

## DOES CREDIT-CARD INFORMATION REPORTING IMPROVE SMALL-BUSINESS TAX COMPLIANCE?\*

Joel Slemrod, University of Michigan  
Brett Collins, Internal Revenue Service  
Jeffrey Hoopes, Ohio State University†  
Daniel Reck, University of Michigan  
Michael Sebastiani, Internal Revenue Service

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**Abstract.** Third-party information has greatly decreased tax underreporting, but substantial underreporting persists where third-party information is not present. We investigate the preliminary response of businesses filing a Schedule C to the introduction in 2011 of Form 1099-K, which provides the Internal Revenue Service (IRS) and taxpayers with information about small businesses' sales done by payment card and other electronic means. We find evidence that taxpayers with high prior noncompliance and/or sufficient use of electronic payment methods did adjust their behavior in response to the new information returns. Theory and distributional analysis isolate a subset of taxpayers who respond to information reporting by reporting receipts equal to or slightly exceeding the amount of receipts reported on 1099-K. Information reporting made these taxpayers much more likely to file Schedule C and, conditional on filing a Schedule C, increased their reported receipts by up to 24 percent. However, firms largely offset this change with increased reported expenses (an area not subject to information reporting), so that the overall effect on reported net taxable income was significantly smaller than would otherwise be expected without the increase in expenses.

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†Corresponding Author: Jeffrey L. Hoopes, 448 Fisher Hall, 2100 Neil Avenue, Columbus, OH, 43210. Phone: 614-688-8679. Fax: 614-292-2118.

## 1. Introduction

Data from randomized audits suggest that, in 2006, \$385 billion in taxes legally owed to the United States government were not remitted, amounting to about 14.5 percent of total tax payments required by the law (IRS, 2012).<sup>1</sup> To combat evasion, Congress has historically subjected various types of income to third-party information reporting, which dramatically increases compliance for those income types. In 2006, for example, 99 percent of wage and salary income subject to information reporting and withholding was, according to the IRS, properly reported and taxed, compared to an estimated 44 percent compliance rate for taxable income subject to little or no information reporting (IRS, 2012). While subjecting individual wage and salary income to information reporting by employers has proved successful at sustaining very high rates of compliance, tax enforcement for small businesses is more challenging. Small businesses often collect receipts in cash, keep poor or no records, have no external financial reporting requirements, and are closely held—all factors that can facilitate underreporting of tax liability.

In 2008, Congress enacted a law with the intent of improving business tax compliance. Starting in 2011, banks processing credit-card transactions and proprietors of third-party payment mechanisms, such as PayPal, were required to report to the IRS total receipts of businesses accepting these forms of payment, from customers using these forms of payment. These reports are made on a new information report called the Form 1099-K.<sup>2</sup> Policymakers anticipated that, armed with new information on the gross receipts of a firm, the IRS would be better able to enforce the tax law and that, knowing that their receipts were being reported to the

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<sup>1</sup> These numbers are not definitive due to the difficulty of measuring evasion, even using National Research Program randomized audits. Nevertheless, the numbers should give a sense of the order of magnitude of tax evasion in the United States.

<sup>2</sup> More information on the specifics of the Housing Assistance Act of 2008, which required 1099-K reporting, is provided in Section 2. A copy of the Form 1099-K for 2011 is provided in Figure 1.

IRS, taxpayers would voluntarily be more compliant. This paper provides the first evidence of the effects of this new policy on tax compliance.

The new informational requirement of Form 1099-K is part of a recent trend in the United States and elsewhere towards expanding third-party information reporting, providing the tax authority with relatively objective information from a third party that will enable them to increase the effectiveness of enforcement at low cost to the IRS (Lederman, 2010).<sup>3</sup> A number of informational returns are required to be furnished to the IRS, reporting income from, for example, dividends, stock sales, interest, and tuition reimbursement. There is a strong association between the amount of information reporting done on a type of income and the reporting compliance associated with that income (Feldman and Slemrod, 2007). Based on a field experiment in Denmark, Kleven et al. (2011) report that tax evasion for income subject to third-party reporting is nearly zero.

Whether expanded information reporting can increase compliance for the largest remaining components of the tax gap, such as sole proprietor income, remains an open question, which we examine in this paper. One cannot directly extrapolate from the experience of information reporting for wage income to the compliance impact of 1099-K. While taxpayers have little recourse to W-2 income reporting (other than to convince their employer to violate the law and pay them under the table, or to become a sole proprietor), small firms could respond to the Form 1099-K rules by continuing to underreport receipts not subject to information reporting under Form 1099-K, such as cash receipts, or by increasing reported expenses.<sup>4</sup>

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<sup>3</sup> Other options exist, such as expanding direct tax withholding and information reporting as was done in 1954 using Form W-2, or requiring increased information reporting directly from the taxpayer, as has recently been done on Schedule UTP (Towery 2014). Further, even more different approaches exist, such as the concept of “reverse withholding” explained in Soos (1990). Under reverse withholding, sellers of goods must remit tax in lieu of the purchasers’ income tax liability. Note that just because the cost of administration by the tax authority is low does not assure that the social cost is low, as compliance costs—borne in the first instance by taxpayers—may be relatively high.

<sup>4</sup> Firms could also stop accepting credit cards, incent cash payments by offering discounts for using cash or checks, or take action to avoid certain thresholds that trigger 1099-K reporting. We are limited by our data in our ability to detect these responses, but note that any such actions taken by firms would limit the impact of 1099-K.

We develop a theoretical model to capture these intuitions. Our model suggests two firm-level characteristics should govern whether and how much information reporting affects a firm's reporting behavior: (1) the firm's propensity to underreport prior to the introduction of information reporting, and (2) the share of the firm's receipts subject to information reporting. The model also predicts that the taxpayers most affected by the new information reporting under 1099-K will be those with receipts equal to or just above the amount reported by information reporting, and that increases in receipts will often be offset by increases in reported deductible expenses. Theory therefore provides some insights into how to examine the impact of the expanded information reporting; exactly how the Form 1099-K will change taxpayers' behavior remains an empirical question.

We examine newly available confidential data from the IRS consisting primarily of the contents of Form 1040, Schedule C, in which sole proprietors declare their business income and expenses, and Form 1099-K, in which payment-card companies and third-party network vendors report businesses' gross receipts to the IRS. The data range from tax years 2004 to 2012, giving us two years of data with 1099-K in place and seven years of data prior to its implementation.<sup>5</sup>

We analyze the data in several different ways to estimate the effect of 1099-K reporting on the behavior of Schedule C taxpayers. We first determine that aggregate time-series data of Schedule C filers do not exhibit any break in 2011. This is not surprising, given that 1099-K recipients comprise a small, although important, subset of the population of Schedule C filers. We then proceed with more disaggregated analyses selecting on whether a firm received a 1099-K, comparing retail firms to non-retail firms, and comparing firms receiving a 1099-K whose income was already subject to information reporting to firms whose income was newly subject to

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<sup>5</sup> Note that a more complete analysis of the initiative's impact would require a review of randomized audit data through a program like the IRS's National Research Program (NRP), but such audit data will not be available for several years. Note also that many non-Schedule C entities also receive the 1099-K, and these are absent from our analysis. In total, only 34 percent of the 7.4 million valid, non-duplicate 1099-Ks (see Section 2.3) are matched to a Schedule C.

income reporting.<sup>6</sup> None of these analyses uncovers a significant impact of Form 1099-K on aggregate receipts reporting or expense reporting but, due to the absence of an unimpeachable control group, none of these analyses provides definitive causal evidence.

We then focus on the predictions about firm behavior generated by our theoretical model, beginning with the prediction that firms most affected by the 1099-K should report receipts approximately equal to or just above the amount reported by Form 1099-K. To investigate this, we examine distributional anomalies around the reporting of receipts and the amounts of income reported by Form 1099-K, and also expenses. We find evidence of behavioral responses in certain subsets of taxpayers. Nine to 10 percent of 1099-K recipients bunch where reported receipts are very close to the gross amount from Form 1099-Ks they receive. Based on their reported sectors, we conclude that many of these firms may be bunching due to a perceived audit threat from reporting receipts below the amount reported to the IRS (and not merely because these taxpayers receive all their receipts by credit card). Nevertheless, we also find a much higher rate of bunching, 40 percent, where the 1099-K amount equals reported receipts for firms receiving a 1099-K only from third-party network vendors (such as PayPal). The bunching behavior of these taxpayers suggests that some firms, for example, those that only do business online, bunch because all of their true receipts are subject to information reporting. Thus, both theory-supported motivations for bunching in response to Form 1099-K are supported by the data. Taxpayers also bunch where reported receipts are exactly equal to reported expenses, and firms bunching at where receipts equal the gross 1099-K amount are disproportionately likely to do so. We also find that the subset of taxpayers that received Form 1099-K but did not file in previous years were much more likely to report expenses exactly equal to receipts.

Motivated by the distributional findings and our theory, we examine taxpayers' response to the introduction of the Form 1099-K as a function of the fraction of their reported receipts that

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<sup>6</sup> We use previous receipt of a Form 1099-MISC to indicate previous experience with income reporting. Form 1099-MISC requires that payments of \$600 or more for services provided in a given year be reported to the IRS by the entity purchasing the service.

were subject to information reporting on the 1099-K. Taxpayers that had only a small fraction of their reported receipts subject to the 1099-K (suggesting that most of their reported sales are done through cash or check) are little affected by 1099-K. For these taxpayers, we observe patterns in evolution of receipts, expenses, net income, and filing behavior over time that are similar to those in the aggregate data. These firms constitute an attractive comparison group for the estimation of the effect of 1099-K on firms with a large share of their reported receipts subject to 1099-K reporting. We may be reasonably sure firms in this group were unaffected by new information reporting, but they are in many respects similar firms.

We estimate a random growth model using this comparison group (e.g., Heckman and Hotz, 1989), and we find that the introduction of 1099-K increased the reported receipts and expenses of firms by up to 24 percent and 13 percent, respectively. For all but the firms reporting receipts *exactly* equal to the 1099-K amount, the degree of expense offsetting was much larger, with receipts and expenses increasing by up to 14 percent and 13 percent, respectively. These effects are strongest for firms receiving 1099-Ks only from third-party settlement entities. We subject this analysis to several placebo tests and robustness checks, with favorable results.

We also find evidence that 1099-K encouraged taxpayers to start filing Schedule C. Taxpayers reporting total receipts exactly equal to the amount on Form 1099-K in 2011 are far less likely to have filed in the past than a typical 1099-K recipient—just 51 percent of these firms file in the previous year, compared to 90 percent of other 1099-K recipients.

This evidence will be of interest to both academics, policymakers, and those responsible for implementing policy. First, this paper contributes to the academic literature examining tax administration, enforcement and compliance, as detailed in Slemrod and Gillitzer (2014), and expands this literature to investigate the effects of information reporting on sole proprietors. The paper also contributes to a new and growing literature on business activity and tax systems (Dharmapala et al., 2011; Pomeranz, 2013; Almunia and Lopez-Rodriguez, 2014; Carillo et al., 2014; Naritomi, 2014). Second, policymakers are likely to find these results useful in considering

legislating new required informational returns, or in changing the requirements around existing returns. Third, these results will be useful for designing a more thorough evaluation of the effectiveness of the Form 1099-K when randomized audit data become available in future years. Fourth, the results here can be used to better target audits toward taxpayers receiving 1099-K who are relatively unlikely to be reporting truthfully.

## **2. Background and Institutional Details**

### *2.1 The tax compliance problem with small business*

The tax authority's lack of information is a ubiquitous problem in tax enforcement, and one that is especially pervasive for smaller businesses and in less-developed economies where formal records of financial transactions are not well maintained. Large public firms must interact frequently with other firms, employees, and the financial sector, and are subject to financial reporting requirements and frequent financial reporting audits (i.e., Hanlon et al., 2014). These requirements result in myriad records and bountiful documentation for the details of most transactions, making tax enforcement for these firms largely a question of finding and interpreting relevant information. Small business, on the other hand, may frequently interact with few other entities, may collect receipts and pay expenses in cash, may have little interaction with the financial sector (especially as a result of seeking external financing), and have no external financial reporting obligations. Indeed, for such unconnected small firms, Gordon and Li (2009) argue that it is optimal for the government to subsidize taxpayer interaction with the financial sector in order to shrink the informal sector and the use of cash. Morse et al. (2009, p. 39) assert, based on extensive interviews with small business owners and their accountants, that income source is "by far the most important determinant of tax compliance...Taxpayers report cash income less accurately than income subject to third party reporting." Receiving cash, especially from difficult-to-monitor customers, is nearly synonymous with a lack of information reporting.

While cash is a common way to settle transactions for small business, businesses have other options for methods of payment. They can accept cash, checks, debit cards, or credit cards.

As of 150 years ago, cash was used in virtually all transactions (Humphrey, 2004). By the 1950s, checks had largely replaced cash, especially for business-related transactions. Recently, debit- and credit-card use has dramatically increased, further decreasing the share of cash and check transactions (Federal Reserve Bank of Kansas City, 2010; Aite Group, 2011; Euromonitor Group, 2014; Javelin Strategy & Research, 2013). Aite Group (2011) predicts that consumer use of cash will decline by about 4 percent per year from 2010 to 2015, or about 17 percent total over this period. Nevertheless, according to data from an Intuit GoPayment survey, 55 percent of the nation's 27 million small businesses do not accept credit cards (Intuit, 2012).

Three factors in this trend are worth noting. First is that the use of cash for online sales is difficult—an electronic means of payment, usually a credit or debit card, is generally required when there is no physical meeting of the buyer and seller in a transaction. This fact, and the growth of online commerce generally, has allowed online payment processors like PayPal to prosper. Businesses like PayPal allow vendors to accept credit cards or direct bank transfers simply, securely, and cheaply through their websites. Second, the acceptance of physical credit cards for in-person sales has become much easier with the widespread use of credit-card readers for smart phones and tablets. Firms like Square provide a physical card reader that attaches to a smartphone, and for a fee of 2.75 percent per sale, allow vendors to accept credit cards. Lastly, the recent advent of payments made directly with one's phone, as with Google Wallet or Apple Pay, will also likely influence the use of cash in retail transactions.

Firms make active decisions about what payment methods to accept. Arango and Taylor (2008) show that businesses choose what payment methods to accept based on their perceptions of the reliability, risks, and costs of different payment methods. Conditional on accepting a payment, they find that merchants have little ability to affect what payment methods their customers use. Firms also choose to accept payment methods in order to compete for customers: Jonker (2011) finds that, in a sample of Dutch merchants, having a competitor that accepts credit cards dramatically increases the likelihood that a vendor will choose to accept credit cards.

## *2.2 Introduction of Form 1099-K*

In light of the ease with which taxes are evaded when dealing with cash, Congress has taken several steps to make cash payments subject to information reporting. For example, the Internal Revenue Code of 1954 required information reporting for payments made to independent contractors for payments above a \$600 dollar threshold (the same dollar threshold is still used for 1099-MISC reporting).<sup>7</sup> Another example comes from the late 1980s, when cash payments to child care providers were made implicitly subject to information reporting. In order to claim a Dependent Care Credit, taxpayers had to provide the name, address and Social Security number of the child care provider being paid. The requirement of this new information resulted in a 31 percent decrease in credit claims from 1988 to 1989. Simultaneous with this dramatic reduction in claims on the credit, there were 252,582 new first time filers of child care Schedule C's in 1989—a 64.7 percent increase from 1988 (Szilagyi, 1991). Similarly, when the IRS started requiring Social Security numbers to claim a dependent child (for children over 5), seven million dependent children that had been claimed the year before disappeared from tax returns as dependents (Lewin, 1991). These dramatic effects suggest that, properly administered, information reporting may help bring taxpayers into compliance with their tax obligations.

The Housing Assistance Act of 2008 requires payment settlement entities (PSEs), who make payments in settlement of payment card transactions and third-party-settlement organizations (TPSOs, such as PayPal), to file a Form 1099-K on behalf of their customers, effective for payments made after December 31, 2010.<sup>8</sup> The first information returns for tax year

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<sup>7</sup> To the best of our knowledge, no systematic evaluation of the efficacy of that information reporting was done. However, even today, the 1099-MISC appears to have a discernible effect on taxpayer behavior—there is noticeable bunching in receipts right around \$600 in Schedule C receipts.

<sup>8</sup> The Simplified Income Tax Plan presented in the President's Federal Advisory Panel on Federal Tax Reform (2005, p. 128) featured two small-business compliance initiatives, both of which aimed at increasing the probability of evasion detection. The first initiative, not yet enacted, would require that small and medium-sized businesses use designated business bank accounts into which they would be required to deposit all receipts and from which they would make all business expenditures. Banks would provide to both the taxpayer and the IRS a summary of the year's financial transactions, simultaneously aiding small businesses in filing their returns and improving tax compliance. The report noted that: "Although taxpayers who fail to deposit cash receipts into segregated accounts

2011 were provided in early 2012.<sup>9</sup> The law mandates that the taxpayer, the IRS, and, in some cases, the state tax agency, receive a 1099-K containing the gross value of transactions, the value of transactions for each month of the tax year, the gross number of payment transactions, any federal income tax withheld, and any state income tax withheld. The form also includes identifying information for the taxpayer and the PSE, including the taxpayer identification number (TIN) for both, and a merchant category code (MCC) that classifies the taxpayer's business activity. Figure 1 contains an example of a Form 1099-K from tax year 2011.

With some exceptions, any entity accepting payment via payment cards or third-party-settlement organizations should receive a 1099-K.<sup>10</sup> In this study, we focus on businesses whose income is reported on Schedule C of the individual tax return, Form 1040. Schedule C data cover both true sole proprietors (individual, unincorporated taxpayers), and single-member limited liability corporations (LLCs), which are taxed as sole proprietorships. We study this set of taxpayers because, as already discussed, small businesses represent a large compliance problem for the IRS, and they represent a large fraction of 1099-K recipients.

The introduction of Form 1099-K led to some initial confusion among small businesses and tax professionals regarding how payers and payees should comply with the new reporting requirements. In response, in November 2011, the IRS issued a notice of penalty relief for failure

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would still present a compliance issue, simpler accounting rules and more detailed information reporting would make such willful evasion easier to detect.”

<sup>9</sup> Throughout the paper, we assume that taxpayer's behavioral response to the 1099-K occurred, at the earliest, in 2011. It is possible that taxpayers may have anticipated the 1099-K and increased receipts in 2010. Such action by taxpayers would work against our finding a response to the 1099-K in 2011. Given the taxpayers we are examining (relatively unsophisticated Schedule C taxpayers), we consider it most likely that any response was a reporting response starting in 2011. Incidentally, Google-related 1099-K searches and searches on IRS.gov for the 1099-K increased dramatically starting in January of 2012. This attention to the 1099-K is mirrored in page view data provided by the IRS—indeed, there were over 850,000 page views on IRS.gov of 1099-K related webpages during the time period January-April, 2012 (see Hoopes, Reck and Slemrod (2014) for a discussion regarding inferring taxpayer information sets from Google trends and IRS.gov data).

<sup>10</sup> Some transactions are exempt from the 1099-K filing requirement. First, payments made to parties outside the United States are not subject to information reporting. Second, third-party settlement organizations such as PayPal are only required to file Form 1099-K when the annual gross amount of transactions of a business is greater than \$20,000 and the total number of transactions is greater than 200. This *de minimis* requirement for TPOs is disregarded if the payment would have been reportable on Form 1099-MISC, which primarily applies to services, prior to the introduction of Form 1099-K. The *de minimis* requirement does not apply to payment card entities.

to accurately report information required by the new form.<sup>11</sup> The penalty relief only applied in the first year of the new program, tax year 2011, and was only designed to mitigate confusion, rather than allow for deliberate noncompliance. Penalty relief required a “good faith effort” on the part of taxpayers to comply with new requirements. To the extent this was widely known, it might explain a delayed response in 2011 to the 1099-K initiative.

### *2.3 The scope of the 1099-K program for sole proprietorships*

Table 1, Panel A, provides summary statistics on the number of taxpayers that file Schedule C, and the number of those that are subject to 1099-K reporting. In 2011, for example, about 23 million taxpayers filed a Schedule C with their Form 1040. We match Schedule C filers to Form 1099-K based on reported employer identification numbers (EINs) and SSNs; details on the matching procedure are in the Appendix. About 10.3 million 1099-Ks were filed in tax year 2012. We limit our analysis to 7.4 million 1099-Ks, due to duplicate filings and other issues.<sup>12</sup> Of these 7.4 million information returns, 2.5 million (34 percent) were matched to Schedule C taxpayers appearing in our data, representing \$160 billion (3 percent) of the total \$5.3 trillion of receipts reported to the IRS on all 10.3 million 1099-Ks through this new information reporting program.<sup>13</sup> Unmatched 1099-Ks report information for other types of business entities, such as partnerships, which tend to be larger.

Of the 23 million Schedule C filers, about 1 million, or 5.1 percent, received at least one 1099-K. The small fraction of Schedule C filers receiving a 1099-K is in contrast to the fraction

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<sup>11</sup> For the full text of the Internal Revenue Bulletin (IRB), see [http://www.irs.gov/irb/2011-46\\_IRB/ar09.html](http://www.irs.gov/irb/2011-46_IRB/ar09.html).

<sup>12</sup> The 7.4 million figure excludes 1099-Ks with the same payer TIN-payee TIN combination, which usually occurs due to the presence of corrected or amended 1099-’s in the uncleaned data, but can also be due to a payee filing multiple Schedule Cs for different businesses. It also excludes returns filed with invalid payee TINs, which cannot be matched to Schedule Cs, as well as returns filed with an employer identification number (EIN) as the payee TIN for a non-sole proprietorship business, which should not be matched to Schedule C returns that are intended for sole proprietorships only. We apply these filters to the full population of 1099-Ks as part of the Schedule C matching process. Refer to the Appendix of this paper for further detail.

<sup>13</sup> If we restrict ourselves to the 7.4 million 1099-Ks with a TIN corresponding to a sole proprietor (and accounting for other TIN problems, see footnote 1), we find that 80 percent of receipts reported by 1099-K to sole proprietors are matched to taxpayers in our data. The number is not 100 percent because we exclude taxpayers filing more than one Schedule C, as it is ambiguous in these cases which Schedule C should be matched to the taxpayers’ 1099-Ks.

receiving the 1099-MISC, another information return mandated by the IRS. In 2011, 13.5 million Schedule C filers were subject to 1099-MISC reporting, or, about 58.2 percent. This fraction declined in 2012, when only 55.9 percent received a 1099-MISC. This decline may be due in part to the introduction of 1099-K reporting, which replaced 1099-MISC reporting for transactions made via payment card or TPSE. Between 60 and 84 percent of Schedule C filers e-file their return and about 70 percent of these taxpayers engage a paid preparer to assist with the filing of their return.

Panel B of Table 1 presents summary statistics for all Schedule C filers regarding reported values on the tax return and on the 1099-Ks they receive. In 2011 total receipts reported by Schedule C filers amounted to \$1.2 trillion dollars. Of those receipts, \$138 billion (11.6 percent) were subject to information reporting under 1099-K, and \$497 billion (41.7 percent) were subject to information reporting under 1099-MISC. The median value of reported receipts on the 1099-K in 2011 is \$25,777, compared to \$7,703 for taxpayer receipts reported via 1099-MISC, which reflects a difference in the volume and types of transactions covered by each informational return, as well as the level of aggregation. Cost of goods sold is the largest deduction claimed by Schedule C taxpayers, amounting to \$355.2 billion in 2011. In 2011, the fraction of reported receipts, on a return-by-return basis, was 40 percent, whereas this fraction increased to 43 percent in 2012. The fraction of total reported receipts subject to either 1099-K or 1099-MISC information reporting was 63 percent in 2011 and 64 percent in 2012.

Table 2 provides details on the different sectors represented by Schedule C taxpayers. The first column lists the percentage of all Schedule C taxpayers in a sector that ever receive a 1099-K at any time during our sample period. For example, 3.2 percent of independent artists in our sample received a 1099-K sometime during our sample period. For grocery stores, this figure is 38.8 percent. The second column tabulates the percentage of all taxpayers in the sector that receive the 1099-MISC any time in our sample period, and it is apparent that far more Schedule C taxpayers receive a 1099-MISC than received a 1099-K. The final column tabulates the

percentage of all Schedule C taxpayers in each sector. In this table, the first 10 sectors (those above the bold line) represent the 10 highest populated NAICS codes among all Schedule C taxpayers. The second 10 sectors represent the 10 sectors with the highest percentage of 1099-K recipients, conditional upon having at least 0.10 percent of all Schedule C taxpayers in the sector.

### **3. A Model of the Taxpayer's Decision**

In this section we develop a model of a firm's decision to report receipts and deductible expenses to a tax authority, based on the theoretical work of Allingham and Sandmo (1972) and Srinivasan (1973). We show how, under intuitive assumptions about taxpayers' perceptions of audit threats, the theory predicts that (1) taxpayers most affected by an increase in information reporting will report receipts approximately equal to the gross amount reported by third parties (even if not all the firm's receipts are subject to information reporting), and (2) when expenses are not subject to information reporting, any increases in receipts from an increase in information reporting will be offset by increases in expenses. These are the two main empirical predictions we test in Section 6. The model also generates predictions as to which firms are likely to be affected by an increase in information reporting, which we use to motivate additional empirical exercises. Specifically, firms should be affected by an increase in information reporting if they experience a large change in the fraction of their reported receipts subject to information reporting, or if they have a low propensity to report truthfully in absence of information reporting. Several of these results are similar to those of Carrillo et al. (2014), who use a similar model to motivate their analysis of the effects of information reporting in Ecuador.<sup>14</sup>

#### *3.1 Baseline model*

We begin with a model of a risk-neutral business that has no deductible expenses. In the next section, we introduce expenses into the model. We consider only the firm's reporting of information to the tax authority in order to derive implications for the impact of increased

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<sup>14</sup> The two approaches were developed independently of one another.

information reporting that are testable with tax return data. We will not consider real but unobservable decisions, such as output responses or firms' attempts to influence the share of receipts subject to information reporting by, for example, discounts for cash payments.<sup>15</sup>

Firm  $i$  chooses the level of receipts  $R_i$  to report to the tax authority, given true receipts  $Q_i$  and the amount of receipts reported to the tax authority by third parties,  $I_i$ . The firm's problem is:

$$\max_{R_i} Q_i - tR_i - p_i(R_i, Q_i, I_i)s(Q_i - R_i), \quad (1)$$

where  $t$  is the income tax rate, assumed to be constant for simplicity, and  $p_i(\cdot)$  is the probability of detection and punishment of evasion. In the event that the firm reports  $R_i < Q_i$  and is detected, it must remit the fraction  $s > t$  on its unreported receipts.<sup>16</sup> We specify a probability of detection with two intuitive properties: first, the probability of detection is decreasing in the fraction of true receipts reported by third parties to the IRS, and, second, the probability of detection increases discontinuously to one when the taxpayer reports receipts below the amount reported to the tax authority.<sup>17</sup> In other words, we suppose taxpayers believe that more compliant firms are less likely to be audited, and that reporting information that directly contradicts third-party information results in an audit.

Using a similar approach to Phillips (2014), we write the probability of detection as

$$p_i(R_i, Q_i, I_i) = \begin{cases} 1, & \text{if } R_i < I_i \\ \frac{\alpha_i}{2} \frac{Q_i - R_i}{Q_i}, & \text{if } R_i \geq I_i \end{cases}, \quad (2)$$

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<sup>15</sup> Though real responses are interesting, our data do not provide a straightforward means of examining their importance.

<sup>16</sup> The important predictions of the model discussed here would all obtain if we assumed the firm were risk averse rather than risk neutral.

<sup>17</sup> The specific functional form we specify here is an expository tool. The predictions of the model we discuss will hold in general, as long as the two assumptions about the probability of detection in the preceding sentence are satisfied. Additionally, the qualitative predictions do not require that the (subjective) probability of detection increases all the way to one when  $I_i$  reaches  $R_i$ , just that reporting receipts less than the information report results in a large, discontinuous increase in the probability of detection. We acknowledge ignoring in this model that the probability of detection is determined by other factors, such as deviations from prior-year receipts and expenses, or deviations from industry norms.

where  $\alpha_i \leq 1$  summarizes firm  $i$ 's *audit threat* from enforcement efforts other than information reporting.<sup>18</sup> For example, a firm experiences low audit threat if it believes that increasing its under-reporting is (1) unlikely to result in an audit in the absence of information reporting, or even (2) unlikely to be detected in the event of an audit. Factors causing firm-specific variation in audit threat include the size of the business, how much income the business owner has from other sources, the salience of tax enforcement to the taxpayer and, importantly, the share of transactions conducted in cash, which is more easily hidden from the tax authority. One could also add to this model a second parameter summarizing idiosyncratic preferences for tax compliance, which would multiply the last term in Equation (1). This parameter would have effects on compliance identical to the effects of  $\alpha_i$ , so in an informal sense one can think of  $\alpha_i$  as summarizing the taxpayers' *propensity to report truthfully* in the absence of information reporting, which could vary due to enforcement efforts targeting different kinds of taxpayers or varying taxpayer preferences for compliance (Erard and Feinstein, 1994). Another key parameter for the solution to the problem is  $\gamma_i \equiv \frac{l}{Q} \leq 1$ , the fraction of the firm's receipts subject to information reporting.

The solution to the firm's problem is given by the following:

$$R(\alpha_i, \gamma_i, I_i, s, t, Q_i) = \begin{cases} \left(1 - \frac{t}{s\alpha_i}\right) Q_i, & \text{if } t \leq s\alpha_i \quad \text{and} \quad \left(1 - \frac{t}{s\alpha_i}\right) > \gamma_i \\ I_i, & \text{if } t > s\alpha_i \quad \text{or} \quad \left(1 - \frac{t}{s\alpha_i}\right) \leq \gamma_i \end{cases} \quad (3)$$

There are three distinct possibilities suggested by Equation (3), which we can characterize in terms of the two key parameters that vary across firms, the audit threat  $\alpha_i$  and the share of true receipts reported to the tax authority,  $\gamma_i$ . Panel A of Figure 2 depicts these possibilities.

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<sup>18</sup> In the more general model alluded to in the previous footnote, the parameter  $\alpha_i$  captures variation in the first derivative of firm  $i$ 's probability of detection with respect to the share of receipt under-reporting, evaluated at the firm's optimal level of under-reporting when there is no third-party information reporting.

- Case 1: if  $\alpha_i$  is large and  $\gamma_i$  is small, firms report some constant fraction of income that depends negatively on the tax rate and positively on the penalty rate and the propensity to report truthfully.
- Case 2: if  $\alpha_i$  is small (but not so small so as to result in Case 3) and  $\gamma_i$  is large, the firm reports receipts exactly equal to the amount reported by third parties.
- Case 3: if  $\alpha_i$  is sufficiently small (or the difference between the penalty rate and the tax rate is small), the firm reports only receipts about which third parties inform the tax authority, regardless of the level of information reporting.

Case 3 firms would not report anything in the absence of information reporting. For both Case 2 and Case 3 firms, the incentive to avoid the audit threat causes bunching where  $R_i = I_i$ , that is, where  $I_i/R_i = 1$ .

We now calculate the effect on reported receipts of an increase in information reporting (i.e., the introduction of the Form 1099-K) from zero to some level  $I_i$ , casewise. That effect is summarized by the following:

$$R(\alpha_i, \gamma_i, I_i, s, t, Q_i) - R(\alpha_i, 0, 0, s, t, Q_i) = \begin{cases} 0, & \text{if } \left(1 - \frac{t}{s\alpha_i}\right) > \gamma_i \\ I_i - \left(1 - \frac{t}{s\alpha_i}\right) Q, & \text{if } 0 \leq \left(1 - \frac{t}{s\alpha_i}\right) \leq \gamma_i. \\ I_i, & \text{if } \left(1 - \frac{t}{s\alpha_i}\right) \leq 0 \end{cases} \quad (4)$$

The first, second, and third rows in Equation (4) corresponds to Cases 1, 2, and 3, respectively. Case 1 firms are unaffected by the 1099-K initiative because it does not cause a large enough increase in the share of receipts subject to information reporting ( $\gamma_i$ ) to be induced to change their behavior. Case 2 firms partially underreport prior to the 1099-K but, because they have a high enough fraction of receipts subjected to new information reporting, they bunch at  $I_i/R_i = 1$  when Form 1099-K is introduced.<sup>19</sup> Case 2 firms therefore respond on the intensive margin to the

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<sup>19</sup> Assuming that firms perceived a higher probability of audit from reporting receipts “suspiciously close” to the amount reported to the tax authority would lead to the prediction of a slightly larger increase in receipts for this

introduction of information reporting. Panel B of Figure 2 plots the firm's receipts with and without information reporting as a function of the fraction of receipts subject to information reporting,  $\gamma_i$ , for Cases 1 and 2. Note that when all a firm's receipts are subject to information reporting, so that  $\gamma_i = 1$ , the firm reports truthfully. In Case 3, the firm's propensity to truthfully report was initially so low that it declared no receipts at all to the tax authority (i.e., does not file a Schedule C), and then is induced to start filing a Schedule C, bunching at  $I_i/R_i = 1$ , following the introduction of information reporting through 1099-K. In other words, Case 3 firms respond on the extensive margin to the introduction of information reporting. Panel C of Figure 2 shows the predicted value of  $I_i/R_i$ , as a function of  $\gamma_i$ . It illustrates a key take-away from our modeling effort: any firm that responds to the 1099-K, either intensively or extensively, will report exactly the amount on the information reports:  $R_i = I_i$ , a prediction we take to data in Section 6.

### 3.2 Expenses

Many small businesses have costs of doing business that are deductible from receipts in the calculation of income subject to tax (Internal Revenue Code (IRC) §162). We introduce deductible expenses into the model by allowing the firm to choose not only reported receipts, but reported expenses. Expenses are not subject to information reporting (in the model or in reality).<sup>20</sup> The firm's problem becomes:

$$\max_{R_i} Q_i - D_i - t(R_i - E_i) - p_i(R_i, Q_i, E_i, D_i, I_i) s[(Q_i - D_i) - (R_i - E_i)], \quad (5)$$

where  $E_i$  are reported expenses and  $D_i$  are real business expenses, and all other variables are as defined above. We will focus on the case where the firm has positive real profits for simplicity, so  $Q_i \geq D_i$ , and we specify a probability of detection function with similar intuitive properties to

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group and the next; affected firms should report receipts above  $I_i$  but close to it, which is consistent with some observations in Section 6.

<sup>20</sup> Note that, under a value-added tax, reported expenses can in principle be checked against the reported receipts of the supplier firm. Further, the Affordable Care Act of 2010 (ACA) included a provision (IRC §9006) that would have required expense reporting to the IRS via a Form 1099. This provision was eliminated with overwhelming Congressional support (314 to 112 in the House, 87 to 12 in the Senate) in the Comprehensive 1099 Taxpayer Protection and Repayment of Exchange Subsidy Overpayments Act of 2011 (CCH, 2011).

before: the probability of detection is increasing in the share of net income underreported (which now depends on receipts and expenses) and equal to one whenever the firm's report contradicts third-party information:

$$p_i(R_i, Q_i, E_i, D_i, I_i) = \begin{cases} 1, & \text{if } R_i < I_i \\ \frac{\alpha_i(Q_i - D_i) - (R_i - E_i)}{2(Q_i - D_i)}, & \text{if } R_i \geq I_i \end{cases} \quad (6)$$

Note that we can reformulate the firm's problem as a choice of reported receipts  $R_i$  and net income  $Y_i \equiv R_i - E_i$ . Note also that there is no non-negativity constraint on  $Y_i$ : reported net income can be negative.<sup>21</sup> In this case the solution to the firm's problem is any combination of  $R_i$  and  $E_i$  such that

$$R_i - E_i = \left(1 - \frac{t}{\alpha_i s}\right) (Q - D) \quad (7)$$

$$R_i \geq I_i. \quad (8)$$

The effect of an increase in information reporting is to weakly increase reported  $R_i$ —and strictly increase it if  $I_i$  is sufficiently large, like before. However, Equation (7) suggests that any changes in receipts will be offset by increases in expense reporting, leaving net income unchanged.

### 3.3 Other Extensions

Thus far, we have employed a very sharp model in order to cleanly illustrate the intuition behind the main empirical analysis of the paper. Here we discuss how a few variations of the model would affect its predictions. First, assuming that the probability of detection is increasing in not just the share of net income underreported but also in the share of receipts hidden from the tax authority would yield more specific predictions for  $R_i$ , similar to those described in the previous section. Additionally, we note that, although expenses are not visible to the tax authority at the time of filing, they are easier to verify upon audit, because taxpayers are required

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<sup>21</sup> In reality, there is also no binding non-negativity provision, although the "Hobby Loss" rules under IRC §183 may come into play if a firm has persistent losses. Further, certain expenses, such as home office expenses, do not allow for a deduction that would result in  $Y < 0$  (IRC §280A(C)(5)).

to maintain records of any expenses they claim. In contrast, receipts, especially cash receipts, are more easily hidden from the tax authority in the event of an audit. Insofar as this difference in visibility upon audit affects taxpayers' compliance, it will diminish the offsetting of increases in reported receipts by increases in reported expenses when third-party information is introduced.

Several possible additions could yield the prediction that some firms report  $R_i = E_i$ , where Equation (7) would suggest they would report  $R_i < E_i$  despite having positive real profits. For example, we could model those aspects of the tax code that limit businesses' ability to claim losses, such as hobby loss rules or restrictions on which expenses may be used to claim a loss. The  $R_i = E_i$  prediction could also be obtained by assuming an increase in the perceived probability of audit where net income becomes negative in the presence of true profits, or by a model of reference dependence in income sheltering similar to that employed by Rees-Jones (2014). In every case, these alterations would add two intuitive predictions concerning the effect of the introduction of information reporting: an extensive margin effect on the declaration of receipts and expenses similar to the one in Case 3 of the previous section, and an increase in firms' propensity to report receipts exactly equal to expenses.

Finally, it may be desirable to incorporate into the model the notion that a firm that does not submit a Schedule C may face a lower probability of detection than a firm filing a Schedule C and declaring arbitrarily small receipts and expenses. To examine how this changes the model, we can add an extensive margin filing choice variable  $F \in \{0, 1\}$ , such that  $F = 0$  implies that  $R_i = E_i = 0$ , and write the probability of detection as

$$p_i(R_i, Q_i, E_i, D_i, I_i) = \begin{cases} 1, & \text{if } R_i < I_i \\ \frac{\alpha_i(Q_i - D_i) - (R_i - E_i)}{2(Q_i - D_i)} - \beta_i(1 - F), & \text{if } R_i \geq I_i \end{cases} \quad (9)$$

where  $\beta_i > 0$  summarizes how the firm's detection probability declines discretely when, in addition to reporting no receipts or expenses, it declines to file a Schedule C.

This addition changes the predictions of the model in two ways. First, information reporting may cause an extensive margin response due to the choice of  $F_i$ . The receipts-only

model in Section 3.1 predicted an extensive margin response to increased information reporting due to the non-negativity constraint on  $R_i$ , but this prediction disappeared when we added expenses because net income can be negative. Adding the non-filing of Schedule C feature to the model recovers the extensive margin prediction, and the comparative statics of the extensive margin response are similar to those in the model in Section 3.1. One new comparative static result is that higher values of  $\beta_i$  make a firm less likely to file in the absence of information reporting, and thus more likely to respond on the extensive margin to 1099-K. The intuition for this prediction is the same as the notion that low audit threat in absence of information reporting leads to a stronger effect of introducing information reporting:  $-\beta_i$  can be thought of as summarizing the audit threat on the extensive margin.

Second, adding the Schedule C filing choice to the model breaks the prediction that *every* firm affected by information reporting will end up reporting  $R_i = I_i$ , although the model does predict that some, perhaps many, affected firms will report  $R_i = I_i$  when the distribution of  $\alpha_i$  is sufficiently rich. Panel D of Figure 2 illustrates the case in which the firm starts filing Schedule C in response to the introduction of information reporting, but it does not report  $R_i = I_i$ .<sup>22</sup> When  $\beta_i$  is relatively small, this situation is unlikely to occur. Nevertheless, it is important to keep in mind that some firms caused to file Schedule C by 1099-K may not be visible in the analysis in Section 6, which focuses on firms reporting  $R_i$  near  $I_i$ .

### *3.4 Implications for the Empirical Analysis of the Effects of Form 1099-K*

The simple model we have outlined suggests that the effect of Form 1099-K is likely to be heterogeneous, depending primarily on (1) the fraction of true receipts subject to information reporting, and (2) the firm's propensity to report truthfully in the absence of information

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<sup>22</sup> The picture is drawn ignoring expenses. With expenses the intuition is complicated by the fact that the prediction that firms report receipts equal to the 1099-K amount requires a modification of the probability of detection alluded to at the beginning of this section (see also Equations (7) and (8)). Given such a modification—requiring that the firm believes its audit probability is increasing not just in the share of net income underreported but also the share of receipts underreported—the intuition illustrated in Figure 2 Panel D is unchanged by adding expenses to the model.

reporting. These two factors matter because they can cause the firm's counterfactual report—the report made in absence of Form 1099-K—to be well above the amount of receipts reported to the IRS, so much so that the audit threat introduced by 1099-K is negligible.

The firms most likely to be affected have a large fraction of receipts subject to information reporting and/or a large degree of noncompliance in absence of the form. The first criterion would apply primarily to businesses like online merchants who accept payment mostly through credit cards or third-party networks (such as PayPal), in sharp contrast with individuals receiving large amounts of cash, such as taxi drivers or convenience stores. Notably, however, these two criteria (whose importance was summarized in the model by  $\alpha_i$  and  $\gamma_i$ ) may be *negatively correlated*: even without the Form 1099-K, tax underreporting by small businesses is generally thought to be correlated with cash use (Morse et al., 2009). Thus, firms with high rates of cash use could still be affected by 1099-K provided they had high rates of noncompliance prior to the form (i.e., very low  $\alpha_i$  in the model). In Section 6 we will shed some empirical light on the possible causes of a response to 1099-K using the sectoral composition of 1099-K recipients bunching where reported receipts are close to the gross 1099-K amount, and whether 1099-Ks came from payment card entities or third-party network vendors.

Finally, the model predicts that even when the 1099-K has an effect on reported receipts, some of the revenue increase are offset by increases in expense reporting, which allows a firm to achieve the same compliance rate as before with respect to net income. Intuitively, firms can report receipts in such a fashion to avoid detection by the information report, but then may change expenses to achieve their preferred level of underreporting at any level of information reporting. The sharp model presented here predicts that 100 percent of receipts increases should be offset with expense increases; this prediction would be weakened by adding intuitive assumptions on taxpayers' beliefs about the risk of detection of expense overreporting or carefully distinguishing between the risk of an audit and the risk of detection upon audit. Various aspects of the tax code limiting losses, as well as intuitive assumptions about taxpayer beliefs or

preferences over reporting losses in the presence of true profits, also predict that firms are likely to respond to Form 1099-K by bunching where reported receipts exactly equal expenses.

In our theoretical discussion, we have ignored the possibility that  $\gamma_i$  may be influenced by the firm at some cost. Were the cost of doing so low enough, noncompliant firms would want to decrease  $\gamma_i$ , either by incentivizing cash payments or by declining to accept some payment methods subject to information reporting. Our data do not provide a credible means of examining whether firms respond to 1099-K in this way. If they do, however, the effect of 1099-K would be smaller than predicted in the model presented here, but qualitatively similar: many firms affected by 1099-K should still bunch near the point where reported receipts equal the 1099-K amount, and firms reporting substantially below the 1099-K amount would have had little change in their receipts (but possibly some change in their payment methods) in response to 1099-K.<sup>23</sup>

#### **4. Data**

We examine data from the population of tax returns and information reports filed with the Internal Revenue Service, accessed via the Compliance Data Warehouse (CDW), the IRS's research repository of tax return data. Specifically, we use data from taxpayers' Form 1040 Schedule C from 2004 to 2012, as well as Form 1099-K, and Form 1099-MISC. Identifying information, including taxpayer identification numbers (TINs), are masked to the researchers to protect taxpayer privacy. The information reports from the credit card and other payment processing companies can be matched to the businesses whose income details are on the Schedule C. Details on the matching and data gathering process are in the Appendix.<sup>24</sup>

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<sup>23</sup> One empirical finding related to these responses is that there is no observable hole in the distribution of 1099-K amounts around the *de minimis* restrictions applying to third-party network vendors. This fact suggests that firms are not willing and/or able to decrease their receipts from third-party network transactions to avoid information reporting from third-party network vendors, at least along the intensive margin. This finding is consistent with the findings of Arango and Taylor (2008) and Jonker (2011), whose work suggests that many firms have limited capacity to manipulate the share of receipts from various transactions types.

<sup>24</sup> Note that the dollar figure on the 1099-K does not necessarily exactly match what should be reported as receipts, due to such item as fees, and merchandise returns; in some cases, the difference could be substantial. It is also possible that some firms report receipts below their 1099-K amount. These reports may nevertheless be truthful.

Available in the CDW data are the contents of the taxpayer’s Schedule C (the taxpayer’s receipts and expenses), Form 1099-K, and Form 1099-MISC. Of course there is much data that we would like to have but do not have. We do not have any direct measure of tax underreporting, from IRS audits or any other source. Thus, we will have to infer the effect on underreporting from the data on taxpayer reports, using a “traces-of-evasion” approach, as discussed in Slemrod and Weber (2012). For most of the analysis, we focus on the gross amount of receipts reported by Form 1099-K, added up over all the 1099-Ks received by a given taxpayer, along with a binary variable encoding whether the taxpayer received at least one Form 1099-K.

The implementation of the Form 1099-K program was not randomized, so that there is not an immediately available control group against which to compare the behavior of those affected. In our initial analyses, we construct comparison groups from (1) taxpayers filing Schedule C but not receiving Form 1099-K, (2) taxpayers in the retail sector, (3) taxpayers receiving Form 1099-MISC in years prior to receiving 1099-K, and (4) in our preferred analysis, firms with a low fraction of reported receipts reported on Form 1099-K.<sup>25</sup>

The comparison of 1099-K recipients and non-recipients is straightforward. Second, we further subdivide the population based on whether the taxpayer is in the retail sector according to its reported NAICS code, because retail businesses are especially likely to use transactions reported by 1099-K. The 1099-MISC comparison group is motivated by the notion that firms already subject to some information reporting may be less affected by additional information reporting. In fact, some payments previously subjected to reporting under Form 1099-MISC—namely those transacted via payment card or TPSO—were subsumed by Form 1099-K, so that

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Law firms, for example, sometimes process payment card transactions in the administration of trusts, which are not legally classified as receipts but may nevertheless be subject to 1099-K reporting.

<sup>25</sup> We also used as a comparison group firms declaring wages depreciation in some or all years, based on the classification of Schedule C businesses used by Nelson (2008). These results closely resemble the results for the comparison of firms based on whether they received 1099-Ks, so we omit them for brevity.

the payer was no longer required to file a 1099-MISC.<sup>26</sup> To construct a comparison group based on this idea, we compare firms receiving 1099-MISC consistently from 2004-2010 to firms who never received Form 1099-MISC. In some regression specifications, we also divide the population of 1099-K recipients into those who had previously received a Form 1099-MISC at least once during 2004-2010, and those who had never received Form 1099-MISC.

We also analyze extensive margin effects, to see if Form 1099-K caused individuals to start declaring their small-business receipts and filing a Schedule C. Given that we cannot observe any business information for taxpayers who should have filed Schedule C but did not, we take the approach of comparing, for firms filing Schedule C in a given year, how likely that firm was to have filed in prior years, which sheds some light on how many would have filed in absence of information reporting. Motivated by the theory in Section 3, we also compare firms whose reported receipts are well above the gross amount from all Form 1099-Ks to those whose reported receipts are close to the 1099-K. Specifically, we examine the distribution of the ratio of the 1099-K receipts amount and total receipts reported on Schedule C, denoted  $K/R$ , and we use firms with low values of  $K/R$  as a control group for the estimation of the treatment effect of Form 1099-K on firms with high values of  $K/R$ . In this context, we examine trends in reporting of receipts, expenses, and net income, as well as filing rates for Schedule C.

To facilitate interpretation of our results, it is useful to have at least coarse proxies for the share of a firm's true receipts subject to information reporting, the parameter  $\gamma_i$  in our model. Doing so helps us distinguish between the possibility that (1) firms report close to the 1099-K amount because their true receipts are close to the amount reported to the tax authority from the possibility that (2) firms report close to the 1099-K amount in response to a perceived audit threat of reporting less receipts than receipts reported to the IRS. Exact measures of  $\gamma_i$  are not available in the data. We take two approaches, one based on the firm's self-reported sector and

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<sup>26</sup> Anecdotal evidence suggests that many people may not have understood this change in filing requirements, at least at first, so we do not attempt to use it directly to aid in identification.

the other based on the nature of the entity issuing the 1099-K. First, we select firms in sectors that we subjectively believe are likely to have a substantial fraction of receipts in cash. These consist primarily of retail firms whose sector suggests they conduct a large number of relatively small transactions with many consumers, such as grocery stores, barber shops, restaurants, and gas stations. The second is even more conservative, consisting of firms we believe are likely to deal primarily in cash, such as car washes, vending machine operators, or parking garages. Every firm included in the more conservative group of firms using cash is also included in the less conservative group. A full list of NAICS codes used to define these groups is in the note to Table 2. Second, we utilize additional information captured from 1099-Ks in 2012 only, which tell us whether the reporting entity was a payment card entity or a TPSE. We use this to compare firms receiving 1099-Ks from payment card entities only with those receiving 1099-K from TPSEs only. The latter in particular are much more likely to be an electronic business with a high share of sales, perhaps 100 percent of sales, done via transactions subject to 1099-K reporting.

## **5. Aggregated Time-Series Analyses**

### *5.1 Overall aggregates*

As a first pass we examine the aggregate time-series of receipts, expenses, and net income as reported on Schedule C returns beginning in 1990, checking for an abrupt change beginning in 2011. Our time-series of micro-data starts in 2004, so for this analysis, we use publicly released SOI data (SOI, 2011). Figure 3, Panel A, graphs net income for Schedule C taxpayers from 1990-2011, and no discernible post-2011 effect is evident. Given the data in Table 1, this is not particularly surprising, because the coverage of the Form 1099-K is small compared to the overall Schedule C population, so that even a fairly substantial response might be lost when compared to the universe of sole proprietors.

We next turn to the population micro-data in order to focus on the firms actually subject to 1099-K reporting. Panel B displays the mean logged receipts for firms receiving a 1099-K in 2011 (2012), for the time period 2004-2012, comparing those firms to firms that did not receive a

1099-K in 2011 (2012). In this analysis and others examining intensive margin effects of the policy change, we restrict our attention to taxpayers filing a Schedule C in each year of 2004-2012, which avoids conflating this analysis with the extensive margin analysis described below. There are 6.5 million firms in this balanced panel, 547 thousand of whom received a 1099-K. We use the logarithmic transformation for receipts and expenses because these variables are distributed approximately log-normally in the data, and because it provides a simple way of calculating the mean growth rate, which equals the first difference of the mean of the log of receipts. We graph the mean growth rates over time in Panel C. Those receiving 1099-K in either 2011 or 2012, but not both years, are excluded from this graph, as there is a large negative growth rate for the 2011 1099-K recipients, but not the 2012 1099-K recipients, and excluding this group makes the effect we seek to document clearer.

It is evident that firms receiving a 1099-K are growing much more quickly, at least based on their reports in 2011 and 2012, but also in 2004 to 2010.<sup>27</sup> Figure 3 shows that, for 1099-K recipients, receipts grew at only a very slightly more rapid pace in the first year of the 1099-K initiative than in the prior year. However, in order to interpret any change in aggregates over time causally, we require a comparison group whose behavior yields a valid counterfactual for growth in the absence of 1099-K. Schedule C filers not receiving a 1099-K do not convincingly qualify, as these firms were growing at much slower rates prior to the introduction of the Form 1099-K in 2011, eliminating one potential comparison group for investigation into the effectiveness of the 1099-K (comparing 1099-K firms to non-1099-K firms).

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<sup>27</sup> An (untabulated) examination of expenses and net income reveals a similar trend. We observe qualitatively similar trends if we restrict our analysis to firms filing Schedule C in each year of 2008-2012 or even 2010-2012: pre-1099-K receipts growth is higher for proprietors receiving a 1099-K than others, and growth rates change little after a 1099-K is introduced. One difference we observe when we select on fewer years of prior Schedule C filing is that firms receiving a 1099-K and filing Schedule C in, say, 2008-2012 instead of 2004-2012, are growing more quickly. Mean growth rates of 5 to 6 percent are common for the 2008-2012 group. We attribute this to the relative maturity of firms which have been filing Schedule C for longer years. None of these concerns influence our findings about the limited influence of Form 1099-K on the aggregate trends.

The difference in the growth rate and Schedule C filing rates of the two populations may stem from differences in the nature of the economic activity undertaken by each. Schedule C filers are a heterogeneous group (Nelson, 2008; Knittel et al., 2011). Taxpayers filing Schedule C but not receiving Form 1099-K may be more likely to be reporting the miscellaneous types of income reportable under Schedule C that do not constitute what one would normally think of as “small business income,” such as secondary income from professional consulting. This income may grow very little from year to year or even decline, and one expects a high degree of movement in and out of the population of Schedule C filers from year to year. In contrast, those true small businesses that survive from one year to the next are likely to grow significantly. Below we pursue alternative strategies for constructing a control group.<sup>28</sup>

In Figure 3, Panel D, we broaden our sample to include all firms filing Schedule C at least once in the sample period to study extensive margin variation in filing Schedule C, and we observe that taxpayers who received a 1099-K were more likely to have filed in previous years than taxpayers who did not receive a 1099-K in 2011. Figure D also highlights that there is substantial turnover in the Schedule C population. With a proper control group, the hypothesis that 1099-K had an effect on the likelihood that an individual filed Schedule C—the extensive margin of reporting sole proprietorship income—may be tested by examining the likelihood that a given type of firm filed Schedule C in the years prior to 1099-K. If individuals receiving 1099-K were substantially less likely to have filed in the previous year than a comparison group—one where the likelihood of having filed in  $t-1$  conditional on having filed in year  $t$  was the same for years prior to 2011—then this would constitute evidence of an extensive margin effect.

## 5.2 Graphical examination of subsets of firms

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<sup>28</sup> One alternative for which we do not present results here is the *de minimis* restrictions suggested by Knittel et al. (2011), who recommend excluding firms with reported receipts and expenses below a set of cutoffs to analyze small businesses. The comparison of firms receiving a 1099-K to firms not receiving a 1099-K is similar if we implement this restriction; we do not present this analysis in this paper due to concerns about introducing selection bias by requiring reported receipts and/or expenses to exceed certain thresholds.

Given that comparing firms that did not receive the 1099-K to firms that did receive the 1099-K is not a valid comparison (because of their differing pre-1099-K trend), we next look at aggregate time-series data for subsets of firms relatively more or less likely to be affected by the 1099-K, to see if a diverging trend begins in 2011. First, one might think that firms in the retail sector are especially likely to be strongly affected by Form 1099-K, due to the high volume of customer transactions done via payment cards and electronic payments in this sector. In Figure 4, Panels A and B, we repeat the analysis of Section 5.1 but dividing the sample into taxpayers who report being in the retail sector (with 2-digit NAICS codes 44 and 45 indicating retail sector membership) and those who do not, based on whether these firms received a 1099-K. To conserve space, we tabulate only the trend and growth rates for receipts, and notice no substantially different trend between 1099-K recipients in the retail and non-retail sector. The trends in expenses, net income, and filing are similar. Insofar as one expects Form 1099-K to have a greater impact on the retail sector due to the high acceptance rate of credit cards in that sector, these results corroborate evidence from the sections that the impact of Form 1099-K on reported receipts was likely small in aggregate.

In contrast to retailers, we should expect firms historically already subject to information reporting to be *less* affected by the introduction of 1099-K information reporting. The receipts of many independent contractors have been for many years subject to information reporting via the Form 1099-MISC. For independent contractors, Form 1099-K actually replaces some 1099-MISC information reporting, for reasons discussed in Section 4.<sup>29</sup> Theory suggests that if Form 1099-K has an effect in the aggregate, we should expect reported receipts to increase by more in the group subjected to information reporting for the first time than in the group subjected to information reporting in prior years. To test this hypothesis, we use as a control group only those

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<sup>29</sup> Anecdotal evidence alluded to above suggests that there was some confusion over whether certain payments were reportable under 1099-MISC and/or 1099-K in the first years of the program. For this reason, in 2011 and 2012 receipts that should have been reported only on a Form 1099-K may have also been reported by 1099-MISC. For this reason we do not use 1099-MISC receipts or amounts in 2011 or 2012. Fortunately, our identification strategy only requires that 1099-MISC provide an accurate information report *prior* to the introduction of 1099-K.

who received a 1099-MISC in every year of 2004-2010, and compare to those who received a 1099-MISC in none of those years.<sup>30</sup> Panel C of Figure 4 depicts the time series of aggregate receipts by 1099-K receipt, for the two groups of interest. All firms in this analysis filed Schedule C in each year from 2004 to 2012. Panel D depicts receipts growth rates. These trends for 1099-MISC recipients and non-1099-MISC recipients co-move closely prior to the introduction of Form 1099-K especially for firms receiving 1099-K, so that growth rates are nearly identical. One exception occurs in tax year 2009, which we attribute to the possibility that 1099-MISC recipients were harmed slightly more by macroeconomic shocks of the Great Recession, which we believe to be the source of the decline and resurgence of growth rates around 2009 occurring in most of these figures.

Given that the common-trend assumption is satisfied, we can more confidently interpret any divergence in trends occurring in or after 2011 as rising from the differential impact of 1099-K on the two groups. However, no such divergence occurs: post-1099-K receipts growth is very similar between the two groups. The high levels of growth observed in Figure 3 occur in both groups, and the especially high rate of growth from 2010 to 2011 also occurs in both groups—as well as the low growth rates in 2012 for both groups. The group of taxpayers subjected to information reporting for the first time under 1099-K behave no differently, on average, than the group of taxpayers subject to information reporting prior to 1099-K due to 1099-MISC, suggesting that the overall initial deterrence effect of the form on reporting was minimal. In untabulated analysis, we observe very similar trends in expense and net income reporting.

## **6. Bunching in the Reporting of Receipts and Expenses**

In this section we examine more closely the prediction of our theoretical model, that the 1099-K initiative should create an additional audit threat that increases receipts reporting (even if

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<sup>30</sup> Many firms file Schedule C in every year but only receive 1099-MISC in some years. If we select on receiving a 1099-MISC continuously from some year  $t$  to 2010, we observe nearly identical trends after  $t$ , but, unsurprisingly, these firms tend to be much smaller on average prior to  $t$ . We report results only for the group receiving 1099-MISC in every year prior to 1099-K for simplicity.

it also unintentionally increases expense reporting). To examine this issue, we analyze two types of bunching related to the effect of Form 1099-K on reported receipts and earnings. The first and most important concerns taxpayers' observed tendency to report receipts exactly or nearly equal to the amount reported by Form 1099-K (see Figure 1).<sup>31</sup> For taxpayers that bunch or report receipts near the bunching threshold, we examine changes in receipts, expenses, and Schedule C filing behavior to examine the differential impact of 1099-K on these specific groups. A secondary bunching analysis concerns taxpayers' tendency to report receipts exactly or nearly equal to expenses. Finally, we examine which specific expense line items may be increased as a result of the 1099-K initiative.

### *6.1 The cross-sectional relationship between receipts and 1099-K amounts*

Theory suggests that all firms affected by Form 1099-K, regardless of the reason they were affected by it, should report receipts equal to or just above the amount of receipts from payment card and/or third-party network transactions. Figure 5 depicts the actual distribution of the ratio of 1099-K amounts scaled by reported receipts, in the top panel among all 1099-K recipients and then zooming in around where the ratio is equal to 1. The 1099-K amount is very close to reported receipts for a large share of firms. About 8 percent of the overall population bunches at a K/R value between 0.9975 and 1.0025 (the bin width in the lower panel of Figure 5 is equal to 0.005). The amount of bunching increased from 2011 to 2012: 9 percent of firms have a ratio between 0.95 and 1.05 in 2011, and the corresponding figure is 11 percent in 2012. That bunching in the 0.95 to 1.05 bin increased from 2011 to 2012 is notable in and of itself because the IRS was presumed to be more heavily relying on 1099-K reporting for audit allocation

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<sup>31</sup> Some credit-card charges reported on 1099-K may not actually be taxable receipts. For example, if a customer returns an item purchased with a credit card, the charge-back is not deducted from the 1099-K receipt amount. One unexamined possibility is that while taxpayers understand that having 1099-K receipts equal to or less than total receipts is important, their total receipts may be less than 1099-K receipts for the reason stated above. Rather than truthfully allow 1099-K receipts to be more than total receipts, they may report total receipts exactly equal to 1099-K receipts, and then increase an expense line item, resulting in an equivalent net income as if receipts had been accurately reported.

decisions in 2012 than in 2011, and therefore we might expect to see the behavioral responses to 1099-K reporting increase in 2012.

Recall that bunching may occur for two distinct reasons. First, the firm may not be reporting any of its cash receipts, because they are not subject to information reporting and are willing to misreport their tax liability. Alternatively, the firm may actually receive all—or nearly all—of its receipts through payment cards or third-party-network transactions. The first possibility, indicated by the model developed in Section 3, suggests that taxpayers may report receipts exactly equal to or just above the amount on Form 1099-K in order to avoid a perceived threat of audit triggered by reporting receipts less than what is reported on Form 1099-K.

To shed some light on the relative likelihood of these possibilities, we examine the rate of bunching in several subpopulations.<sup>32</sup> Table 3 tabulates the rate of sharp bunching (bunching exactly at  $R=K$ ) and diffuse bunching (reporting receipts within 5 percent of the 1099-K amount) for 2011 and 2012 in these subpopulations. For more details on the construction of the subpopulations, see Section 4 and the note to the table.

Column 1 of Table 3 indicates that 3 to 4 percent of firms report receipts exactly equal to the 1099-K amount, and 9 to 11 percent report receipts very close to the 1099-K amount. Columns 2 and 3 show that both types of bunching are significantly more pronounced for new filers than for firms filing Schedule C in every year. About 10 to 11 percent of Schedule C filers who did not file in the previous year report receipts exactly equal to their 1099-K amount, compared to just 1 percent of firms who filed in every year covered by our data. This finding foreshadows the results on extensive margin effects in the next section. In Columns 4 and 5 of Table 3, we select on whether firms are in sectors that we determine to have high rates of cash use. A high degree of sharp bunching persists near where receipts equal the gross 1099-K amount. For firms that fit the less conservative definition of cash use (Column 4), we observe

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<sup>32</sup> In each population the shape of the histogram of the 1099-K amount-receipts ratio in that subpopulation is very similar to Figure 6, with the exception of the significantly different amounts of bunching reported in Table 3.

slightly less sharp bunching (2 percent) and about the same amount of diffuse bunching (8-10 percent) compared to the population. For firms that fit the conservative definition (Column 5), we observe less sharp bunching (2 percent) but significantly more diffuse bunching (11-12 percent). Relatedly, the two most common sectors (according to the 6-digit NAICS classification system) in the bunching population are nail salons (5,756 sharp bunchers, 8,564 diffuse bunchers), and beauty salons (3,555 sharp bunchers, 6,296 diffuse bunchers). Firms in these sectors likely receive a substantial amount of cash.

Columns 6 and 7 present rates of bunching for firms receiving 1099-Ks from payment cards only or TPSEs only, respectively. Bunching is slightly less common for firms receiving 1099-K from payment-card-only firms. Strikingly, however, bunching is extremely common for firms receiving 1099-K from TPSEs only, with 17 percent reporting receipts exactly equal to 1099-K amounts and 42 percent reporting receipts very close to 1099-K amounts.<sup>33</sup>

Table 4 reports the results of a probit regression analysis of both sharp and diffuse bunching, where we regress an indicator for whether the taxpayer bunched (measured in two ways,  $K/R=1$  or  $K/R$  is about 1) on whether the taxpayer filed in the previous year.<sup>34</sup> We also include additional controls. We see that most of the differences documented in Table 4 are statistically significant and robust to the addition of controls. We also include the marginal tax rate as an explanatory variable in Columns (3), (5), (8), and (10), to discern whether a higher marginal tax rate is associated with bunching, which the simple model would predict.<sup>35</sup> To alleviate concerns about the potential endogeneity of the marginal tax rate, in these specifications we use the marginal tax rate that the taxpayer would face if she declared no income on Schedule

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<sup>33</sup> As we should expect given the construction of the variables, only 4 percent of the firms receiving 1099-K from third-party-network entities only are in sectors we believe to be using primarily cash, compared to 13 percent of all 1099-K recipients in 2012. That there is very little overlap between these groups and high rates of bunching in both bolsters our interpretation of the results.

<sup>34</sup> We also estimated each specification in Table 4 using a logit regression, in addition to the probit analysis reported here. The two functional forms yield virtually identical estimated average marginal effects.

<sup>35</sup> Note that our simple model does not take into account the point made by Yitzhaki (1974) that, when the penalty depends on the amount of tax evaded rather than the amount of income underreported, the effect of marginal tax rates on evasion is ambiguous.

C. We find that a higher marginal tax rate is indeed associated with sharper bunching. Using the regression results from column (5), for example, an increase in the marginal tax rate from 25 percent to 35 percent is associated with a 1.5 percent increase in the probability of bunching where the 1099-K amount exactly equals reported receipts. The corresponding effect for the diffuse bunching measure is closer to 1 percent. The model suggests that firms with a higher marginal tax rate would be more likely to report well below the 1099-K amount if it were not for information reporting, so information reporting is more likely to cause them to bunch.

Interestingly the sign of the effect of being in a high-cash-use sector on sharp bunching changes when the marginal tax rate is included as an explanatory variable. We previously noted from Table 3 that sharp bunching is slightly less common in high-cash-use sectors but diffuse bunching is more common, a finding also present in Table 4. However, when we control for the marginal tax rate in the sharp bunching analysis, we see that firms in the high-cash-use sector are *more* likely to report receipts exactly equal to the 1099-K amount. This is consistent with firms in the high-cash category tending to have lower marginal tax rates, so that the simpler analysis of sharp bunching from before conflates the effect of the marginal tax rate with the effect of being in a sector where firms use a large amount of cash. The sign and magnitude of the estimated effect of other explanatory variables are generally invariant to the specification we use.

Theory suggests that firms should bunch if (1) the fraction of true receipts subjected to information reporting is very high, or (2) the propensity to report truthfully in absence of information reporting is low. Together, the results in Tables 3 and 4 suggest that both factors matter. Were the first channel the sole driver of the effects, we should see much less bunching for firms in sectors with high rates of cash use; were the first channel irrelevant, we would not see large rates of bunching for firms receiving 1099-K from TPSEs only.

It thus appears that Form 1099-K induces some firms to change their reported receipts, although the effect we can detect is limited to the roughly 10 percent of Schedule C filers who receive Form 1099-K and report receipts very close to the amount reported on the 1099-K. In the

next section we reconcile the observation that these firms were affected by Form 1099-K with a difficult-to-detect aggregate effect.

### *6.2 Trends based on percent of reported receipts subject to 1099-K reporting*

In the previous section, we documented a large amount of bunching of firms at or near where reported receipts exactly equal the gross dollar amount of receipts reported on Form 1099-K. This section analyzes differential post-2010 trends among 1099-K recipients based on the value of the ratio of the gross amount from a taxpayer's 1099-Ks and reported receipts, denoted  $K/R$ . If the observed bunching is an indication that firms respond to Form 1099-K by increasing their reported receipts, as suggested by the theoretical model in Section 3 and the evidence in the previous section, then firms with  $K/R$  close to one should be the most likely to have been affected by Form 1099-K.

Figure 6 depicts the trends in reported receipts, expenses, and net income, as well as Schedule C filing behavior, based on the value of  $K/R$  in 2011. Note that for firms not receiving a 1099-K,  $K/R$  equals zero. The top three panels analyze trends in reporting for taxpayers filing Schedule C in all years 2004-2012, and the bottom panel analyzes the extensive margin of Schedule C filing behavior.

For firms with a total 1099-K amount less than 75 percent of reported receipts we observe similar growth in receipts and expenses in Panels A and B to those documented in earlier sections: growth rates of 3 to 7 percent both before and after the introduction of 1099-K. In stark contrast, firms with  $K/R$  close to 1 report large increases in their receipts and expenses from 2010 to 2011. In Panel A, we observe 10 to 18 percent growth in reported receipts for firms with  $K/R$  between 0.8 and 1, and almost 30 percent receipts growth for firms with  $K=R$  exactly. These increases are not plausibly attributable to differing pre-trends, which we should observe if, for example, the patterns in the 2010-2011 line in the figure were driven by the rapid growth of (compliant) credit-card only or TPSE-only firms. We plotted receipts growth rates prior to 2010-2011 for comparison; firms with  $K/R$  close to but less than 1 were growing slightly faster (about

7-11 percent) before the introduction of 1099-K, but the changes from 2010 to 2011 still represent an enormous deviation from trend. Firms with  $K=R$  exactly actually had a *lower* growth rate than other firms prior to the introduction of Form 1099-K. In untabulated regressions, we verify that these results are statistically significant by regressing logged receipts (and expenses) on the interaction of the vector of year dummies with a vector of indicators for  $K/R$  bins (see also the related regressions in the next section). We observe statistically significantly larger growth in the bins surrounding  $K=R$  in 2011 and 2012, but not in any other year 2005-2010, confirming that the graphed results in Figure 6 are statistically significant.

In summary, the introduction of the Form 1099-K appears to have had a sizable impact on the subset of firms who reported receipts close to the amount reported on the new form. However, this finding is not the end of the story. While receipts growing especially quickly among the firms with  $K/R$  close to one suggest the possibility that the Form 1099-K increased tax compliance, Panel B of Figure 6 documents a markedly similar pattern in growth rates of reported expenses. Putting receipts and expenses together, in Panel C we observe little to no growth in median incomes attributable to Form 1099-K for firms with  $K/R$  close to 1.<sup>36</sup> We interpret these findings as support for the predictions of the theoretical model suggesting that, when induced to increase their reported receipts in response to new information reporting, many taxpayers also increased their reported expenses, leaving net income largely unaffected. In large part because of the increase in reported expenses, the percent change in median net income was only about 2.5 percent higher than the percent change from the previous year for firms with  $K/R$  close to one, and this is difficult to distinguish from idiosyncratic variation in median incomes.

We also find evidence of an extensive response among the same class of firms—those with  $K/R$  close to one—that is consistent with the theoretical model. Panel D of Figure 6 shows

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<sup>36</sup> We report median income because large outliers frequently occur in the level of net income. The logarithmic transformation largely eliminates this concern for receipts and expenses on their own, but we cannot use the logarithmic transformation for net income due to the presence of negative values of the variable. We observe a qualitatively similar pattern to the one in Panel C of Figure 6 if we instead plot the change in median income instead of the percent change.

that firms with K/R close to one in 2011 were substantially less likely to have filed a Schedule C in prior years. For most values of K/R significantly below 1, 90 percent of 1099-K recipients in 2011 filed in 2010, while only half of firms reporting K=R filed in the earlier year. Among those with receipts within 5 percent of the 1099-K amount, 66 percent filed in the previous year. Put another way, up to 34 percent of this group were induced to file Schedule C in response to the introduction of Form 1099-K.<sup>37</sup>

We next explore differences in this trend among subgroups of interest. Figure 7 reports patterns in receipts growth, as in Panel A of the previous figure based on characteristics of interest.<sup>38</sup> First, motivated by the reasoning in Section 5, we examine firms receiving 1099-MISC from 2004 to 2010 and compare them to firms never receiving a 1099-MISC. Firms receiving 1099-MISC were far less likely to report K=R (the second graph in Panel A), but the few hundred firms that did report K=R after receiving a 1099-MISC actually reported higher receipts growth from 2010 to 2011 than the firms that did not receive a 1099-MISC. These are likely firms for whom the 1099-MISC previously only reported some small fraction of their receipts, while 1099-K reports a larger fraction. Receipts growth for firms with K/R significantly less than one are very similar for 1099-MISC and non-1099-MISC firms, which we should expect given the results shown in Figure 4, Panel D.

Panels B and C of Figure 7 report the same estimates for payment-card-only and TPSE-only recipients of 1099-K. We plot these patterns using a coarser binning of K/R because the latter groups are quite small in the sample of firms filing Schedule C in all years. The qualitative pattern is the same as before for both groups: firms with K/R=1 (in 2012, when we have data on entities issuing 1099-K) experience large receipts growth when 1099-K is introduced in 2011.

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<sup>37</sup> In an untabulated figure, we recreate this graph using predicted Schedule C filing in the previous year based on a probit estimation of whether the firm is predicted to file in the previous year. The pattern is the same: even controlling for other factors by including covariates in the prediction regression, K/R=1 firms are much less likely to have filed in the previous year.

<sup>38</sup> In all cases, the patterns in expenses resemble the pattern for receipts, and median income changes very little with the introduction of 1099-K, even for firms with K/R close to 1.

Other firms grow only very slightly faster from 2010-2011. Perhaps unsurprisingly given the stark differences in bunching rates between these groups, however, TPSE-only firms appear much more strongly affected by Form 1099-K than payment-card only firms.

### *6.3 Firms with Receipts Well in Excess of 1099-K Amount as a Control Group*

The results in the previous section suggest that firms with low values of K/R behaved similarly to firms with high K/R prior to 1099-K, but were unaffected by the introduction of 1099-K. Here we report the results from a analysis that explicitly uses firms with K/R below 0.5 as a control group. We divide “treated firms”—those Schedule C filers with K/R>0.5—further into bins based on K/R to reflect that treatment intensity should be expected to be weaker for firms with K/R just above 0.5 than for firms with K/R equal to or very close to one. Performing the analysis this way allows us to estimate explicitly the magnitudes of the causal effect of 1099-K on firms with high K/R, as suggested by Figures 6 and 7. We use a random growth model to estimate the impact of Form 1099-K (Heckman and Hotz, 1989), and estimate the parameters of the following regression equation:

$$y_{it} = \sum_{b \in B} 1 \left\{ \frac{K_{i2011}}{R_{i2011}} \in b \right\} \alpha_{bt} + \eta_t + \gamma_i + \epsilon_{it}, \quad (10)$$

where  $y_{it}$  is one of three outcome variables (either logged receipts, logged expenses,<sup>39</sup> or (the level of) net income),  $b$  is a set of binned values of K/R and  $B$  is the set of bins with K/R>0.5. This model implies that we can estimate the effect of Form 1099-K on firms in group  $b$  on  $y_{it}$  as

$$\widehat{D}_b = [(\alpha_{bt} - \alpha_{bt'}) - (t - t')(\alpha_{bt'} - \alpha_{bt'-1})], \quad (11)$$

where  $t$  is a post-treatment year (2011 or 2012) and  $t'$  is a pre-treatment year, which will be 2010 in our preferred specification. The first term of Equation (11) captures how receipts grew for firms in a given K/R bin before and after treatment, and the second term compares this growth to how much faster these firms were growing relative to the control group prior to

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<sup>39</sup> Cases in which a firm filed in every year but did not report positive expenses in a given year were dropped from the estimation of Equation (11) when examining log expenses. This restriction eliminates just under 1 percent of the observations for the expenses specification of Equation (11).

treatment. The identifying assumption is that the counterfactual deviations from the group-specific trend—those occurring if 1099-K had not been introduced—were the same in the treatment and control group. To validate this assumption, we also report the results of several placebo tests, in which  $t$  is some pre-treatment year and  $t' = t - 1$ .<sup>40</sup> Importantly, this identification strategy does not require that firms in treatment and control groups grow at the same rate prior to the policy change; indeed, Figure 6 shows that they did not. Differing prior trends could arise, for example, due to internet-based firms growing faster than others. They could also arise out of anticipation of 1099-K, as firms anticipating the policy might have increased their reported receipts (and expenses) in 2009 and/or 2010 to avoid a large (and suspicious) increase in 2011. If this anticipatory response occurred, our specification underestimates the total effect of Form 1099-K.

Figure 8 reports the results of this analysis.<sup>41</sup> In Panel A we see that the effect of 1099-K on receipts is rapidly increasing as K/R moves close to 1, reaching 0.239 (i.e., a 23.9 percent increase in receipts) for firms with K=R in 2011. The increase in receipts due to 1099-K for diffuse bunchers (those with  $0.95 < K/R < 1$ ), was 13.2 percent in 2011. Panel B of Figure 8 reports that for expenses, we see a very similar pattern with slightly smaller effect sizes of 13.8 percent for the sharp bunchers and 12.7 percent for the diffuse bunchers. The placebo tests all result in a small estimated effect relative to the estimated effect of the policy change, as we should expect if the identifying assumption is satisfied to a reasonable approximation. In Panel C, we see there is little discernible effect on net income. None of the estimated effects, placebo or otherwise, is statistically significant at the 5 percent level.

We performed several robustness checks for this analysis. First, this analysis was limited to firms filing Schedule C in every year from 2004-2012, like many other results above. We use

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<sup>40</sup> It is the results of these placebo tests that led us to prefer the random growth model specification to a differences-in-differences design (Heckman and Hotz, 1989).

<sup>41</sup> We omit some bins with K/R only slightly above 0.5 for clarity; the estimated effect on these bins is very small. We also omit the results for firms with  $K/R > 1$ .

this restriction to alleviate concerns about firms endogenously selecting into and out of the population of Schedule C filers during the sample period. If we ignore the selection issue and estimate Equation (10) on all firms filing Schedule C at least once in 2004-2012, we obtain similar results. Second, our estimate of Equation (10) included firms filing Schedule C and receiving 1099-K in 2011. A small number of firms receive 1099-K in 2011 but not 2012, and removing them from the analysis changes very little. Third, our preferred specification includes all firms with  $K/R < 0.5$  in the control group, but we obtain very similar results when designating firms with  $K/R < 0.3$  or  $K/R < 0.7$  as the control group. Finally, we obtain similar results if for 2011 and the placebo years we let  $t' = t - 2$  in Equation (11), instead of  $t' = t - 1$ .

#### 6.4 Receipts and expenses

Schedule C filers have a tendency to report receipts exactly equal to expenses, compared to having reported receipts just above or below expenses. There are two potential reasons this may occur, as mentioned in Section 3. First, taxpayers may target zero business tax liability when underreporting receipts and/or overstating expenses.<sup>42</sup> Second, for various reasons, taxpayers may not claim legitimate expenses in excess of receipts, creating a situation in which expenses exactly equal receipts.<sup>43</sup> If taxpayers fail to report valid expenses, preferring instead to merely report no (as opposed to negative) business income, then an increase in reported receipts induced by 1099-K may merely be met with an increase in the reporting of *valid* expenses.

Figure 9 shows that firms receiving a Form 1099-K in 2011 became substantially more likely to report receipts almost exactly equal to expenses ( $R/E=1$ ) in 2011 than in 2010. Of all 1099-K recipients in 2011, 0.47 percent report receipts exactly equal to expenses in 2010, and 1

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<sup>42</sup> Overstating expenses may result in some expenses getting disallowed under audit. As a result, the response in new income we document may represent a lower bound, given that under audit, some improperly claimed expenses may be disallowed. Some taxpayers may also accelerate real expenses into a year with otherwise positive profits in order to zero out tax liability from the business.

<sup>43</sup> For example, taxpayers may not deduct expenses in order to meet the presumptive rule of IRC §183(d), which suggests that firms that show profit three out of five years are deemed not to be subject to the hobby loss rules (they can still deduct business losses against ordinary income). Further, some deductible expenses, such as the home office deduction, may not be deducted in excess of gross income (IRC §280A(c)(5)).

percent do so in 2011. Of 1099-K recipients in 2012, 0.45 percent report receipts exactly equal to expenses in 2010, 0.64 percent do so in 2011, and 1 percent do so in 2012. This finding corroborates the evidence in Sections 6.2 and 6.3 suggesting that those taxpayers whose reported receipts rose due to Form 1099-K also increased expense reporting, substantially diminishing its effect on overall tax revenues, and possibly diminishing the effect on reporting compliance by offsetting more accurate receipts reporting with less accurate expense reporting. It also corroborates the findings of Carrillo et al. (2014), who uncover evidence of a similar kind of evasion substitution in response to expanded information reporting in Ecuador (see also Pomeranz, 2013; Morse et al., 2009).

Table 5 reports rates of bunching in several subpopulations.<sup>44</sup> Of particular interest are the results related to new Schedule C filers. Overall new Schedule C filers are not disproportionately likely to report receipts equal to expenses: Column 1 indicates that about 1 percent of all Schedule C filers report receipts equal to expenses. This proportion is similar to the value for all 1099-K firms—in 2011, 1 percent of 1099-K recipients have  $R=E$ . This is not markedly different from the proportion of new Schedule C filers with  $R=E$ , 1.4 percent, in Column 3. However, in Column 4, we see that about 4.3 percent of new filers receiving a Form 1099-K in 2011 report receipts equal to expenses. In contrast, firms filing Schedule C in every year of 2004-2012 were unlikely to report receipts equal to expenses, even if they got a 1099-K (Columns 4 and 5). This finding suggests that new filers induced to file by 1099-K were disproportionately likely to offset their receipts with expenses.

In the final two columns of Table 5, we focus specifically on firms reporting receipts exactly near the 1099-K amount, as we have seen in earlier sections that these firms appear especially likely to have been affected by increased information reporting. These firms are much more likely to bunch than any others we observe: about 7 percent of firms reporting receipts

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<sup>44</sup> For selection criteria appearing in Table 3 but not Table 5, such as whether the firm is in a high-cash sector or received 1099-K from TPSEs only, we do not observe any stark differences in the rate of bunching where receipts equal expenses between groups.

equal to the 1099-K amount *also* report expenses equal to receipts, while 4 percent of firms with receipts within 5 percent of the 1099-K amount report receipts equal to expenses. Much of this is driven by payment-card-only firms: 9 percent of payment-card-only 1099-K recipients with receipts equal to the 1099-K amount also report receipts equal to expenses, while only 4 percent of TPSE-only 1099-K recipients with receipts equal to the 1099-K amount do so. To summarize, when we focus on firms we believe to have been especially strongly affected by 1099-K, we see more bunching at where receipts equal expenses, which suggests that expense offsetting did occur in response to the form.

### *6.5 Which expenses increased?*

Our analysis suggests that firms that increased their reported receipts as a result of 1099-K reporting may have simultaneously increased reported expenses. There are several reasons a taxpayer might increase reported expenses upon receiving a Form 1099-K. First, taxpayers may want to minimize their tax liability through any means necessary, and take expenses to which they are not legally entitled. As tax liabilities and marginal tax rates increase as a result of 1099-K, the marginal benefit of overstating expenses increases. Second, taxpayers may have previously not reported all valid expenses in an attempt to avoid, for whatever reason, reporting negative net income.<sup>45</sup> Having higher reported receipts makes that constraint less binding. Third, for certain expenses, such as Section 179 depreciation and home office expenses, expense deductions statutorily cannot be so large as to create negative net income. Fourth, and finally, there is anecdotal evidence that in some instances the way 1099-K reports were created induced increased expenses. For example, an app developer may be compensated for sales on an app store net of a commission. Before the 1099-K program, she may have merely reported the net payment as part of receipts and deducted any other valid business expenses. Upon receiving a 1099-K for the gross amount, she may report total receipts (without netting commissions),

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<sup>45</sup> Relatedly, the firm may wish to avoid reporting a suspiciously low rate of profit, as in the model of Carrillo et al. (2014).

leading her to report higher receipts and now claiming commission expenses that were previously netted out of receipts.

In this section we examine which expenses increased as a result of 1099-K reporting. In doing so, we are able to reject that the third explanation discussed above contributed substantially to the increase in expense reporting. Specifically, we examine the average ratio of particular expense line items, as a fraction of total expenses, for firms in different binned values of K/R. We do this by year, and look for specific expenses that increased in 2011 and 2012 for K/R-close-to-one firms. In untabulated analysis, we start by examining all expense line items available to us—wage expense, cost of goods sold, home office deduction, other expenses (line 27a on Form 1040 Schedule C), depreciation expense, insurance expense, legal expenses, meals and entertainment, mortgage expenses, office expenses, repairs and maintenance, travel expense, utilities, automobile expense, and the aggregate of all other expenses not individually examined. Of these, only “other expenses,” (Line 27a on Form 1040 Schedule C) increased as a percentage of total expenses in 2011 and 2012 for K/R-close-to-one firms.

Figure 10, Panel A, tabulates other expenses as a fraction of total expenses, by year, and K/R. Both 2011 and 2012 show a substantial departure from historical norms for firms reporting K near R, with other expenses representing a larger portion of total expenses than in previous years. For the bin where  $K/R=1$ , the average ratio of other expenses to total expenses is 0.252 in 2011 and 0.250 in 2012. In 2008-2010, average values for firms in this bin were always below 0.221. This nearly 15 percent increase in the share of total expenses comprised by other expenses suggests that some taxpayers, when wanting more expenses to net against increased receipts as a result of 1099-K, increased reported other expenses. Panel B tabulates a similar result, but examines the proportion of firms in the bin that have a non-zero value of Other Expenses. Panel B suggests that an increase in other expense reporting happened not only at the intensive margin, but, also at the extensive margin. For  $K/R=1$  firms, the percentage of firms claiming Other Expenses increases dramatically in 2011 and 2012. Panel C plots the first differences of the

expense shares reported in Panel A, highlighting the sharp increase in the share of expenses devoted to Other Expenses from 2010 to 2011. Growing use of Other Expenses prior to 2011 for the high-K/R groups could be attributable to behaviors like the commissions example described above. In Panel D, we show that taxpayers' use of the home office deduction, the most likely candidate for the third explanation above, did not grow substantially in 2011.

This analysis suggests that as taxpayers reported additional revenue in response to 1099-K reporting, they increased expenses to offset some of the increase, specifically opting to increase Other Expenses. As a share of total expenses, neither depreciation expenses (where Section 179 depreciation is reported) nor home office expenses increased in 2011 and 2012, suggesting that statutory limitations on expense deductions are likely not to blame for increased expense reporting due to 1099-K. We cannot rule out that some of the expense increases occur because some taxpayers are now forced to declare new expenses such as commissions to reconcile their receipts with the Form 1099-K—the fourth explanation above. Commissions could be claimed in the “other” category where the increases occurred. However, the pattern of reported sectors of bunching firms, which we discussed in Section 6.1, suggests that explanations involving commissions and the like are unlikely to account for most of the observed offsetting behavior: many bunching firms exist in sectors where commissions and the like should not be common. The remaining explanations for expense offsetting involve some degree of noncompliance by the taxpayer.

#### *6.6 What we learn from bunching*

The data analysis shows clearly that taxpayers were disproportionately likely to self-report receipts very close to the amount reported to the IRS on 1099-K forms. Nine to 11 percent of 1099-K recipients report their receipts within 5 percent of the amount reported on 1099-K, and 3 to 4 percent of taxpayer report receipts exactly equal to the 1099-K amount. Some of this bunching undoubtedly occurs because some businesses deal only in payment methods subject to 1099-K reporting (i.e., online vendors), but we also find bunching in sectors where substantial

cash use should be typical. This result suggests that many taxpayers responded to the 1099-K initiative by reporting receipts near the 1099-K amount, even in cases when the true value of receipts did not equal reported receipts.

The 1099-K prompted an estimated 24 percent increase in reported receipts on average for firms reporting receipts exactly equal to the 1099-K amount, but also increases in reported expenses of 13 percent in this group. Among firms reporting receipts above the 1099-K amount by 5 percent or less, the degree of offsetting was even larger, with receipts and expenses increasing by 14 and 13 percent, respectively. This offsetting moderated the impact of 1099-K on total tax payments, even in groups strongly affected by 1099-K. Some of the increase in expenses occurred in the Other Expenses line item, with the share of total expenses devoted to this line item increasing 15 percent from pre-1099-K to post-1099-K for taxpayers reporting receipts exactly equal to the 1099-K amount. Finally, we document a sizable extensive margin effect for bunching firms. Of firms reporting receipts within 5 percent of the 1099-K amount, 66 percent did not file in the previous year, while half of firms reporting exactly the 1099-K amount did not file a Schedule C in the previous year. For comparison, around 90 percent of 1099-K recipients with receipts well in excess of the 1099-K amount filed before receiving 1099-K.

## **7. Conclusions**

U.S. tax policy has made expanded third-party information reporting a centerpiece of its enforcement policy, with a prime example being the new Form 1099-K that applies to business receipts processed through credit cards and third-party payments. At first blush this would seem to increase compliance, as the IRS would more easily learn when the reported receipts of a business fell short of now-known receipts. However, both because Form 1099-K does not apply to cash transactions and because business expenses are not currently subject to third-party information reporting, there could be leakage in the impact on revenue.

Because only a small share of the total net income of sole proprietors is reported by those that received a Form 1099-K, aggregate trends in receipts and expense reporting or Schedule C

filing behavior do not reveal a sharp break in 2011, whether or not we condition on a variety of observable data about these sole proprietors. We then focus on the type of firms that theory suggests are most likely to be affected by Form 1099-K: those reporting receipts close to the amount reported on 1099-Ks. Theory suggests these firms are likely to have high noncompliance before the introduction of the form as well as high rates of credit card and third-party payment use. We find evidence suggesting that this small group of firms increased their reporting of revenues dramatically, along both intensive (reporting compliance) and extensive margins (Schedule C filing compliance), in response to the introduction of Form 1099-K. The evidence suggests to us that many of these firms are reporting revenues that they would not have otherwise reported. The implication of this finding for tax revenue is moderated by the fact that firms in this subgroup also increased their reported expenses.

For information reporting to have a strong effect on tax compliance, it must target a noncompliant group of firms and it must subject a large share of their income to information reporting. The subset of firms we identify as being affected by 1099-K constitutes at most 15 percent of all 1099-K recipients. After all, much noncompliance among small businesses is related to cash use, which the 1099-K initiative does not address. Even for affected firms, expenses are subject to no information reporting. As a result, the overall change in reported tax liability through this channel is small. At the same time, our analysis suggests that expanded information reporting can shrink the large amount of noncompliance in one segment of the small-business sector. Future research should examine the impact of the 1099-K initiative on small partnerships and corporations, and consider what other initiatives could consolidate its compliance gains. Further, as audit data from the National Research Program become available, the net effects from the 1099-K may be better understood.

Joel Slemrod, University of Michigan  
Brett Collins, Internal Revenue Service  
Jeffrey Hoopes, Ohio State University  
Daniel Reck, University of Michigan  
Michael Sebastiani, Internal Revenue Service

## Appendix

### Data Construction

We rely on data from the Compliance Data Warehouse (CDW), the IRS's primary research database, and in particular on two CDW databases: the Individual Returns Transaction File (IRTF) and the Information Returns Master File (IRMF), which contain transcribed tax return data from key IRS forms, including Form 1040, Form 1040 Schedule C, Form 1099-MISC, and Form 1099-K. Because our analysis requires taxpayer level data and most CDW information is provided at the tax form level, a major part of constructing our analysis dataset involves converting form-level data to taxpayer-level data and addressing related problems, such as choosing which filing to use when a taxpayer has multiple filings of the same form for a single tax year. These duplicate filings are usually the result of a taxpayer filing an amended or corrected return, but they can also be caused by errors, for example by a taxpayer mistakenly mailing multiple copies of the same return to the IRS. In general, when duplicates exist, we attempt to select the most recently posted return for a given tax year, or the one that appears to reflect the greatest amount of business activity in the case of multiple returns processed in the same time period.

#### *Schedule C data*

Our dataset begins with all Form 1040 Schedule C filings from tax year 2004 through tax year 2012 from the CDW IRTF\_SCHEDULE\_C table. Most Schedule C filers only need to file one Schedule C for their primary business, but those running multiple businesses are required to file a separate Schedule C for each one. In order to simplify our analysis and allow for the use of return information that cannot easily be aggregated, such as industry codes, we target only the one primary Schedule C for each taxpayer identification number (TIN) for inclusion in our analysis dataset, rather than attempting to combine all Schedule C activity for each TIN by summing fields across primary, secondary, and any additional Schedule C filings. To select only the primary Schedule C for each taxpayer, we start by restricting the initial pool of Schedule C filings to include only those returns with the most recent posting date for each TIN in each tax year, since more recent postings are likely to reflect amended or corrected returns that are more accurate than the original, earlier filings. If multiple Schedule Cs remain after restricting the data to only the most recent filings, we select only the form with the highest reported gross receipts from line 1 of the Schedule C for each TIN and tax year as a method to identify the taxpayer's primary Schedule C business activity. At this point, any additional duplicates represent Schedule C filings for the same TIN in the same tax year posted at the same time with the same gross receipts, and with no further basis to prefer one duplicate over another, we aim for consistency, in most cases selecting the largest value available on any of the duplicates on a field-by-field basis (the exceptions are the categorical fields for accounting method and TIN type, for which we take the minimum value).

#### *Form 1040 data*

Once we have constructed observations for a single Schedule C for each TIN-tax year combination, we add additional taxpayer-level data from the IRTF\_ENTITY table, which is already structured this way, with one observation per taxpayer per tax year. This table allows us to bring in fields for the TIN of the taxpayer's spouse in cases where the filing status of the taxpayer's Form 1040 is married filing jointly and the spouse's TIN is derived from a Social

Security Number (SSN), rather than an Employer Identification Number (EIN), which can help match the taxpayer's primary returns to the relevant information returns. We also rely on the IRTF\_ENTITY table for some filing information from the taxpayer's Form 1040 which can be assumed to also be true of the Schedule C, including whether or not the return was electronically filed and whether or not a professional tax preparer was involved in the preparation of the return, which we infer by the presence of a preparer TIN and/or a preparer EIN on the Form 1040.

#### *Information returns, Form 1099-K and Form 1099-MISC*

With primary return data in place, we follow a similar process with information returns, using data from both the IRMF\_F1099MISC and IRMF\_F1099K tables. Since we can only use information return records that can be matched to Schedule C filers, we eliminate all information returns with invalid payee TINs. Because some payee TINs represent SSNs and some represent EINs, information returns must be matched to the primary returns in stages, and we ensure we capture all of a payee's returns whether the filer used an SSN or an EIN for the payee TIN by aggregating all payees' information returns across payers separately for returns with payee SSNs and payee EINs, only calculating the total across all information returns once each piece is matched to the primary returns. To help reduce the number of potential mismatches, we also take advantage of another CDW field, the TIN Association Key Code, to restrict the pool of information returns with an EIN payee TIN to those with the EIN of a sole proprietorship. Errors are common on the payee TINs of information returns, but, while common, they are also difficult to detect. However, since Schedule C is filed only by sole proprietorships, eliminating EINs associated with non-sole proprietorship businesses can prevent cases in which an information return that belongs to a large business but is incorrectly filed with the TIN of a small Schedule C business results in a large discrepancy between reported Schedule C income and information return income.

In aggregating Form 1099-K and 1099-MISC income, we allow one of each return for each payee TIN-tax year-payer TIN combination. As CDW IRMF tables code whether a return was filed as original, corrected, or amended, if we have multiple filings by the same payer for the same payee in the same tax year, we prioritize the amended return if available, then the corrected, then the original, assuming amended returns are more accurate than the original filings. If duplicates remain, we usually select the largest value available on a field-by-field basis, as we do with Schedule C, with the exception being the type of transaction reported field from Form 1099-K, for which we use the minimum value. For Form 1099-K, we calculate total 1099-K receipts from the gross payment amount in box 1 (see Figure 1), splitting payment card income and third-party-network payment income where possible. Form 1099-MISC income is calculated as the sum of rents (box 1), royalties (box 2), other income (box 3), fishing boat proceeds (box 5), medical and health care payments (box 6), nonemployee compensation (box 7), substitute payments in lieu of dividends or interest (box 8), crop insurance proceeds (box 10), and gross proceeds paid to an attorney (box 14).

#### *Merging primary returns and information returns*

Having calculated total 1099-MISC and 1099-K income for each taxpayer by TIN type (SSN or EIN), we use a multi-stage process to match the information return data to Schedule C data. Information returns with EIN payee TINs have these payee TINs matched to the EIN reported on the Schedule C if one is available. Schedule C EINs are reported in a separate field from the

Schedule C TIN, which is always an SSN. For returns with an SSN payee TIN, we start with the full population of Schedule C returns and SSN TIN information returns, and match as many as possible with the primary TIN. Any returns that were matched are then removed from the pool of Schedule C returns and Forms 1099-K/1099-MISC, and an additional match is conducted on the remaining returns using the TIN of the spouse of the primary filer of the Schedule C, when available (from the taxpayer's Form 1040). This process allows us to match as many information returns as possible to each taxpayer's Schedule C, whether they are filed with an EIN, primary SSN, or spouse SSN as the payee TIN. Once all possible matches are made, we sum income fields derived from all payee TIN types for each TIN to calculate total 1099-K and 1099-MISC income for each Schedule C filer. Due to errors with filing, transcription, or incorrect TINs, we observe numerous cases where total income reported on information returns greatly exceeds that reported on the Schedule C, with extreme cases reporting over \$1 billion in receipts, which are unlikely to reflect the true income of a sole proprietorship filing a Schedule C. We attempt to reduce the impact of these extreme observations on our analysis by removing observations with dollar values over \$1 billion, applying this restriction not only to income reported on information returns, but also key variables from the Schedule C, such as receipts and expenses, for consistency.

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**Table I. Descriptive Statistics on Sole Proprietorships and 1099-K Recipients**

Panel A. Number of taxpayers filings Schedule C and receiving 1099-K per year

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Number of taxpayers filing Schedule C	20,989,774	21,973,643	22,570,198	23,293,611	23,106,563	23,011,483	23,184,700	23,293,079	22,722,882
Number of taxpayers receiving 1099-K	N/A	1,185,364	1,226,624						
Number of 1099-MISC	12,602,790	13,054,379	11,422,177	11,811,580	13,772,250	12,992,037	13,440,875	13,565,210	12,703,269
Share using Paid Preparer	0.740	0.730	0.720	0.710	0.710	0.710	0.710	0.700	0.690

Panel B. Descriptive Statistics of receipts and expenses for Schedule C filers

	2004		2005		2006		2007		2008	
	Sum	Median								
1099-MISC amount	461,651,731,502	7,642	487,574,679,712	7,744	480,972,046,250	8,712	463,352,339,452	8,493	514,863,386,850	7,589
Gross receipts by tax year	1,114,973,927,724	10,170	1,196,165,660,397	10,210	1,285,328,104,416	10,240	1,321,188,963,103	10,000	1,280,447,326,135	9,937
Cost of Goods Sold Deduction	360,351,420,180	0	383,649,893,696	0	403,295,235,150	0	406,731,866,455	0	401,470,195,547	0
Depreciation Deduction	43,995,325,663	0	42,445,099,745	0	39,543,598,031	0	41,049,046,475	0	43,324,063,812	0
Wages Deduction	67,877,738,703	0	71,071,594,690	0	75,372,257,393	0	77,217,581,954	0	75,629,878,287	0
Total Deductions	885,198,096,095	5,995	948,766,332,320	5,995	994,163,395,465	5,911	1,025,906,328,493	5,697	1,014,341,711,900	5,478
1099-MISC amount / total reported receipts	60,501,398	1	69,319,963	1	77,702,239	1	90,321,092	1	107,682,229	1

	2009		2010		2011		2012	
	Sum	Median	Sum	Median	Sum	Median	Sum	Median
1099-K amounts by tax year	.	.	.	.	137,596,127,166	25,777	145,104,440,987	26,841
1099-MISC amount	330,078,532,105	6,719	486,025,841,247	7,556	496,789,609,453	7,703	501,624,114,023	7,306
Gross receipts by tax year	1,122,622,948,158	9,743	1,137,030,181,519	9,881	1,191,521,942,884	10,000	1,178,155,549,276	10,000
Cost of Goods Sold Deduction	337,589,961,980	0	341,134,431,591	0	355,164,381,566	0	346,877,081,074	0
Depreciation Deduction	34,990,132,902	0	33,874,113,252	0	32,960,591,777	0	29,898,147,459	0
Wages Deduction	70,038,546,687	0	70,250,773,948	0	71,544,015,086	0	71,441,407,426	0
Total Deductions	882,295,609,656	4,933	884,354,403,969	4,790	904,999,744,101	4,800	889,747,819,940	4,792
1099-K amount / total reported receipts	.	.	.	.	295,932,213	0.400	101,669,516	0.430
1099-K + 1099-MISC amount/total reported receipts	.	.	.	.	298,458,778	0.630	122,886,766	0.640
1099-MISC amount / total reported receipts	76315995.88	1	122559069.1	1	229,505,959	1.000	249,373,177	1.000

**Table II. Number of Schedule C Filers, by NAICS Code, for Common NAICS Codes**

	<b>Percentage of All Taxpayers in Sector that Ever received a 1099-K</b>	<b>Percentage of All Taxpayers in Sector that Ever received a 1099-MISC</b>	<b>Percentage of C Filers in this Sector</b>
All Other Personal Services	4.00%	71.89%	6.87%
Independent Artists, Writers, & Performers	3.19%	85.67%	4.52%
Offices of Real Estate Agents & Brokers	1.12%	94.72%	4.08%
All Other Professional, Scientific, & Technical Services	2.85%	88.33%	4.35%
Other Direct Selling Establishments	5.11%	66.17%	4.33%
Educational Services	1.95%	85.61%	3.06%
Management, Scientific, & Technical Consulting Services	1.68%	88.89%	2.79%
Child Day Care Services	1.27%	57.02%	3.79%
Janitorial Services	0.80%	66.49%	3.04%
Legal Services	6.25%	90.40%	1.80%
Grocery Stores	38.78%	70.08%	0.22%
Offices of Chiropractors	36.61%	93.00%	0.21%
Offices of Optometrists	36.12%	95.59%	0.11%
Drycleaning & Laundry Services	35.04%	53.24%	0.13%
Florists	31.43%	60.11%	0.15%
Sporting Goods Stores	29.91%	58.28%	0.12%
Other Amusement & Recreation Industries	10.79%	70.55%	0.24%
Travel Accommodation	24.76%	71.66%	0.22%
Other Clothing Stores	24.55%	53.41%	0.14%
Jewelry Stores	24.44%	55.56%	0.18%

Notes. This table tabulates, in the first column, the percentage of all Schedule C taxpayers in a sector that ever receive a 1099-K at any time during our sample period. The second column tabulates the percentage of all taxpayers in the sector that receive the 1099-MISC any time in our sample period. The final column tabulates the percentage of all Schedule C taxpayers in each sector. The first 10 sectors (those above the bold line) represent the 10 highest populated NAICS codes among all Schedule C taxpayers. The second 10 sectors represent the 10 sectors with the highest percentage of 1099-K recipients, conditional upon having at least 0.10 percent of all Schedule C taxpayers in the sector.

**Table III. Rates of Bunching Where Reported Receipts Equal the 1099-K Amount in Select Subpopulations**

	Tax year	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		All 1099-K recipients in the given tax year	New Schedule C filers receiving Form 1099-K	1099-K recipients filing in every year of 2004-2008	1099-K recipients in sectors using some cash	1099-K recipients in sectors using primarily cash	Firms receiving 1099-K from payment cards only	Firms receiving 1099-K from TPSEs only
Percent with R=K	2011	0.030	0.119	0.011	0.021	0.020	--	--
	2012	0.036	0.100	0.013	0.027	0.028	0.018	0.171
Percent with R within 5 percent of K	2011	0.094	0.260	0.052	0.083	0.106	--	--
	2012	0.109	0.223	0.060	0.099	0.128	0.063	0.423
Number of Taxpayers	2011	1184359	146182	546601	465636	154391	--	--
	2012	1225694	139152	557299	486289	164762	1008507	138585

Notes: we denote reported receipts by R and the gross amount from 1099-Ks by K. By R=K in the first row, we mean firms reporting a dollar amount of receipts *exactly* equal to the gross amount from Form 1099-K's. In column (2), "new filers" refers to firms not filing Schedule C in the previous tax year. Columns (4) and (5) are constructed as follows. Firms designated as receiving some cash are designated by having a two digit NAICS code equal to 236118 238130:238990, 441120, 441320:453998, 454210, 485112:485320, 488410, 492110, 492210, 512131, 512132, 532111:532310, 541921, 541940, 561622, 561710, 561730, 561740, 611691, 624410, 711110, 711212, 711310, 711310, 712110, 712130, 713110, 713120, 713210, 721191, 721211, 721214, 722320, 722410:811211, 811411:812113, 812310, 812320, 812910:812930. Firms designated as receiving mostly cash are designated by having a two digit NAICS code equal to 445110:445291, 45310, 453991, 454210, 485310:485320, 492110, 492210, 512131, 512132, 532220, 624410, 711110, 711212, 713110, 713120, 713210, 722410:722515, 811192, 812111:812113, 812310,812930.

**Table VI. Predictors of 1099-K Amount-Receipts Bunching Behavior**

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Tax Year	1(R=K)	1(R=K)	1(R=K)	1(R=K)	1(R=K)	1(0.95K≤R≤1)	1(0.95K≤R≤1)	1(0.95K≤R≤1)	1(0.95K≤R≤1)	1(0.95K≤R≤1)
	2011	2011	2011	2012	2012	2011	2011	2011	2012	2012
Intercept	-1.065 (0.005)	-1.063 (0.005)	-1.328 (0.008)	-1.298 (0.01)	-1.547 (0.012)	-0.580 (0.004)	-0.578 (0.004)	-0.798 (0.007)	-0.691 (0.007)	-0.927 (0.009)
Filed C in Previous Year	-0.982 (0.005) {-0.066}	-0.811 (0.006) {-0.054}	-0.812 (0.006) {-0.056}	-0.441 (0.006) {-0.031}	-0.447 (0.006) {-0.034}	-0.953 (0.004) {-0.143}	-0.799 (0.005) {-0.118}	-0.800 (0.005) {-0.119}	-0.407 (0.005) {-0.059}	-0.414 (0.005) {-0.063}
In high-cash sector	-0.176 (0.008) {-0.012}	-0.197 (0.008) {-0.013}	-0.137 (0.008) {-0.009}	0.083 (0.007) {0.006}	0.159 (0.007) {0.012}	0.066 (0.005) {0.010}	0.049 (0.005) {0.007}	0.092 (0.005) {0.010}	0.347 (0.005) {0.051}	0.400 (0.005) {0.059}
Filed C 2004-2012		-0.381 (0.006) {-0.025}	-0.409 (0.006) {-0.028}	-0.429 (0.006) {-0.03}	-0.468 (0.006) {-0.035}		-0.320 (0.004) {-0.047}	-0.343 (0.004) {-0.049}	-0.346 (0.004) {-0.05}	-0.375 (0.004) {-0.055}
Card-only 1099-K(s)				-0.258 (0.01) {-0.018}	-0.278 (0.01) {-0.021}				-0.455 (0.007) {-0.066}	-0.468 (0.006) {-0.070}
3PN-only 1099-K(s)				0.884 (0.010) {0.063}	0.864 (0.010) {0.065}				0.990 (0.007) {0.144}	0.974 (0.007) {0.149}
Marginal Tax Rate			1.915 (0.049) {0.133}		2.051 (0.046) {0.154}			1.545 (0.037) {0.084}		1.797 (0.036) {0.102}
N	1073809	1073809	1073809	1121193	1121193	1073809	1073809	1073809	1121193	1121193

Notes: The sample for every regression in this table is the population of 1099-K recipients who filed Schedule C in the given tax year (2011 in Columns 1, 2, 3, 6, 7 and 8 or 2012 in Columns 4, 5, 9, and 10) and reported receipts equal to or above the 1099-K amount. Below coefficient estimates from the probit regression we report standard errors in round parentheses, followed, in braces, by the average marginal effect of a change in the variable on the probability that the dependent variable equals one, holding constant all other independent variables for an observation. The dependent variable in columns (1) through (5) is an indicator coded to equal one for whether a taxpayer reports receipts exactly equal to the gross 1099-K amount. The dependent variable in columns (6) through (10) is an indicator coded to equal one for whether receipts were equal to 95 to 100 percent of the gross 1099-K amount. In specifications including the marginal tax rate, the marginal tax rate that would apply to the taxpayer if Schedule C income were eliminated, calculated using an IRS research tax calculator, is employed as an instrument for the marginal tax rate.

**Table V. Rates of Bunching Where Reported Receipts Equal Reported Expenses in Select Subpopulations**

	(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)	
	Tax year	All firms	All 1099-K recipients in the given tax year	New Schedule C Filers	New Schedule C filers receiving 1099-K in the given tax year	Firms filing in every year of 2004-2012	1099-K recipients filing in every year of 2004-2012	Firms reporting R=K	Firms reporting R within 5 percent of K
Percent with R=E	2009	0.011	--	0.015	--	0.007	--	--	--
	2010	0.011	--	0.014	--	0.007	--	--	--
	2011	0.011	0.010	0.014	0.043	0.008	0.004	0.069	0.042
	2012	0.011	0.010	0.014	0.032	0.009	0.005	0.066	0.042
Number of Taxpayers*	2010	22896179	--	5645463	--	6454500	--	--	--
	2011	23083651	--	5717308	--	6454500	--	--	--
	2011	23181066	1184359	5785811	149152	6454500	546601	35720	111639
	2012	22622981	1225694	5598704	127242	6454500	557299	44508	133108

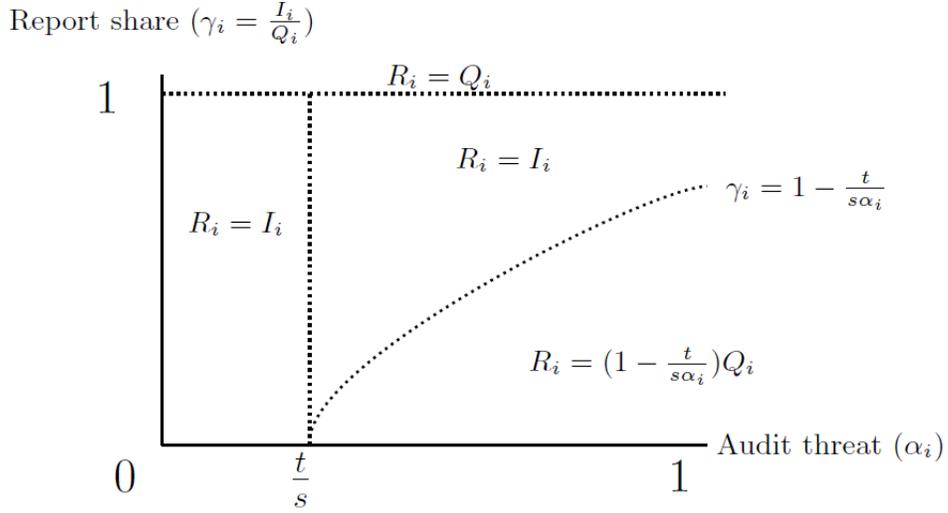
Notes: We denote receipts by R, expenses by E, and receipts by K. By R=E in the first row, we mean the fraction of firms reporting receipts exactly equal to expenses. The selection criteria in columns (6) and (7) are exactly the same as those used to calculate the percentages in Table 3. \*Number of taxpayers here refers to taxpayers reporting either positive expenses or positive receipts. If we limit the study of R=E-bunching to firms reporting both positive receipts and positive expenses, the percentages in the top half of the table all increase (because the denominator becomes smaller), but the qualitative patterns are exactly the same.

**Figure I. Form 1099-K From 2011**

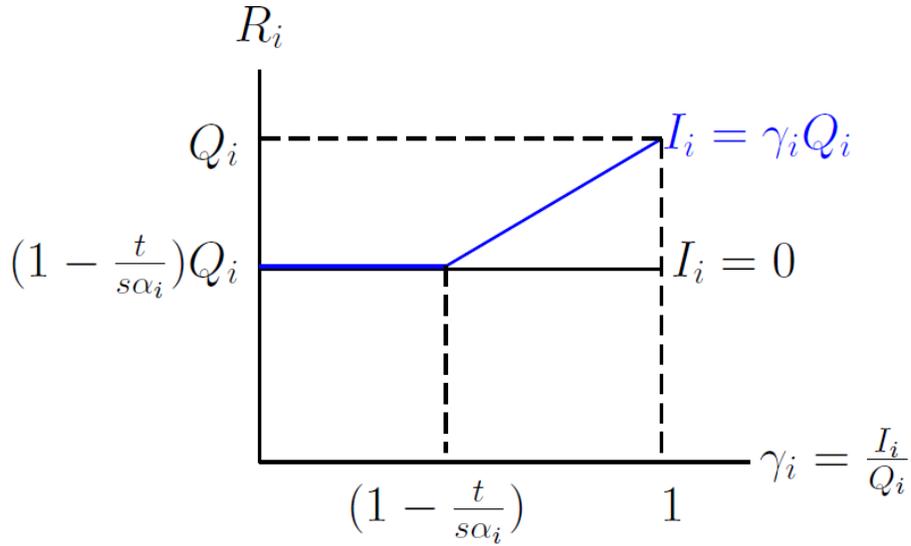
FILER'S name, street address, city, state, ZIP code, and telephone no.	FILER'S federal identification no.	OMB No. 1545-2205	<b>Merchant Card and Third Party Network Payments</b>  <b>2011</b>  Form <b>1099-K</b>
	PAYEE'S taxpayer identification no.		
If checked, FILER is Payment Settlement Entity (PSE) <input type="checkbox"/> OR If checked, FILER is Electronic Payment Facilitator (EPF)/ Third Party Payer (TPP) <input type="checkbox"/>	<b>1</b> Gross amount of merchant card/third party network payments \$	<b>2</b> Merchant category code	<b>Copy B</b> For Payee  This is important tax information and is being furnished to the Internal Revenue Service. If you are required to file a return, a negligence penalty or other sanction may be imposed on you if taxable income results from this transaction and the IRS determines that it has not been reported.
		<b>3</b>	
PAYEE'S name	<b>5a</b> January \$	<b>5b</b> February \$	
	<b>5c</b> March \$	<b>5d</b> April \$	
Street address (including apt. no.)	<b>5e</b> May \$	<b>5f</b> June \$	
	<b>5g</b> July \$	<b>5h</b> August \$	
City, state, and ZIP code	<b>5i</b> September \$	<b>5j</b> October \$	
	<b>5k</b> November \$	<b>5l</b> December \$	
PSE'S name and telephone number			
Account number (see instructions)			
Form <b>1099-K</b>	(Keep for your records)	IRS.gov/form1099k	Department of the Treasury - Internal Revenue Service

**Figure II. Theoretical Prediction of the Impact of Form 1099-K**

Panel A. Reported receipts as a function of the share of receipts reported and audit threat in absence of information reporting

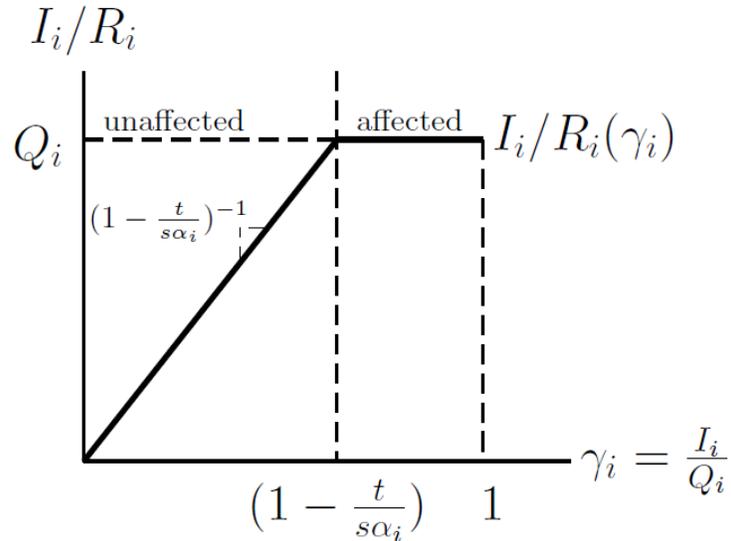


Panel B. Reported receipts as a function of the amount reported to the tax authority

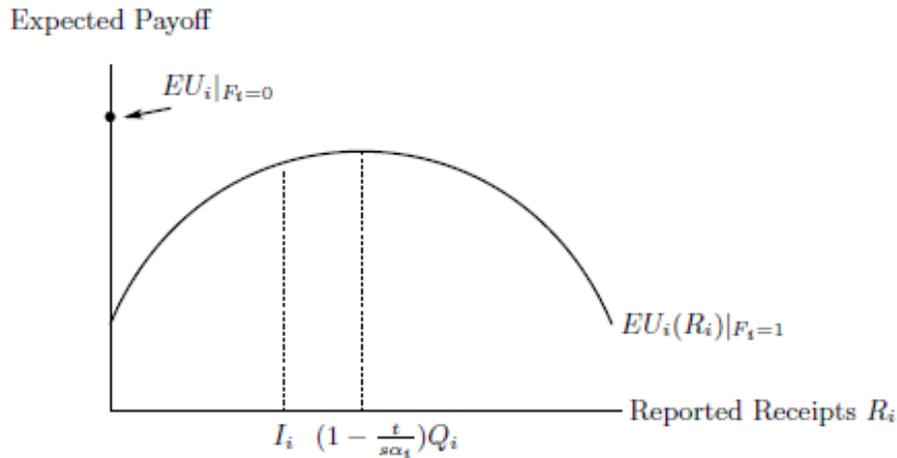


**Figure II. (continued) Theoretical Prediction of the Impact of Form 1099-K**

Panel C. Predicted ratio of information report amounts and receipts amounts



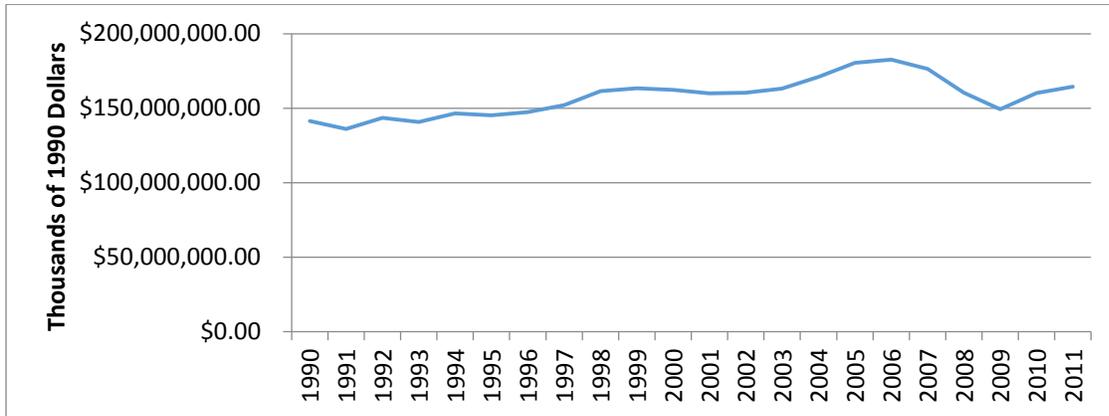
Panel D. Extensive margin effect if the detection probability decreases sharply under non-filing of Schedule C



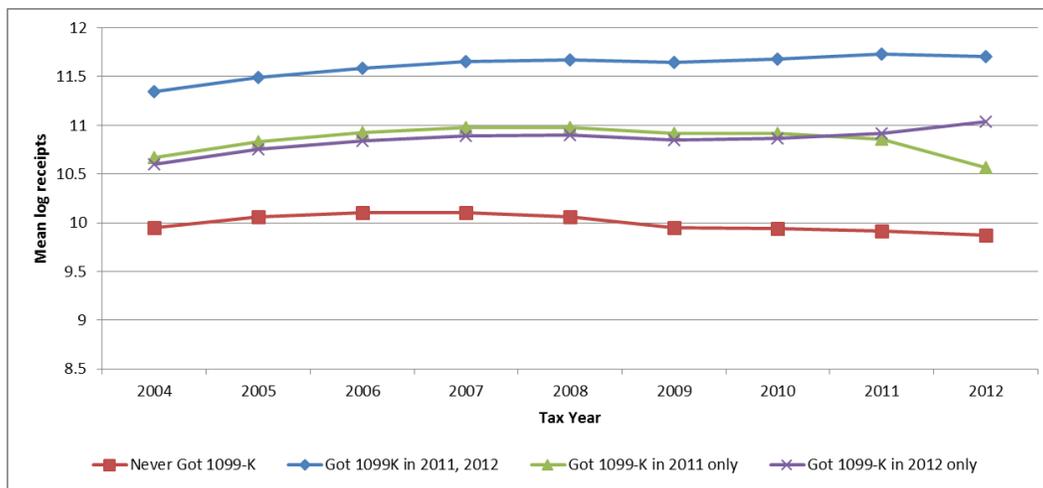
Note: Panels B and C are drawn for the case where the firm underreports in the absence of information reporting, rather than not reporting any receipts at all. Panel D illustrates the special case for a modification of the model discussed in Section 3.3: in absence of information reporting, the firm does not file Schedule C at all because not filing decreases the detection probability discretely. However, when information reporting is introduced, the firm does not report receipts greater than the 1099-K amount. The special case in Panel D stands in contrast to Panel A, where the additional change in the detection probability from declining to file Schedule C is assumed to be negligible, so that all firms affected by information reporting report receipts equal to the amount reported by third parties.

### Figure III. Aggregate Trends for Schedule C Taxpayers

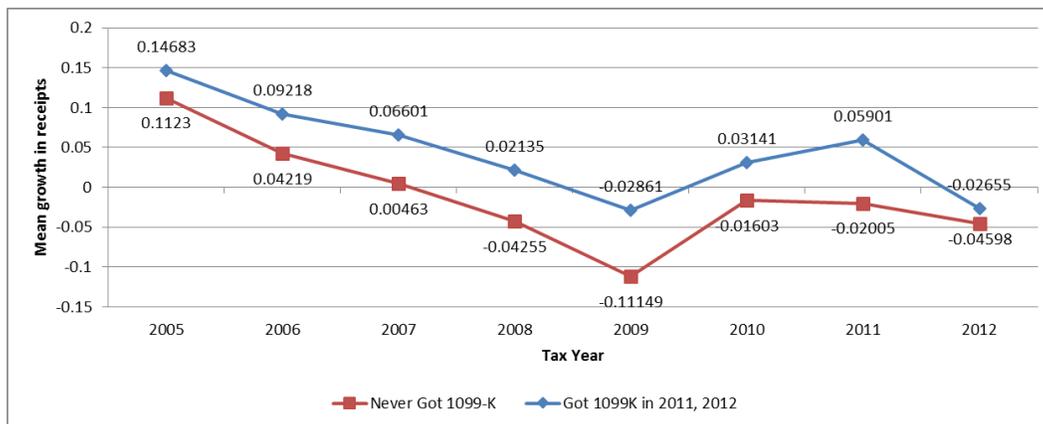
Panel A. Aggregate receipts less expenses for all Schedule C taxpayers, from SOI Public data



Panel B. Trends in receipts by whether the taxpayer received 1099-K

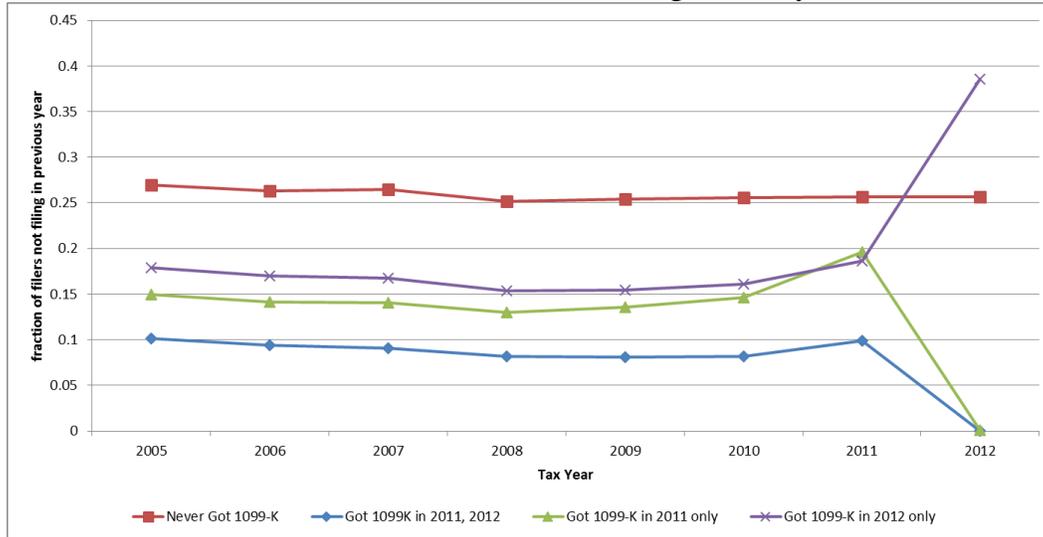


Panel C. Trends in receipts growth by whether the taxpayer received 1099-K



**Figure III. (continued) Aggregate Trends for Schedule C Taxpayers**

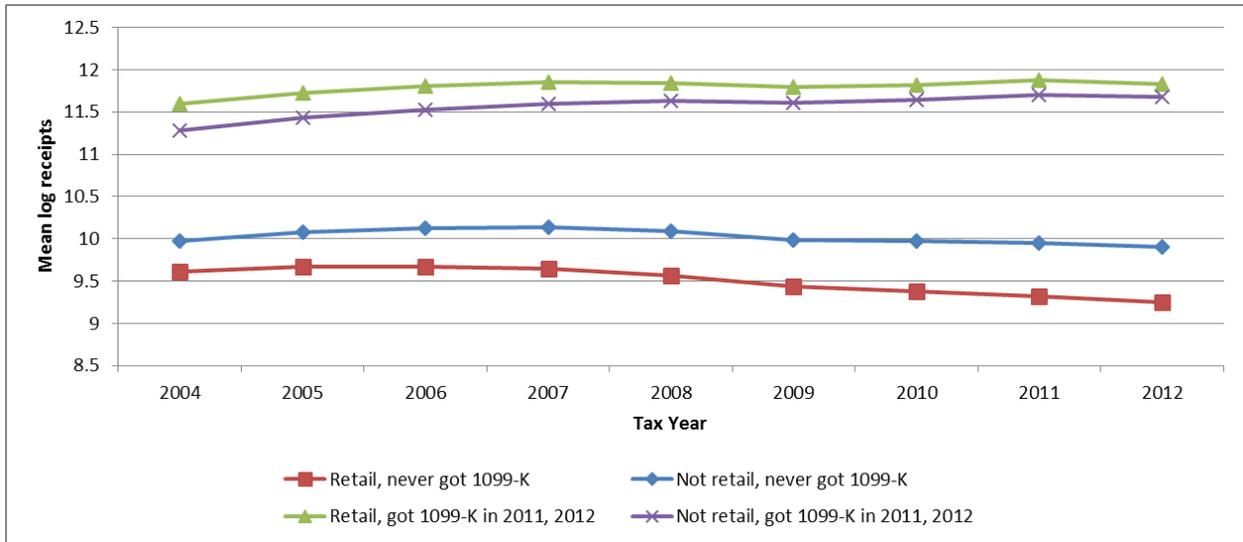
**Panel D. Fraction of new filers in a given tax year**



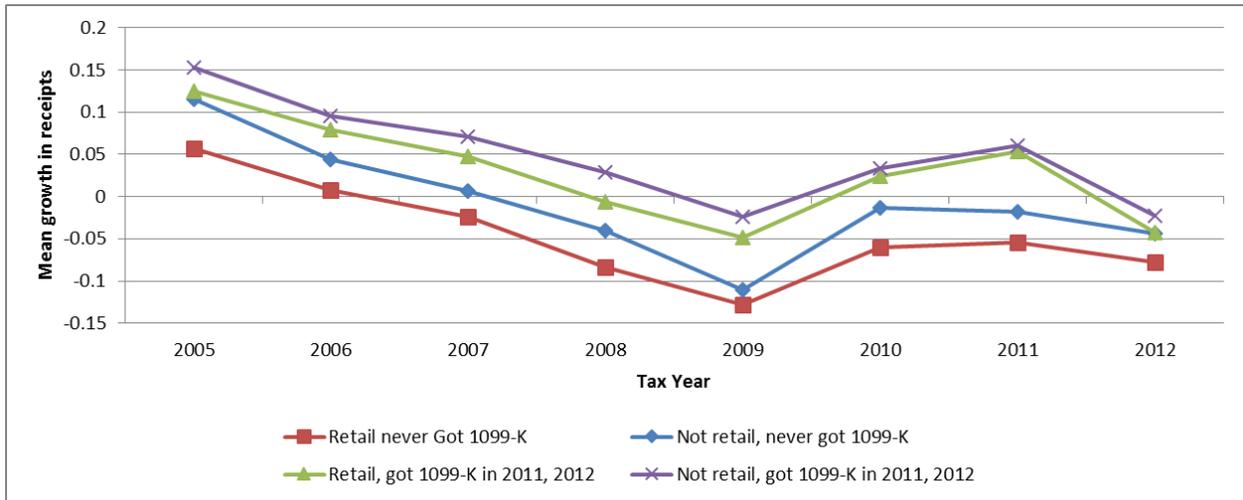
Notes. This figure depicts, in Panel A, the aggregate receipts less Expenses for all Schedule C taxpayers, from 1990 to 2011, in 1990 dollars, publicly available from [http://www.irs.gov/file\\_source/pub/irs-soi/11intba.xls](http://www.irs.gov/file_source/pub/irs-soi/11intba.xls). The data in this panel is from SOI data that is publicly available. Panel B (C) depicts the trends in receipts (receipts growth) reported on Schedule C by whether the taxpayer received 1099-K in 2011 and/or 2012. Panel D depicts the percentage of filers in a given year who did not file in the previous year, separating firms which eventually did or did not receive a 1099-K in 2011 or 2012. For firms receiving a 1099-K in 2011, this fraction falls mechanically to zero in 2012: firms can only be matched to a 1099-K if they file Schedule C.

### Figure IV. Investigating Specific Subsets of Taxpayers

Panel A. Trend in log receipts by whether the firm is in the retail sector and 1099-K receipt

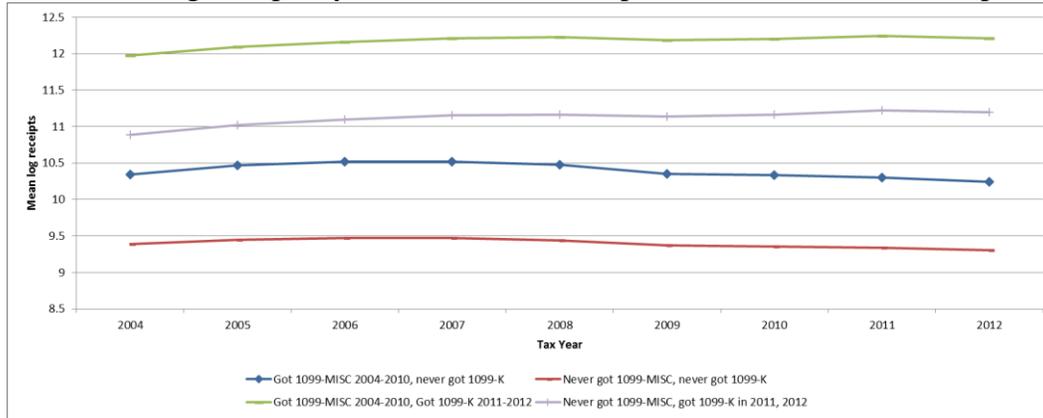


Panel B. Trend in mean receipts growth by whether the firm is in the retail sector and 1099-K receipt

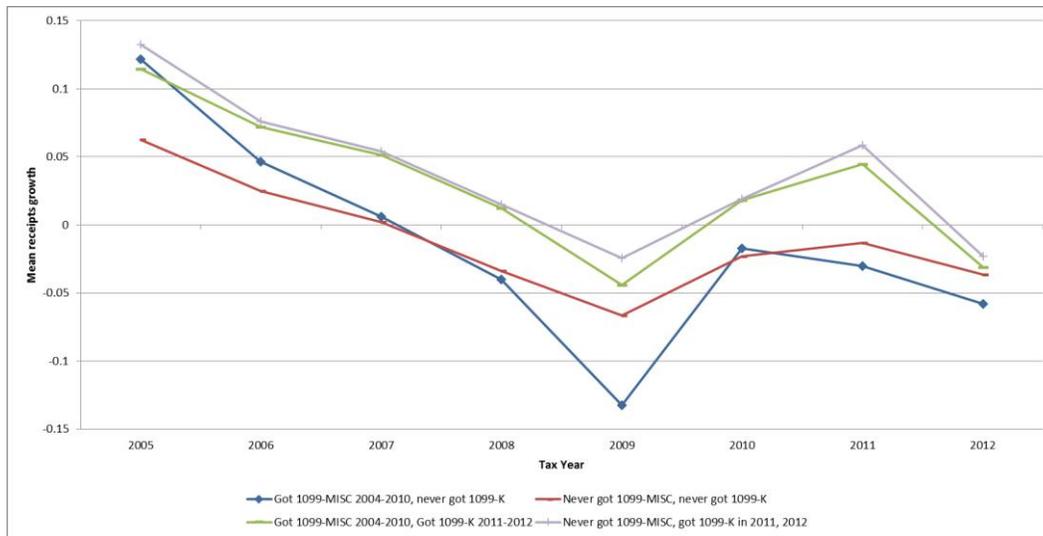


**Figure IV. (continued) Investigating Specific Subsets of Taxpayers**

Panel C. Trends in log receipts by whether 1099-K recipients received 1099-MISC prior to 2011

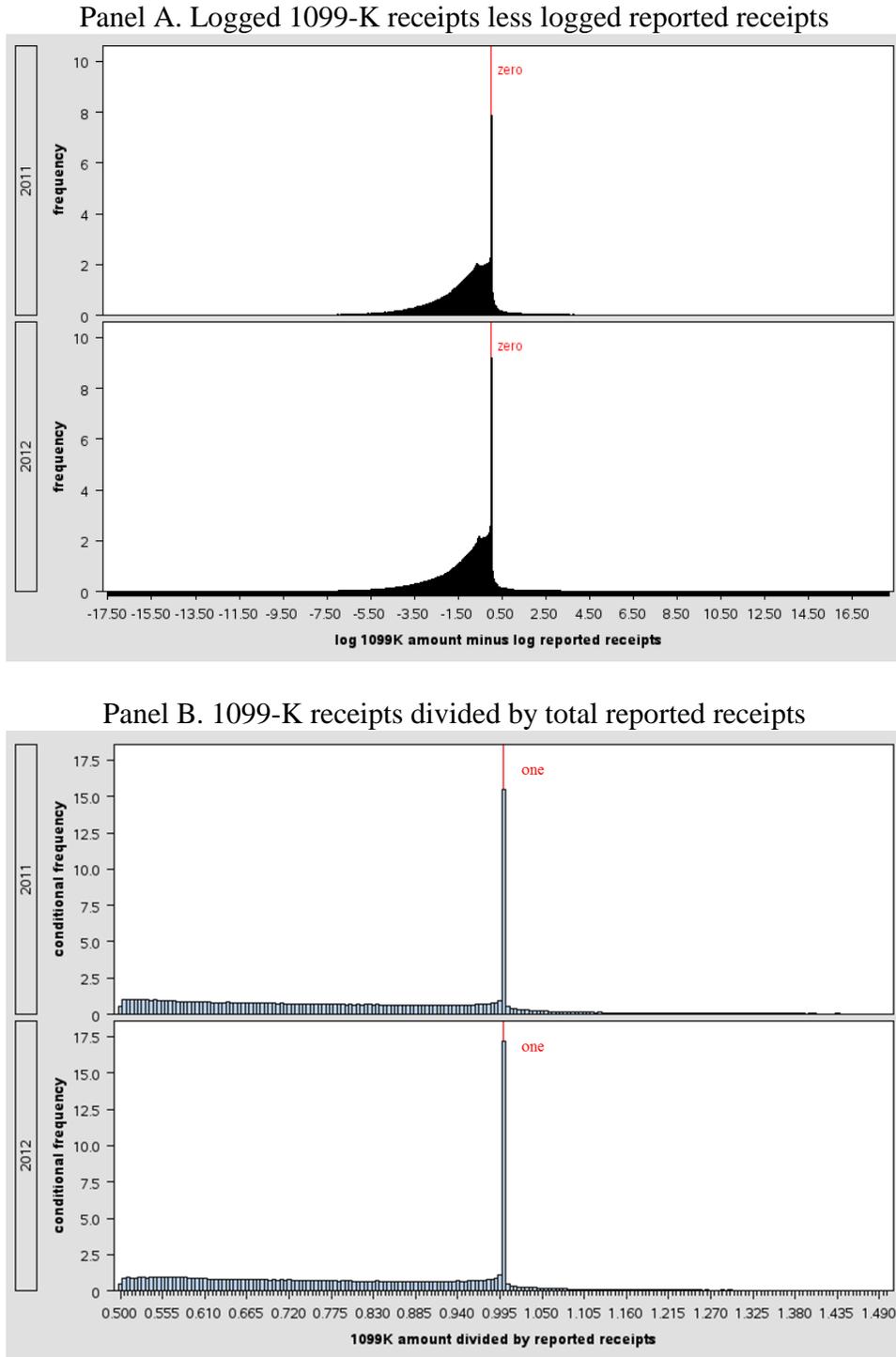


Panel D. Trends in receipts growth by whether 1099-K recipients received 1099-MISC prior to 2011



Notes. This figure depicts the mean natural log of receipts (Panels A and C), and the mean receipts growth (Panels B and D), for retail firms (Panels A and B) and firms subject to the 1099-MISC (Panels C and D). A retail firm is a firm with a two-digit NAICS code equal to 44 or 45. We plot trends for firms who received 1099-MISC continuously from some earlier year (2004 or 2005) to 2010.

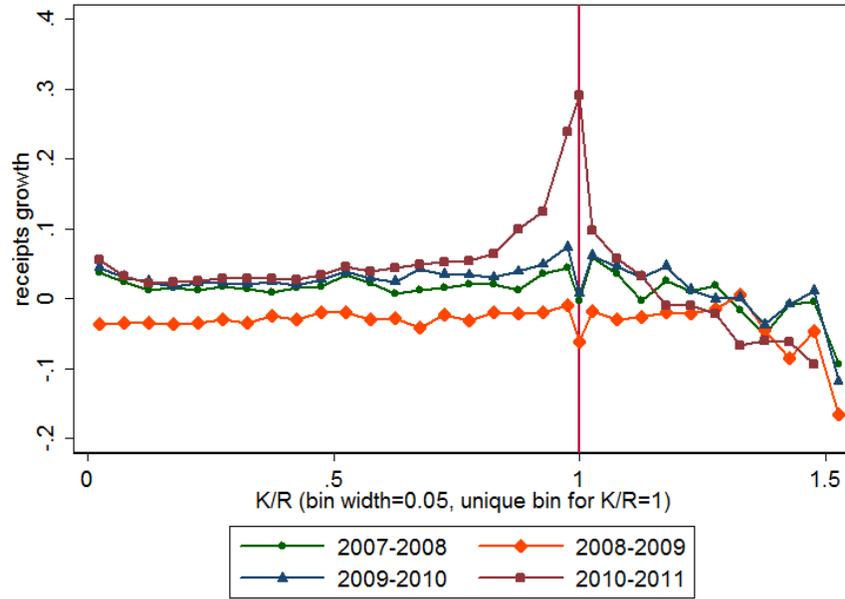
**Figure V: Distribution of 1099-K Amount Scaled by Reported Receipts**



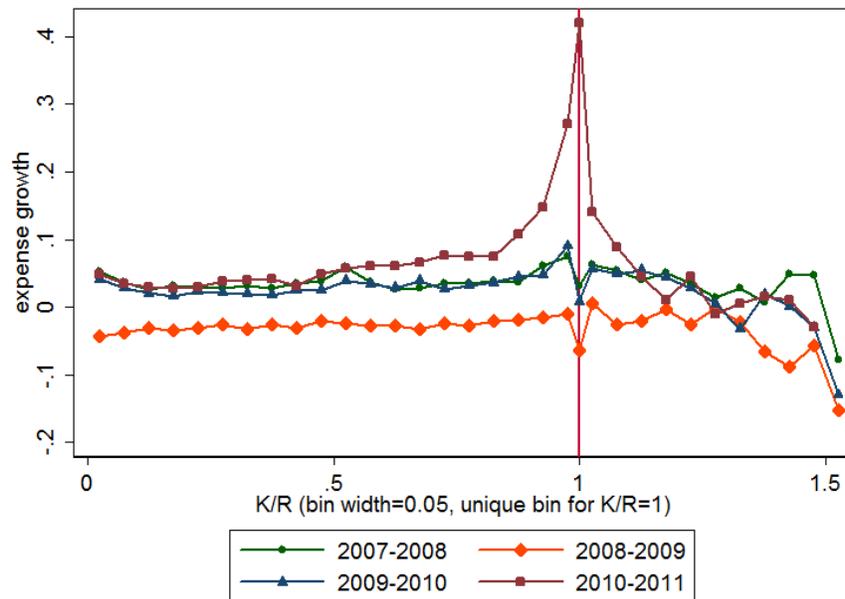
Notes. This figure depicts, in Panel A, the logged 1099-K receipts less logged reported receipts, for both 2011 and 2012. Panel B contains the histogram of 1099-K receipts divided by total reported receipts, for both 2011 and 2012.

**Figure VI. Trends in Reporting by Binned Values of the Ratio of Reported Receipts Subject to Reporting by Form 1099-K in 2011**

Panel A. Receipts growth rates

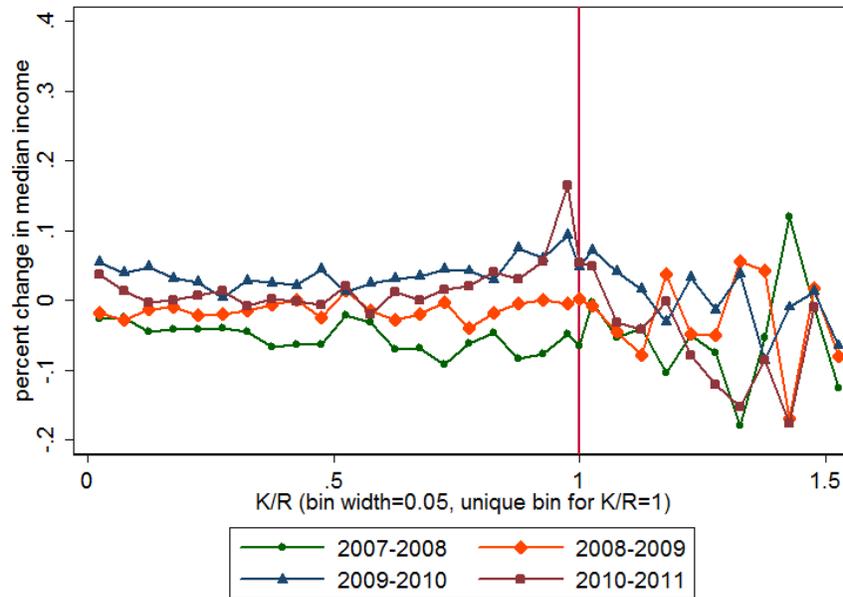


Panel B. Expense growth rates

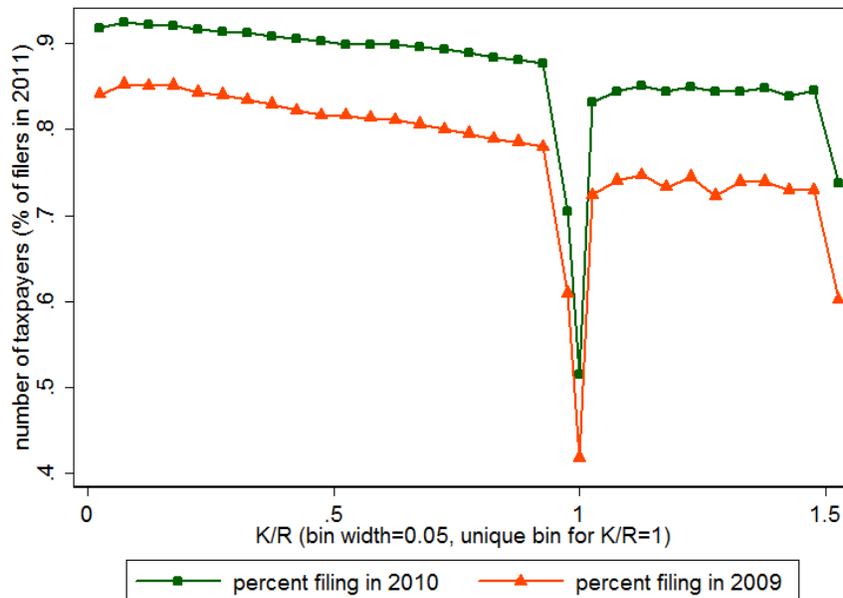


**Figure VI. (continued) Trends in Reporting by Binned Values of the Ratio of Reported Receipts Subject to Reporting by Form 1099-K in 2011**

Panel C. Percent change in median income



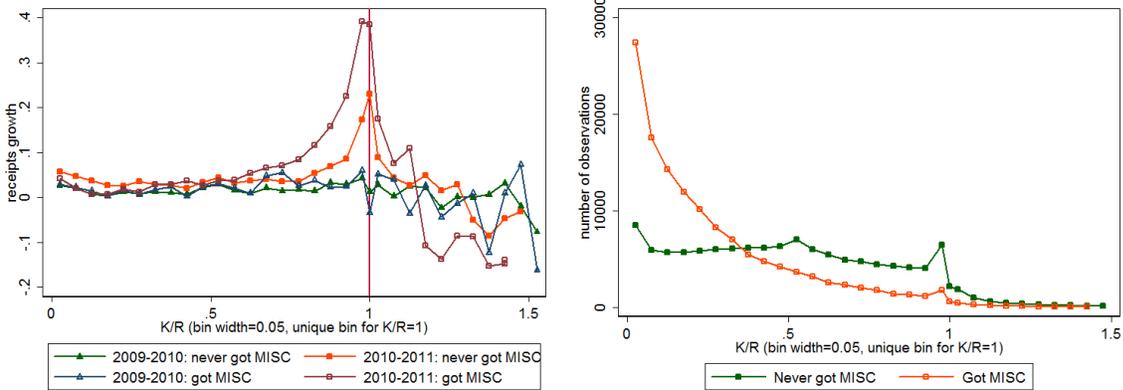
Panel D. Percent of taxpayers filing Schedule C in the previous year



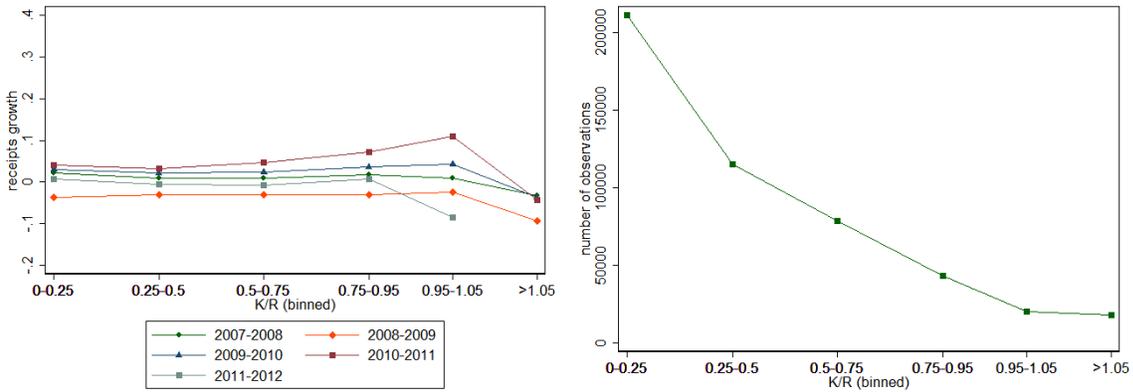
Notes: Growth rates of a variable are calculated as the first difference of the mean of logged receipts for different values of K/R; a vertical red line in all figures highlights the bin where receipts exactly equal the 1099-K amount. The sample for Panels A-C consists of firms filing Schedule C in every year of 2004-2012; the sample for Panel D consists of all firms filing Schedule C in 2011.

**Figure VII. Trends by the 1099-K-Amount-Receipts Ratio in Select Subpopulations**

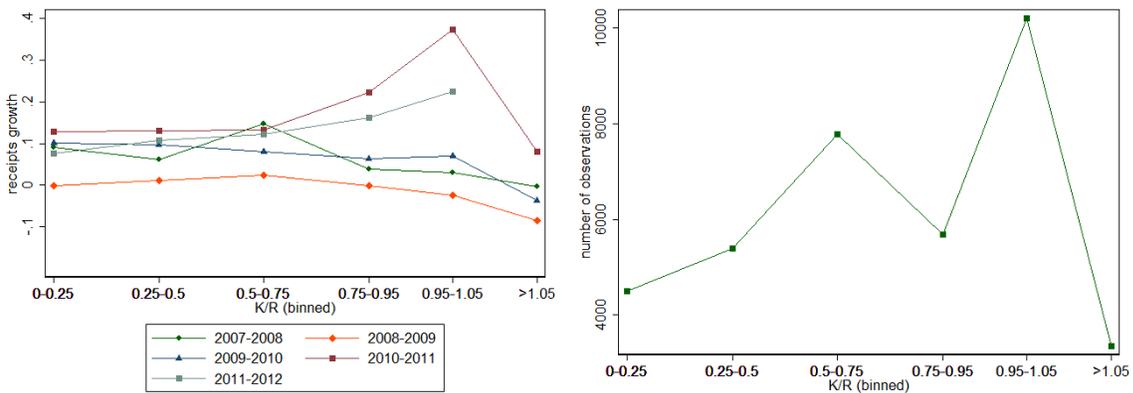
Panel A. 1099-MISC recipients in 2004-2010 compared to firms never receiving 1099-MISC



Panel B. Firms receiving 1099-K from payment-card entities only



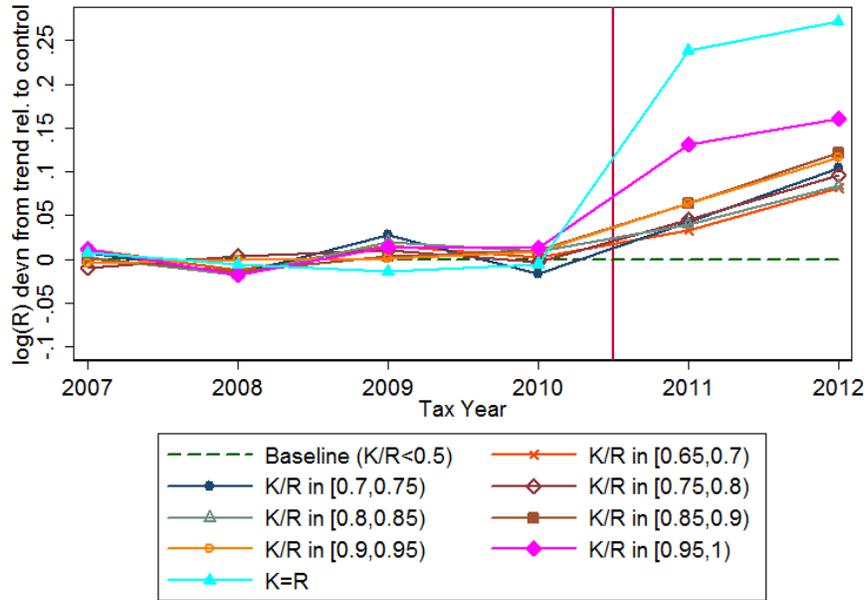
Panel C. Firms receiving 1099-K from third-party settlement entities only



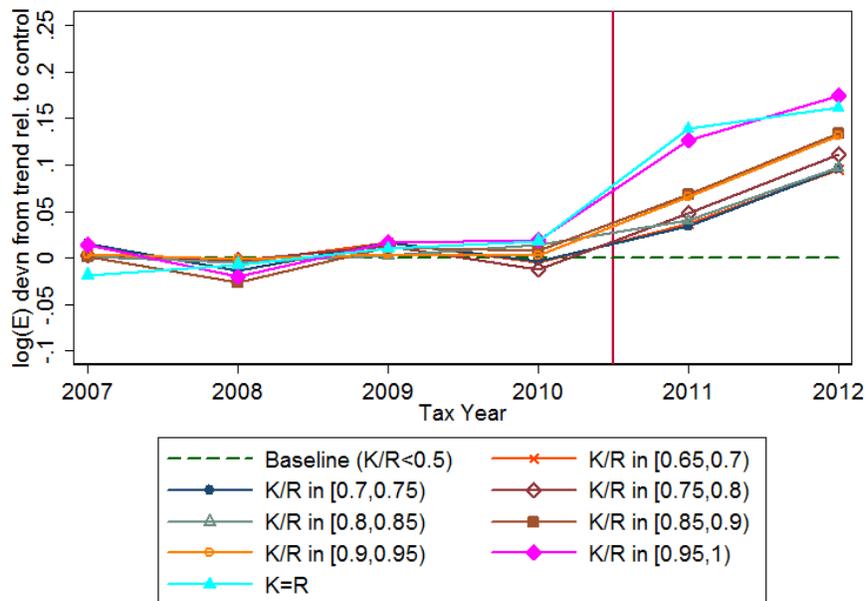
Notes: Growth rates of receipts are calculated as the first difference of the mean of logged receipts for different values of K/R. The sample consists of firms filing Schedule C in every year of 2004-2012.

**Figure IIX. Random Growth Model Estimates and Placebo Tests**

Panel A: Receipts

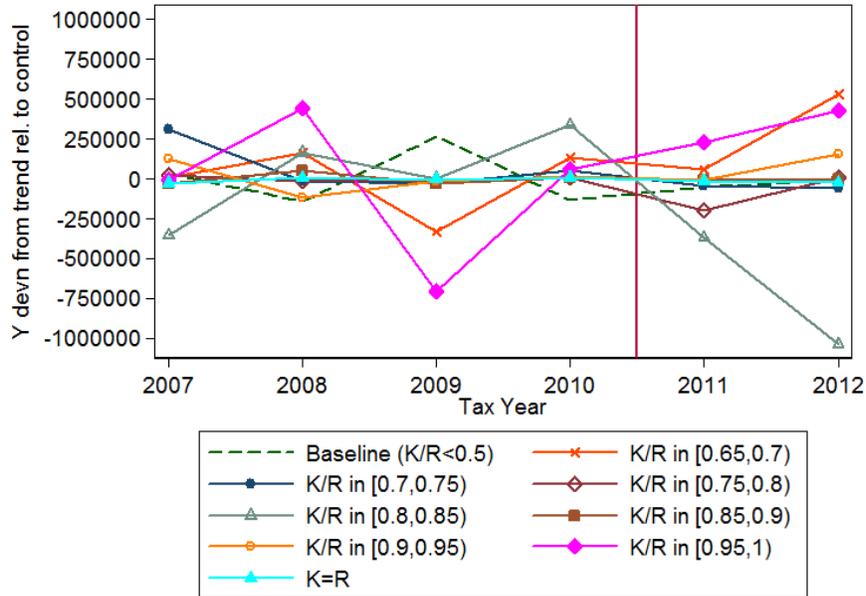


Panel B: Expenses



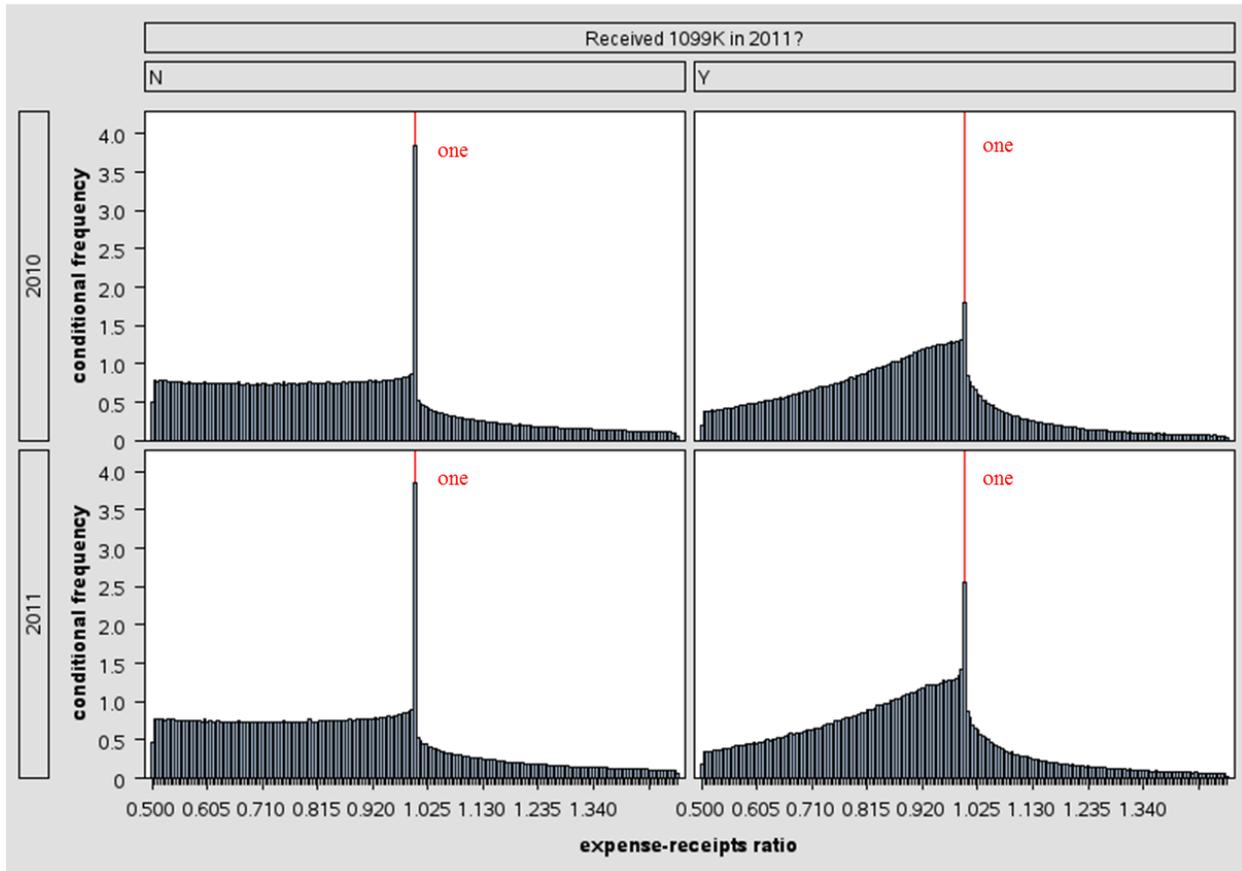
**Figure IIX. (continued) Random Growth Model Estimates and Placebo Tests**

Panel C. Net income



Notes: The sample for this analysis consists of businesses filing Schedule C in every year of 2004-2012. Plotted is the estimated effect in 2011 and 2012 of Form 1099-K on firms with a given set of values of K/R in 2011, along with placebo results for pre-2011. The 2011 effect and placebo effects are calculated using a random growth specification with the pre-trend calculated using the one- and two-year lags of the variable. The pre-trend for the 2012 effect is calculated using the two- and three-year lags of the variable. See Section 6.3 of the paper for a description of how effect sizes are calculated.

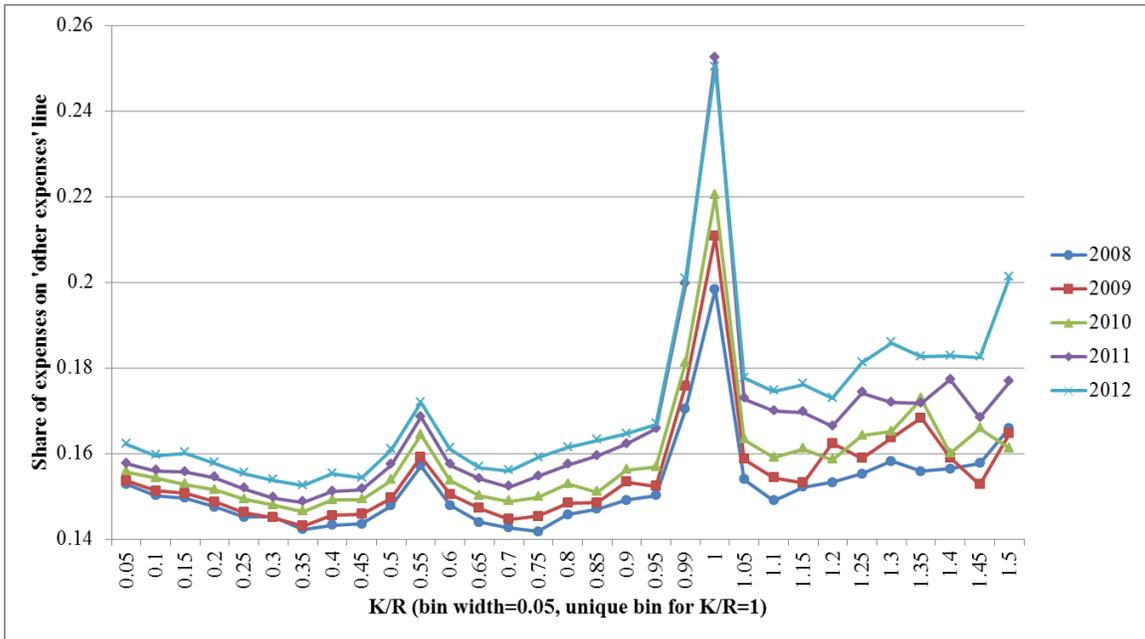
**Figure IX. Distribution of Reported Expenses Divided by Reported Receipts, by 1099-K Receipt, in 2011**



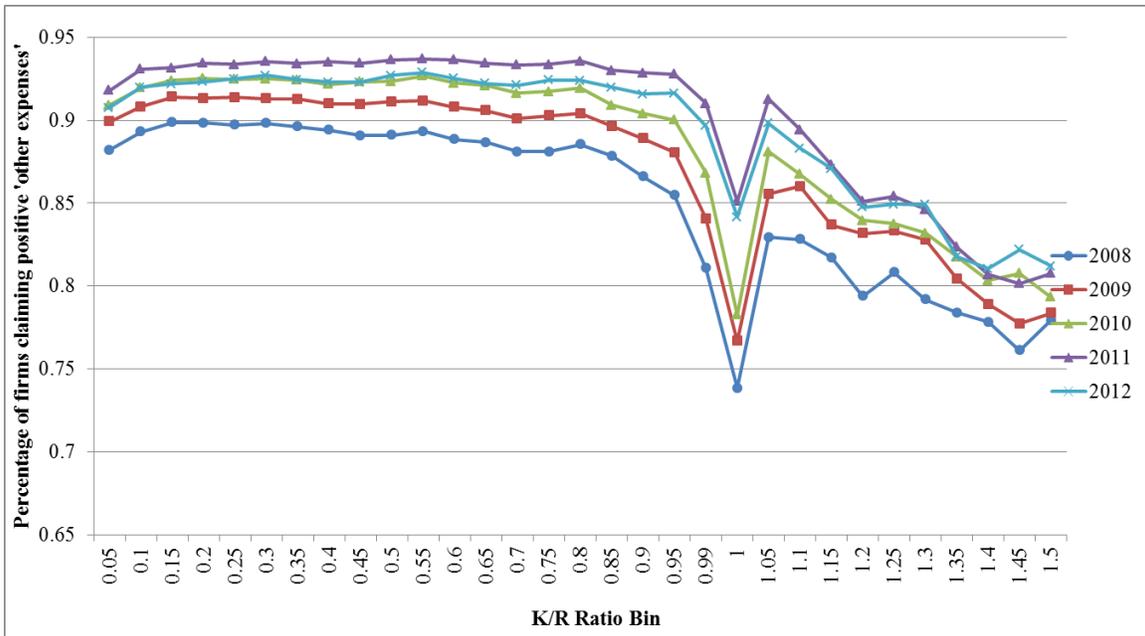
Note: This figure documents the large number of firms reporting receipts equal to expenses, and shows that firms receiving 1099-K in 2011 became more likely to do so in that year. The sample consists of anyone filing Schedule C in 2010 and 2011, depicted in the histogram is the part of the distribution with expenses between 50 percent and 150 percent of reported receipts. A vertical red line marks the point where expenses equal receipts.

### Figure X. Examining Specific Expense Line Items

Panel A. Ratio of other expenses to total expenses by year and K/R bin

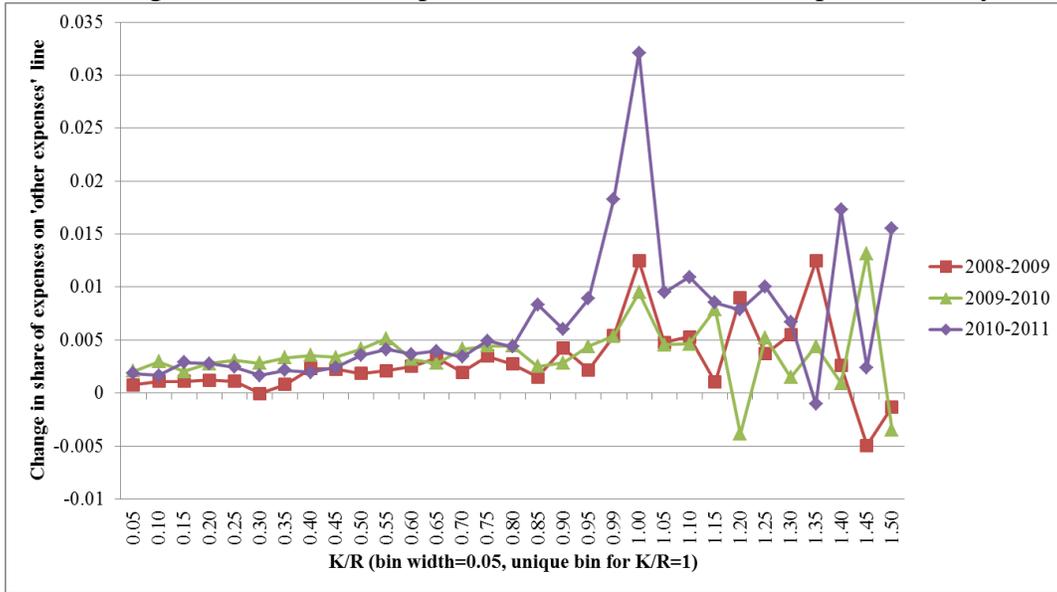


Panel B. Percentage of taxpayers claiming other expenses, by year and K/R bin

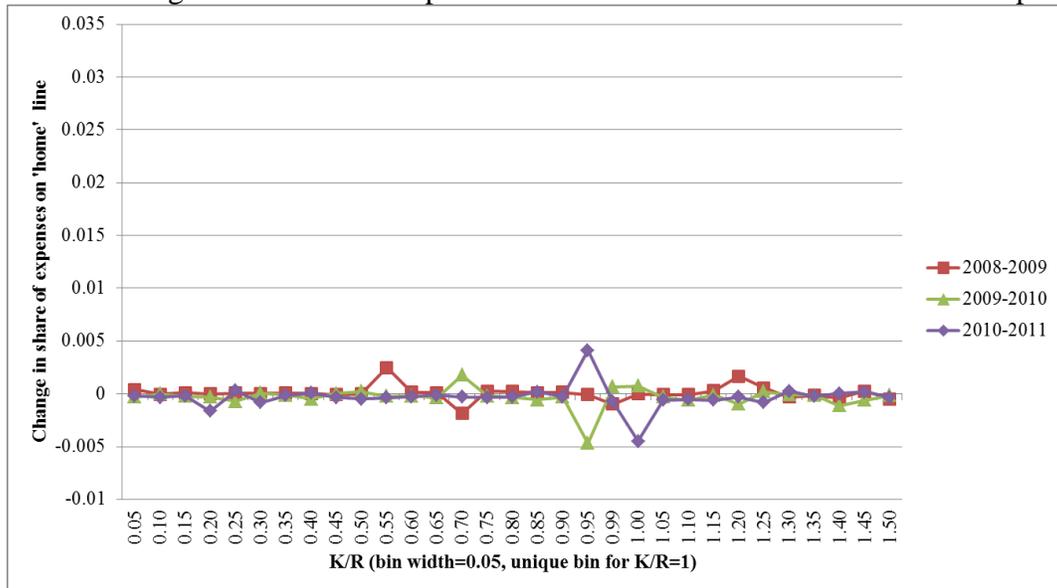


**Figure X. (continued) Examining Specific Expense Line Items**

Panel C. Changes in the share of expenses devoted to the Other Expenses line by K/R bin



Panel D. Change in the share of expenses devoted to the business use of home expense



Notes. Panel A depicts the ratio of Other Expenses, line 27a of Schedule C, to total expenses, line 28 of Schedule C, by year and bins of the firms reported value of receipts on 1099-K in 2011 divided by reported receipts on Schedule C in 2011. Panel B depicts the percentage of firms in each bin of K/R (the ratio of the firms reported value of receipts on 1099-K in 2011 divided by reported receipts on Schedule C in 2011) that had a non-zero value of Other Expenses (line 27a) on their Schedule C. Panel C depicts the first differences in the Other Expense shares in Panel A. Panel D depicts first differences in the share of expenses appearing as business use of home expenses (line 30), calculated in the same way as Panel C.