cycles are when expansionary policies are pursued prior to an election, which are then offset by post-election contractionary policies.}
in the aggregate economy by: (1) stabilizing within household income from year to year,\(^3\) (2) altering the marginal returns from working over the business cycle,\(^4\) and (3) stabilizing between household income within a year through redistribution.\(^5\) Through these three channels, the revenue raised by the progressive income tax system falls by more than income during a recession, and therefore complements the stabilization role of monetary policy.

Theoretical work on the effectiveness of automatic stabilizers began with Musgrave and Miller (1948). But despite the design of better automatic stabilizers being one of the promising routes for better macroeconomic policy (Blanchard et al., 2010), the role automatic stabilizers play on the aggregate economy has received very little attention in the literature in the past few decades (Blanchard, 2006). Research on the effectiveness of automatic stabilizers should be contrasted with the large literature analyzing the effects of fiscal policy on the aggregate economy (Mertens and Ravn, 2013; Barro and Redlick, 2011; Ramey, 2011; Romer and Romer, 2010; Burnside et al., 2004; Blanchard and Perotti, 2002; Fatas and Mihov, 2001). Due to econometric considerations, this latter literature tends to focus on exogenous changes in fiscal policy, which are, by definition, independent of the business cycle and in this sense looks at changes in fiscal policy that are not relevant to the potential stabilizing role of government spending and taxes.

The basic coordination objective for monetary and fiscal policy is to align interest rates with stated macroeconomic goals given the automatic stabilizing effect of the progressive personal income tax system. Until recently, empirical work has largely ignored interactions of fiscal and monetary policy. A small but growing literature has begun incorporating the influence of monetary policy on the effect that fiscal policy has on aggregate activity. The International Monetary Fund (2010) explores the interaction between monetary and fiscal policy using cross-country evidence of fiscal consolidation over the past 30 years. They find that for each one percent of GDP of fiscal consolidation, interest rates usually fall by about 20 basis points after two years. Christiano et al. (2011) and Woodford (2011) show that the effects of changes in government spending are much larger when monetary policy is constrained at the zero-lower bound because the rise in output and expected inflation that accompanies increases in government spending are not muted by the usual monetary policy response. Romer and Romer (2014) suggest that the quantitative response of the macro economy to changes in fiscal policy depends crucially on the reaction of monetary policy. They find that increases in Social Security benefits lead to much smaller and less persistent increases in consumption relative to similar sized decreases in taxes, which is explained by the differing response of monetary policy. The idea is that the FFR responses quickly to benefit increases but slowly to tax changes (usually with little movement within a year).

This growing literature is limited to studying the effects of monetary policy on fiscal policy, and not vice versa. We think the reason is quite simple: the Federal Reserve acts in the short run with full information on fiscal policy; thus, monetary policy is completely

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\(^3\)The progressive nature of marginal tax rates reduces fluctuations in disposable income, thereby stabilizing consumption and aggregate demand (Brown, 1955).

\(^4\)Workers are incentivized to substitute work effort away from booms and into recessions when faced with tax rates that rise in expansionary periods and fall in recessionary periods (Christiano, 1984).

\(^5\)If low income households have higher propensities to spend than high income households, redistribution from high to low-income households means that aggregate consumption and demand will rise with redistribution during recessions (Blinder, 1975).
endogenous to fiscal policy. As a result, any study of the “effects of monetary policy on fiscal policy” is really about discovering connections between fiscal and monetary policy unknown to the Federal Reserve. Indeed, the monetary policy literature acknowledges there is uncertainty in the conduct of monetary policy and the economy in general, so all this type of research would be doing is helping to resolve some of the uncertainty faced by the Federal Reserve. Even though it is well known that regressive tax policies such as the MID or the Charitable Contributions Deduction reduce the ability of the tax system to act as an automatic stabilizer and are thus “destabilizing”, to our knowledge no one has ever considered mechanical links between monetary and fiscal policy, and in particular the unique link between the MID and monetary policy caused by its link with the FFR. As such, we briefly present the institutional framework for which to analyze how MID impacts the fed’s ability to stabilize the economy through monetary policy.

Section 2A of the Federal Reserve Act specifies that monetary policy should attempt to maximize employment, promote stable prices, and moderate long-term interest rates. These multiple mandates mean that the Federal Reserve is not officially an inflation targeting central bank, although it is in practice (at least for the time period in our study) (Svensson, 2010; Blanchard and Gali, 2007; Clarida et al., 1999). And even though the Federal Reserve has many monetary policy tools at its disposal, the primary instrument in practice is the FFR, the target for which it sets eight times per year at the Federal Open Market Committee (FOMC) meetings. Thus, the fed more or less uses one instrument (manipulating the FFR) to achieve one goal (an inflation target).

The FFR is the interest rate at which banks borrow from each other. Bank borrowing is necessary to maintain the Federal Reserve Requirement—a delegated amount of money holdings that a bank must keep on hand each night. The Federal Reserve does not directly mandate the FFR, however. Instead, it achieves targets through open market operations such as the buying and selling of securities to commercial banks. These open market operations influence the FFR by changing the amount of bank reserves in the economy. In order to increase the FFR, for example, the Federal Reserve will sell securities, thereby decreasing the reserves held by banks. Accordingly, a higher FFR arises to induce banks to lend. After an increase in the FFR, any loans the banks make will be at a higher rate because they themselves are borrowing money at a higher rate. It is through this channel that changes in the FFR, and therefore monetary policy, ultimately affect the mortgage interest rate and behavior of individuals within the economy more generally. To shed some light on how much a change in the FFR leads to a change in mortgage interest rates, Figure 2 plots the FFR and the prevailing mortgage interest rate for both Fixed Rate Mortgages (FRM) and Adjustable Rate Mortgages (ARM). We will discuss the FRM and ARM and how mortgage interest rates relate to MID tax expenditures in more detail in the next section, but for now note the strong correlation between the FFR and mortgage interest rates as seen in Figure 2.

[Insert Figure 2 about here]
2.2 Measuring Tax Expenditures

The MID literature is two sided. One side investigates the benefits of the MID, i.e., examines the effects of housing subsidies on homeownership and housing consumption.\(^6\) Empirical work on the choice between renting and owning focuses on the concept of the “user cost” of housing, which integrates into a single measure the various components of housing costs (Poterba, 1984, 1992). This conceptual framework examines the overall effect of various tax provisions on the cost of housing services (Rosen, 1979, 1985; Green and Vandell, 1999; Glaeser and Shapiro, 2003; Himmelberg et al., 2005). The general findings are that housing subsidies have very little effect on homeownership (Glaeser and Shapiro, 2003; Hilber and Turner, 2014).\(^7\)

The other side of the MID literature addresses the seemingly more basic question about the costs of the MID in terms of the federal budget. Typically, research on the costs of the MID takes place within the broader context of estimating tax expenditures more generally. This fairly large literature attempts to quantitatively estimate the size of provisions of the tax code, including the MID, and the fiscal costs and benefits of reforming them. Because one of our main contributions is to propose and implement a procedure that essentially includes estimating the size of tax expenditures, in this section we describe what is exactly meant by a tax expenditure, discuss the methods used to estimate the size of tax expenditures, and lay out the complications that arise in defining and measuring tax expenditures.

In the sense that there ought to be little difference between giving an individual $10 and reducing that individual’s tax bill by $10, tax expenditures and direct government expenditures are considered to be economically equivalent. This was recognized as early as 1967 when Stanley Surrey, then Assistant secretary of the US Treasury for Tax Policy, compiled a list of concessions in the income tax code that had the nature of expenditure programs.\(^8\) The motivation behind this was to subject spending programs administered through the tax code to the same scrutiny as direct expenditures.

Unfortunately, the measurement of tax expenditures is much more complex than that of direct expenditures, which can be measured using standard accounting methods. A tax expenditure is defined as “those revenue losses attributable to provisions of the Federal tax laws which allow a special credit, a preferential rate of tax, or a deferral of tax liability” (Congressional Budget and Impoundment Act of 1974). Tax expenditures are deviations from the “normal” tax base. Estimating a tax expenditure amounts to estimating the change in federal income tax revenue caused by the hypothetical elimination of a provision in the tax code. The provision must therefore be classified as a divergence from some “normal” income tax system, which is not defined by the Budget Act. The size and distribution of individual tax expenditures can therefore be affected both by changes to that specific tax expenditure’s

\(^6\)Early research on the MID is reviewed by Rosen (1985) and Glaeser and Shapiro (2003) provide a more recent review.

\(^7\)Glaeser and Shapiro (2003) use time series and cross-state evidence to show that there is little connection between the size of the subsidy and the level of homeownership. Hilber and Turner (2014) find that the MID has no statistically significant impact on homeownership attainment in aggregate. They also find that to the extent that the MID does affect decisions on an individual level, it does so in places where the positive externalities of homeownership are minor.

\(^8\)The first tax expenditure budget report was issued in 1968 by the U.S. Department of the Treasury, although the annual publication of such a list was not required until the Congressional Budget and Impoundment Control Act of 1974, which established the modern Congressional budget-making process. See the introduction of Altshuler and Dietz (2011) for a brief history of U.S. tax expenditures.
rules as well as changes to the definition of the normal tax baseline. Tax expenditures are an inherently relative concept.

The Congressional Joint Committee on Taxation (JCT) and the U.S. Department of the Treasury Office of Tax Analysis (OTA) each produce a list of tax expenditures every year. Even among these official estimates, the normal tax baselines differ, and indeed the OTA currently uses two baselines. In addition to the sensitivity of tax expenditures to the baseline normal tax code, the literature gives many other reasons for why tax expenditure estimates should be treated with caution.

Perhaps the biggest reason is that the official estimates are of a “static” nature in the sense that they assume no change in economic behavior as a result of the hypothetical elimination of a tax provision. In other words, the methods of calculating tax expenditures punt on the difference between marginal impacts (“changes in behavior the government hopes to encourage through a given tax incentive”) and inframarginal impacts (“tax breaks the government gives to those whose behavior is not changed by a new tax policy”). Thus, tax expenditure estimates do not measure the revenue that would be gained by eliminating that provision (Burman et al., 2008). Given that tax expenditures are precisely designed to alter economic behavior, this assumption is likely to have a large impact on the accuracy of the estimates. If, as expected, the repeal of the MID would reduce the size of outstanding mortgage debt, static estimates are likely to overestimate the size of tax expenditures. Poterba and Sinai (2011) estimate that repealing the mortgage interest deduction in 2003 would have raised federal and state income tax revenues by $72.4 billion in the absence of any household portfolio adjustments, but by only $58.5 billion if homeowners drew down financial assets to pay down their mortgage debt. With lower asset holdings, income generated from those assets would decrease, which would offset some of the gain in tax revenue from eliminating the MID. Follain and Melamed (1998) estimate that the increase in federal tax revenues after allowing for adjustments in borrowing patterns would be only 25 percent of the no response estimate, Gervais and Pandey (2008) suggest that it would be 58 percent, and Gale, Gruber, and Stephens-Davidowitz (2007) conclude that it would be 84 percent. These estimates differ largely because they are based on different assumptions about the set of assets used to repay mortgages and the rates of return that households earn on these assets.

Tax expenditure estimates also crucially depend on the presence of other tax expenditures. As will be explained in the next section, the procedure for estimating tax expenditures essentially consists of running taxpayers through a tax calculator under the baseline normal tax structure with and without the tax provision and comparing tax revenues. This implicitly incorporates tax filing behavior. Consider a tax payer that would not itemize her deductions in the absence of the MID. Removing the MID would then cause this individual to claim the standard deduction. The alternative minimum tax has a similarly distortionary effect, although

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9 See Althshuler 2011, section D1, for an example. To streamline the filing of many tax returns and to reduce the need for record keeping, the Code has adopted the standard deduction §62, which allows all tax filers the option to subtract from adjusted gross income an amount that only depends on the number of dependents. If a tax filer claims the standard deduction, all personal deductions are forgone, including the MID. Thus, in determining taxable income, tax filers who itemize subtract these personal deductions from adjusted gross income but tax filers claiming the standard deduction do not. Tax filers that claim the standard deduction cannot technically write off mortgage interest, but always have the option to not claim the standard deduction. Those tax filers who do not claim the standard deduction are said to itemize deductions. Itemizing deductions simply means that the tax filer can reduce from adjusted gross income amounts paid for various expenditures,
Finally, tax expenditures may not simply be summed to come up with a tally of the cost of the web of tax expenditures as a whole because there are potentially significant interactions among the different tax provisions. For example, the cost of the MID and the deduction for state and local taxes is less than the sum of the two estimates. If either tax preference were eliminated, many fewer taxpayers would itemize deductions, making the value of the second tax preference significantly smaller. The bottom line is that the sum of tax expenditures provides very little information about the cost of tax expenditures as a whole to the federal government.

However, it not obvious in which direction the interaction between the various tax expenditures changes the results. For example, Burman et al. (2008) estimate the interaction between several tax expenditures. Using the TPC tax simulation model, they estimate that eliminating a large share of individual income tax expenditures would raise about 8 percent more revenue than the sum of individual estimates for each provision. The interactions among tax expenditure provisions tend to raise revenues mainly because eliminating some tax expenditures pushes taxpayers into higher marginal rate brackets, raising the revenue gain from eliminating additional ones. The gain from eliminating all itemized deductions, however, is less than the gain from the sum of separate provisions because, as itemized deductions are removed, more taxpayers switch to the standard deduction, reducing the incremental gain from eliminating additional deductions.

3 Data and Descriptive Statistics

The Treasury Department’s Internal Revenue Service (IRS) administers the United States tax laws, which set forth the calculation of tax liability. These returns contain information on income from whatever source derived and the amount MID-eligible mortgage interest paid. With the universe of U.S. tax returns, the IRS releases aggregate yearly statistics for each reduction in tax liability broken down by income. These data are called the Statistics of Income (SOI). In this article, we use data on mortgage interest paid and claimed as an itemized deduction and other information from the yearly SOI from 1980 to 2012. This section presents descriptive statistics of these data and demonstrates the workings of the MID and the growth of its size and who has benefited from it over time in terms of income groups.

In the previous section, we explained that only itemizers are allowed a MID and so not all mortgage interest paid is technically eligible for the MID and is thus not reported to the IRS. Consequently, the SOI only contains data on mortgage interest paid that is eligible for the MID. Because itemizing deductions is a filter for claiming the MID, the natural starting point for an empirical analysis of the MID is how the portion of tax filers who itemize change over time and over the income distribution. Figure 3 is a range plot with area shading that shows the number of tax filers and total monetary value of deductions over time broken down into those claiming the standard deduction, those itemizing deductions, and those claiming the MID deduction, where the left hand side panel is the number of tax filers and the right hand side panel is the real total deductions in 2011 dollars. The left hand side figure shows that

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including mortgage interest and charitable contributions.
the around one third of all tax filers itemize, and that only about a fairly small portion of the itemizers do not claim the MID (around one sixth). The right hand side figure shows that two thirds of all deductions in terms of spending come from those who itemize, and that of the itemizers about half spent are those who claim the MID. It also shows that the small portion of itemizers who do not claim the MID have larger other deductions relative to those who claim the MID, demonstrated by the fact that this small portion makes up about the same amount of total deductions as the MID. Together, the plots in Figure 3 strongly support the conventional wisdom that tax filers who itemize receive much larger tax deductions than those who claim the standard.

[Insert Figure 3 about here]

Figure 4 shows the percentage of tax filers who itemize deductions and the percentage of itemizers who claim the MID broken down by income, where the 95% confidence intervals captures the distribution for the particular income group over time. Referring to the right hand side of Figure 4, the steep rise in the percentage of itemizers starting at around $30,000 reflects the fact that the standard deduction is meant to streamline returns for tax filers with straightforward tax returns. The left hand side of Figure 4 shows that over half of all income groups that itemize claim the MID. This is unsurprising because these tax filers gave up the standard deduction for a higher amount of other personal deductions, the largest of which has historically been the MID.

Finally, Figure 5 shows the percentage of all tax filers who claim the MID by income, which is simply the product of the outcome measures of the right hand and left hand side plots in Figure 4. One somewhat surprising feature of Figure 5 is the high percentage of tax filers with income over $500,000 who still claim the MID. The fact that the percentage decreases after $500,000 is consistent with our priors because households with large incomes would be more likely to pay off mortgages. However, the decrease is less than one might expect, especially for yearly incomes of over one million. Figure 5 provides one measure that could perhaps be used to support the claim that the MID benefits the rich more than the poor: the percentage of tax filers who claim the MID clearly increases in income, at least in the income range in most arguments against the MID. Other perhaps better measures for this claim include aspects of the actual monetary benefits received, such as the average yearly benefit for each income group as a whole and the average yearly benefit conditional on claiming the MID. These measures naturally depend on the amount of total mortgage debt as well as the mortgage interest rate for that dept.

[Insert Figures 4 and 5 about here]

With an idea for the percentage of tax filers who itemize and claim the MID by income group, the next natural question is how these income groups differ in terms of average MID eligible mortgage interest paid. Figure 6 plots the average yearly tax filer MID-eligible mortgage interest paid by income along with error bars for one standard deviation, and Figure 7 plots the average yearly itemizer MID-eligible mortgage interest paid by income along with error bars for one standard deviation. These figures provide other measures of the claim that the rich benefit more from the MID. A final measure of the distributional benefits of the MID
is the total yearly spending by income group. Figure 8 plots the average total yearly spending by income group with error bars for one standard deviation. Indeed, Figure 8 does paint a slightly different picture in terms of the groups who benefit the most, but still shows that a small portion of high income individuals capture large benefits from the MID relative to low income households.

[Insert Figures 6, 7, and 8 about here]

Before we turn to describing our method of measuring the destabilizing effect of the MID, we end this section by presenting some evidence about the forces driving the change in MID expenditures over time. Figure 2 in the previous sections showed the cyclical nature of the mortgage interest rate (for both the FMR and VMR) that trend with the FFR, and showed that mortgage interest rates have typically been decreasing since the early 1990’s. These decreasing rates would push down total spending through the MID if total mortgage dept remained constant. To shed some light on how total mortgage dept has changed over time, we obtained U.S. aggregate mortgage dept per year from the Federal Reserve Economic Data. The left hand side panel of Figure 9 plots the nominal and real U.S. mortgage dept over time. One observes a drastic increase in total mortgage interest rate in the 1900s and 2000s from around about 2 trillion to its peak of 10 trillion in 2008. Note that this aggregate amount is for all tax filers, i.e., it includes mortgage dept for tax filers claiming the standard deduction and thus do not qualify for the MID. The right hand side panel of Figure 9 shows the total number of tax filers claiming the MID and the total amount of mortgage interest paid that is eligible for the MID, which shows more volatility than total mortgage dept. From 1980 to 2008, one observes an increase in both number of tax filers claiming the MID and the total government spending on the MID. Both the number of tax filers claiming the MID and the total government spending on the MID decrease after 2008. Given Figures 2 and 9, the change in MID spending over time is unclear. On the one hand, decreasing mortgage interest rates would push down total MID spending. On the other hand, the large rise in total mortgage dept pushes up total MID spending.

[Insert Figure 9 about here]

4 Methods and Results

The main goal of this article is to empirically investigate the relationship between MID expenditures and monetary policy. In doing so, we effectively examine the consequences of the MID on the ability of the Federal Reserve to stabilize the economy through monetary policy. Our analysis consists of two parts. First, we investiate whether deviations in estimated MID expenditures vary with the FFR. Next, we investigate whether the relationship between the MID’s automatic destableizer and the FFR. This latter analysis exploits the method in Kingi and Rozema (2015). There, we defined a destabilizing tax provision as one that “acts to propagate business cycle induced fluctuations in post-tax disposable income by preventing pre-tax income from being absorbed through the progressive tax system,” and set forth a method to measure the size of the destabilizing effect of a tax provisions.

10NBER recession bars to come.
4.1 Empirical Procedure

The simulation to construct the NTC usually relies on individual level data on income and the amounts of itemized deductions such as mortgage interest paid. We exploit aggregate IRS data to generate pseudo-individual level data. The basic idea is that we can use the binned AGI groups with corresponding average above the line deductions, below the line deductions, and mortgage interest paid to formulate a distribution of observations representing the mean tax filer deductions of particular AGIs. Our goal in constructing such data was to test the validity of the pseudo-individual level data in measuring the NTC by comparing our estimates with those in Auerbach (2009). As we will show, the difference in the NTC measure using the pseudo data and the actual data is rounding error, which is unsurprising considering that a large majority of the individuals driving the NTC measure are high income individuals who are represented fairly accurately in our data. The idea is that, as shown in section 3, nearly all high income households itemize deductions and claim the MID.

Our methodology of constructing the pseudo-individual level data is as follows. The IRS data contains aggregate tax and income information broken down by AGI groups. We use maximum likelihood estimation to fit a lognormal distribution to this aggregated data. We then divide each AGI group into several smaller bins and allocate individuals into each bin using the lognormal estimates, while maintaining the aggregate distribution of individuals across income groups. Figure 10 provides an example of the resulting pseudo-individual data for the year 2012. As can be seen, the procedure performs well in approximating a lognormal distribution, but the fact that we are constrained by the bins makes the distribution less than an entirely smoothed distribution.

The procedure above allocates individuals across AGI groups. However, further assumptions need to be made to allocate the other characteristics, such as MID payments and above the line deductions. For simplicity, we simply allocate the average within an AGI bracket to each simulated individual. Armed with simulated individuals, we proceed by attempting to reproduce the NTC measure in Auerbach (2009). We first obtain the total amount of taxes paid. We then add back each individuals statutory deductions to obtain gross income, and increase each persons gross income by 1 percent. We then remove the statutory deduction and calculate the total tax liability under this new higher counterfactual. This allows us to construct our version of the NTC, \( NTC_{MID>0} \). We then repeat the same exercise above, but this time we remove the ability of the individual to claim the MID. We refer to this NTC as \( NTC_{MID=0} \). The resulting estimates are presented in Figure 11. It shows that the effect of the MID is to shift the entire curve downward, which is to say that the ability of the tax system to absorb fluctuations in aggregate income is reduced by the MID. We call the vertical distance

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11We perform a number of robustness checks over the distribution type including a Pareto distribution and a Pareto lognormal distribution. Our main conclusions are not affected.

12For example, in 2012 there are 7,878,597 tax filers that reported an adjusted gross income of between $25k and $30k. Our pseudo data set still has 7,878,597 tax filers between $45k and $50k, but the number of people between $45k and $47.5k differ from the number of people between $47.5k and $50k according to their respective proportions as determined by the estimated lognormal distribution.
between each line in Figure 11 the Total Destabilizing Effect (TDE). Formally,

\[ TDE_{MID} = NTC_{MID>0} - NTC_{MID=0} \]

The time series for the TDE is given in Figure 12. The TDE encapsulates both of the destabilizing channels discussed in section 2. However, the short term fluctuations in the TDE appear to be driven by fluctuations in the federal funds rate, as shown in Figure 12. We capture this correlation more formally by measuring it directly, and find that the time series have a correlation of over 0.15. Even though this is less than the correlation of over 0.5 between MID-eligible mortgage interest paid as seen in Figure 1, it is still somewhat strong considering all the counteracting forces at work, as described in the introduction. The destabilizing effect of the MID is always present, but its magnitude is highly correlated with the level of the federal funds rate. The extent to which the MID destabilizes the economy is determined by monetary policy, and works in the opposite direction to the intention of monetary policy. We do not find this effect for other tax deductions, as can be seen in the online appendix. Our finding therefore reinforces the view that of all tax expenditure, the MID is the most troubling for the conduct of monetary policy.

5 Conclusion

The MID reduces the progressivity of the tax system without achieving its primary goal of increasing homeownership. Widespread concern exists over whether expenditures on tax policies such as the MID and the CCD could be better spent elsewhere (Cole et al., 2011; Anderson et al., 2007; Berkovec and Fullerton, 1992). One of the main arguments is that a more progressive tax system resulting from the repeal of the tax provisions is better because of higher redistribution. However, it is not obvious to us that the regressive nature of the tax deductions is necessarily an undesirable feature, as is largely assumed in the literature. Insomuch that social welfare has the potential to be enhanced by altering the structure of the progressiveness of the tax code, from the standpoint of an overall redistribution policy regressive tax policies must be viewed in light of the overall progressiveness of the tax code, not just the regressiveness of certain provisions. However, even though the regressive nature of the MID should be viewed within the wider context of fiscal and monetary policy, most discussions usually revolve narrowly around distributional concerns (Rosen, 1985) and it’s role in fiscal policy (Kingi and Rozema, 2015). To the best of our knowledge, no research examines the implications of the regressive nature of the MID on monetary policy.

In this article, we investigate the consequences of the MID on the conduct of monetary policy. In theory, a change in the federal funds rate (FFR) is reflected in a change in mortgage interest rates, which in turn alters mortgage interest payments through both preexisting variable rate mortgages and future fixed rate mortgages. This relationship creates a mechanical link between fiscal and monetary policy that has potentially large ramifications for the conduct of monetary policy. A contractionary increase in the FFR, for example, will trigger expansionary fiscal policy through an increase in MID spending. We find strong evidence for the presence of this relationship.
Our findings are relevant in the policy debate about what to do with regressive tax deductions. The evidence supporting how the MID impacts intended behavior suggests that restructuring marginal tax rates may be a better way of achieving desired overall redistribution rather than through the MID. Overall, reshaping the progressiveness of the tax code through distortive tax deductions is less efficient than reshaping it directly. Because little to no evidence suggests that tax deductions achieve their goal of inducing intended behavior, they need to be judged on other grounds Glaeser and Shapiro (2003). Our results are one aspect of those grounds. Taken at face value, our findings bolster the arguments for eliminating or at least reducing the size of the MID. However, the extent that our findings combined with what is known about the behavioral responses to the MID translate to social welfare is still premature. An interesting (and much needed) avenue for future research would be to depart from the economics literature that typically takes a neutral stance on the distributive element of the MID, and develop a framework to analyze the costs and benefits of the MID. It is our view that any assessment of the desirability of these tax deductions ought to take potentially destabilizing features into account.
References


Figures

Figure 1: Short Term Fluctuations in MID-Elgible Mortgage Interest and the FFR Over Time

Source: Own illustration. Data for the HMID spending was obtained from the IRS's SOI Tax Stats on Individual Tax Returns. Data for the monthly FFR was obtained from Board of Governors of the Federal Reserve System’s Historical Data. The short term fluctuation in MID-eligible mortgage interest paid in any year represents deviations from the five year moving average.

Figure 2: The Federal Funds Rate versus the Mortgage Interest Rate for Fixed Rate Mortgages

Source: Own illustration. Data for the monthly mortgage rates was obtained from the Federal Housing Finance Agency’s Monthly Interest Rate Survey. Data for the monthly FFR was obtained from Board of Governors of the Federal Reserve System’s Historical Data.
Figure 3: Breakdown of Tax Filers and Total Monetary Value of Deductions Over Time by Standard Deductions and MID Deduction

Source: Own illustration. Data was obtained from the IRS’s SOI Tax Stats on Individual Tax Returns.

Figure 4: Percentage of Tax Filers who Itemize Deductions and Percentage of Itemizers who Claim the MID by Income

Source: Own illustration. Data for the monthly mortgage rates was obtained from the Federal Housing Finance Agency’s Monthly Interest Rate Survey. Data for the monthly FFR was obtained from Board of Governors of the Federal Reserve System’s Historical Data.
Figure 5: Percentage of Tax Filers who Claim the MID by Income

Source: Own illustration. Data for the monthly mortgage rates was obtained from the Federal Housing Finance Agency’s Monthly Interest Rate Survey. Data for the monthly FFR was obtained from Board of Governors of the Federal Reserve System’s Historical Data.

Figure 6: Yearly Average Tax Filer MID by Income

Source: Own illustration. Data for the monthly mortgage rates was obtained from the Federal Housing Finance Agency’s Monthly Interest Rate Survey. Data for the monthly FFR was obtained from Board of Governors of the Federal Reserve System’s Historical Data.
Figure 7: Yearly Average Itemizer MID by Income

Source: Own illustration. Data for the monthly mortgage rates was obtained from the Federal Housing Finance Agency’s Monthly Interest Rate Survey. Data for the monthly FFR was obtained from Board of Governors of the Federal Reserve System’s Historical Data.

Figure 8: Total Yearly MID by Income

Source: Own illustration. Data for the monthly mortgage rates was obtained from the Federal Housing Finance Agency’s Monthly Interest Rate Survey. Data for the monthly FFR was obtained from Board of Governors of the Federal Reserve System’s Historical Data.
Figure 9: Total Mortgage Debt and MID Eligible Mortgage Interest Payers and Amount Paid Over Time

Source: Own illustration. Data on total mortgage dept obtained from Federal Reserve Economic Data. Data on the total MID eligible mortgage interest paid obtained from the IRS’s SOI.

Figure 10: Example of Simulated Distribution from Log Normal Parameters within AGI Bins

Source: Own illustration. Data for the HMID spending was obtained from the IRS’s SOI Tax Stats on Individual Tax Returns.
Figure 11: Auerbach Measure of Destabilizing Effect Over Time (Gross Income and AGI) and the FFR

Source: Left hand side is reproduced from Auerbach (2009). The right hand side is our own illustration. Data for the HMID spending was obtained from the IRS’s SOI Tax Stats on Individual Tax Returns. Data for the monthly FFR was obtained from Board of Governors of the Federal Reserve System’s Historical Data.

Figure 12: Auerbach Measure of Destabilizing Effect Over Time (Gross Income and AGI) and the FFR

Source: Own illustration. Data for the HMID spending was obtained from the IRS’s SOI Tax Stats on Individual Tax Returns. Data for the monthly FFR was obtained from Board of Governors of the Federal Reserve System’s Historical Data.
Figure 13: Total Destabilizing Effect (TDE) Over Time Against the FFR

Source: Own illustration. Data for the HMID spending was obtained from the IRS’s SOI Tax Stats on Individual Tax Returns. Data for the monthly FFR was obtained from Board of Governors of the Federal Reserve System’s Historical Data.
Figure 14: Total MID Spending and the FFR Over Time

Source: Own illustration. Data for the total MID spending was obtained from the IRS’s SOI Tax Stats on Individual Tax Returns. Data for the monthly FFR was obtained from Board of Governors of the Federal Reserve System Historical Data.
Tables

Table 1: Equation to Calculate Income Measures

<table>
<thead>
<tr>
<th>Equation</th>
</tr>
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<tr>
<td><strong>Gross Income</strong></td>
</tr>
<tr>
<td>( \text{Gross Income} )</td>
</tr>
<tr>
<td>(-) “Above the Line” Deductions</td>
</tr>
<tr>
<td>(=) <strong>Adjusted Gross Income</strong></td>
</tr>
<tr>
<td>(-) the Greater of</td>
</tr>
<tr>
<td>1. Standard Deduction</td>
</tr>
<tr>
<td>2. Itemized Deductions</td>
</tr>
<tr>
<td>3. Personal Exemptions</td>
</tr>
<tr>
<td>(=) <strong>Taxable Income</strong></td>
</tr>
<tr>
<td>(\times) Tax Rate</td>
</tr>
<tr>
<td><strong>Tax Liability</strong></td>
</tr>
<tr>
<td>(-) Credits</td>
</tr>
<tr>
<td>(+) Additional Taxes</td>
</tr>
<tr>
<td>(=) <strong>Final Tax Liability</strong></td>
</tr>
</tbody>
</table>
Table 2: Breakdown of AGI with the mean yearly Total Returns, mean yearly Total HMID, mean yearly percent claiming the HMID deduction, mean yearly HMID spending (in billions), and HMID spending by household.

<table>
<thead>
<tr>
<th>AGI</th>
<th>Total Returns (x1000)</th>
<th>HMID MID (x1000)</th>
<th>Percent Claiming (%)</th>
<th>HMID Spending ($ billions)</th>
<th>HMID Per HH All ($)</th>
<th>HMID Per HH Claiming ($)</th>
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<tr>
<td>&lt;5k</td>
<td>302.78</td>
<td>183.52</td>
<td>61.27</td>
<td>1.58</td>
<td>5074.47</td>
<td>8284.50</td>
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<tr>
<td>5k-10k</td>
<td>544.45</td>
<td>321.48</td>
<td>59.05</td>
<td>2.41</td>
<td>4362.57</td>
<td>7362.50</td>
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<tr>
<td>10k-15k</td>
<td>937.19</td>
<td>545.08</td>
<td>58.09</td>
<td>3.81</td>
<td>4035.49</td>
<td>6951.70</td>
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<tr>
<td>15k-20k</td>
<td>1229.28</td>
<td>773.84</td>
<td>62.90</td>
<td>5.38</td>
<td>4382.20</td>
<td>6997.66</td>
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<tr>
<td>20k-25k</td>
<td>1478.57</td>
<td>1025.07</td>
<td>68.96</td>
<td>7.05</td>
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<td>6977.80</td>
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<tr>
<td>25k-30k</td>
<td>1735.24</td>
<td>1254.94</td>
<td>72.03</td>
<td>8.62</td>
<td>4973.28</td>
<td>6958.11</td>
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<td>30k-35k</td>
<td>1992.05</td>
<td>1512.08</td>
<td>75.60</td>
<td>10.35</td>
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<td>35k-40k</td>
<td>2139.40</td>
<td>1666.08</td>
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<td>11.70</td>
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<tr>
<td>40k-45k</td>
<td>2200.41</td>
<td>1762.42</td>
<td>79.81</td>
<td>12.53</td>
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<td>7174.97</td>
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<td>45k-50k</td>
<td>2189.42</td>
<td>1783.07</td>
<td>81.19</td>
<td>13.13</td>
<td>5992.23</td>
<td>7417.05</td>
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<td>50k-55k</td>
<td>2170.25</td>
<td>1791.28</td>
<td>82.30</td>
<td>13.60</td>
<td>6258.20</td>
<td>7636.85</td>
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<td>55k-60k</td>
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<td>1802.87</td>
<td>84.16</td>
<td>14.05</td>
<td>6575.70</td>
<td>7837.63</td>
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<td>60k-75k</td>
<td>5854.57</td>
<td>4983.45</td>
<td>85.04</td>
<td>41.25</td>
<td>7020.62</td>
<td>8276.06</td>
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<td>75k-100k</td>
<td>7121.84</td>
<td>6145.12</td>
<td>86.37</td>
<td>57.48</td>
<td>7974.01</td>
<td>9235.78</td>
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<tr>
<td>100k-200k</td>
<td>8711.84</td>
<td>7477.04</td>
<td>85.54</td>
<td>89.54</td>
<td>10077.72</td>
<td>11770.76</td>
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<td>200k-500k</td>
<td>2660.05</td>
<td>1917.28</td>
<td>81.01</td>
<td>34.95</td>
<td>14614.14</td>
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<td>500k-1m</td>
<td>409.66</td>
<td>307.50</td>
<td>74.90</td>
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<tr>
<td>&gt;1m</td>
<td>226.76</td>
<td>149.90</td>
<td>66.10</td>
<td>4.69</td>
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<td>Overall</td>
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<td>74.5546</td>
<td>18.88608</td>
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