Year-End Tax Planning of Top Management: Evidence from High-Frequency Payroll Data

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This paper uses a new data source, containing monthly information about wages and salaries of all taxpayers in Denmark, to detect the use of year-end tax avoidance strategies among top managers.

A simple Google search on "year-end tax planning" gives around 400 thousand hits – roughly ¼ of the number of hits from a Google search on "tax deduction". This indicates that year-end tax planning may be a non-negligible phenomenon but little is known about the extent to which taxpayers exploit such opportunities to save taxes.

A taxpayer will have an incentive to accelerate or postpone the payments of salaries and bonuses whenever the expected marginal tax rate in the following year differs from the marginal tax rate in the current year. The possibility and potential scope of this type of behavior are often discussed in the public debate on the eve of a tax reform where marginal tax rates are changed from one year to the next year. A recent example is the American Taxpayer Relief Act of 2012, where the debate included statements from tax consultants and lawyers reporting more inquiries than usual concerning year-end tax planning.[1] The tax reform was expected to generate intertemporal income shifting effects of macroeconomic importance. The Congressional Budget Office (2013) projects 2013 tax revenue decreases because of shifting of income from calendar year 2013 into late 2012 in anticipation of the higher 2013 tax rate.

From an economic efficiency point of view, it is crucial to know whether behavioral responses to tax reforms are permanent or temporary (Slemrod, 1995), but with annual tax and income data it is difficult to

[1] **Rampell, Catherine.** 2012. "With Higher Taxes Looming, Bonuses May Come Early." The New York Times, November 29.

empirically identify the temporary component due to intertemporal income shifting.[2]

Kreiner et al. (2013) exploit the monthly frequency of the new Danish data source, combined with reform variation in tax rates, to identify intertemporal income shifting behavior for the entire Danish population and to decompose the elasticity of taxable income into temporary and permanent components.

In this paper, we focus exclusively on year-end tax planning of top managers, and ask whether tax avoidance strategies take place primarily by changing the timing in the payment of bonuses or by deferring/accelerating payments of regular wages and salaries.

I. Data

Our empirical analysis is based on monthly payroll records for all top managers working in the private sector in Denmark. Since January 2008 firms in Denmark have been required by law to report wages and salaries of all employees to the tax agency (SKAT) at a monthly frequency. All the records are contained in an administrative register (the eIncome register) that also contains the Central Person Registry number of each individual, allowing us to link the monthly payroll information to other administrative registers at Statistics Denmark.

Top managers are identified according to the International Labor Organization's (ILO) International Standard Occupational Classification (ISCO). We include all corporate and general managers defined as employees belonging to major group 1 in the ISCO-88 classification.[3]

There are about 2.5 million wage earners in Denmark. The data set analyzed here covers all of the 23,892 persons who are recorded as top managers and contains 37 monthly observations for the period 2008m1 to 2011m1. In 2008 the average monthly income for this group was 72,000 Danish crowns (DKK), corresponding to the 97.9 percentile in the overall distribution of wage incomes.[4] In one analysis, we focus on the subsample of chief executives and directors (category 121 in the ISCO-88 classification). This group consists of 4,861 persons with an average monthly income of 106,000 DKK in 2008, corresponding to the 99.4 percentile in the overall wage distribution.

[2] Goolsbee (2000) uses annual data for corporate executives and finds large, significant effects from the Clinton tax increase of 1993 on the exercising of stock options but does not detect any strong timing-effects in payments of salary and bonuses. Findings in Sammartino and Weiner (1997) suggest that the 1993 reform did generate shifting in wage income.

[3] For more information on the ISCO classification see http://www.ilo.org/public/english/bureau/stat/isco/isco88/1.htm.

[4] One US Dollar corresponds to about 5.5 DKK.

II. Institutional Background

We quantify the extent of year-end tax planning of wage income using a tax reform decided in the Danish parliament at the end of May 2009, and taking effect from January 1st 2010. The reform reduced the highest marginal tax rate, which applies to wage income of top managers, from 63 percent to 56 percent, equivalent to a reduction in the after-tax rate close to 20 percent. This gave top managers a non-negligible economic incentive to postpone bonus payments or regular salary payments from 2009 to 2010, and half a year to plan such action.

Kreiner et al. (2013) show that tax planning in connection with the 2010 tax reform is carried out mainly by shifting income around the New Year where a tax reform is implemented, and we shall therefore focus on the income variation taking place in December and January.

It is impossible to carry out year-end tax planning single-handedly because the firms are reporting the wage income to the tax agency. However, top managers with inside-firm control probably have better opportunities to obtain firm collaboration than other employees. Moreover, it was possible to move wage payments earned in the second half of 2009 to 2010 without coming into conflict with the Danish law.

According to the tax rules, companies have to withhold and remit taxes on labor income at the time income is paid out to the employees, and taxes have to be remitted at least half a year after the income is earned.

Although it is not illegal to save money on taxes by changing the timing of the pay-out of wage income, this behavior is of course not an intended effect of the tax reform and the tax rules in general, and it is therefore a classic example of tax avoidance (rather than tax evasion).

III. Identification of Year-End Tax Planning

We consider two types of year-end tax planning of wage income: retiming of bonus payments and shifting of regular wage income from 2009 to 2010.[5] In both cases the taxpayer will have a lower observed wage income in December 2009 and a higher observed wage income in January 2010 compared to the counterfactual situation without a tax reform. We approximate the counterfactual income level using the observed income in the year before the reform was announced. Thus, year-end tax avoidance is identified by observing an unusually low wage level in December

[5] Since our data only contains information about wage income we do not consider year-end tax planning of other types of income such as capital income and the exercising of stock options.

2009 compared to December 2008 *and* an unusually high wage level in January 2010 compared to January 2008 for the same individual. Accordingly, we construct a shifting indicator dummy variable that takes the value one in any given month if income in that month is at least 50 percent above the 2008 level and income in the preceding month is at least 50 percent below its 2008 level.[6]

The shifting indicator will equal one in January 2010 for top managers who normally receive a large bonus in December, including December 2008, but have shifted the payout of the 2009 bonus from December 2009 to January 2010 in order to save taxes. It will also equal one for top managers who postpone a regular monthly salary payment from December 2009 to January 2010. Of course, the dummy variable may also equal one because of random fluctuations but the size of this effect can be evaluated by looking at the dummy variable in all the other months from February 2009 to January 2011 acting as "placebo" because December 2009-January 2010 is the only consecutive bi-monthly period where taxpayers have an incentive to shift income to save taxes"..

IV. Evidence of Year-End Tax Planning

Figure 1 plots the average value of the shifting dummy variable for top managers for each of the months from February 2009 to January 2011. The graph reveals a clear spike in January 2010, showing that many top managers have an unusually low level of income in December 2009 compared to December 2008 *and* at the same time an unusually high level of income in January 2010 compared to January 2008. According to the analysis, approximately 6 percent of top managers engage in year-end income shifting, which is derived by comparing the spike at 7 percent in January 2010 to a level of ½-1 percent in any of the other months, including January 2011.

The 50 percent cut-off criterion defining shifting behavior is somewhat arbitrarily chosen, but the result turns out to be reasonably stable with respect to the choice of cut-off level. If we consider criteria with alternative cut-off levels of 25 percent and 75 percent then the conclusion is that 5-7 percent of top managers engage in year-end shifting activity.

[6] To be precise, the dummy variable is equal to one in year *y*, month *m* if the income difference between (*y*,*m*) and (2008,*m*) is at least 50 percent of the average monthly income level in 2008 and the income difference between (2008,*m*-1) and (*y*,*m*-1) is at least 50 percent of the average monthly income level in 2008. Note that by comparing (*y*,*m*) to (2008,*m*) and (*y*,*m*-1) to (2008,*m*-1) the definition of the shifting indicator accounts for seasonal variation in wage income, i.e. it is not equal to one in January 2010 for a person who always has low income in December and high income in January.

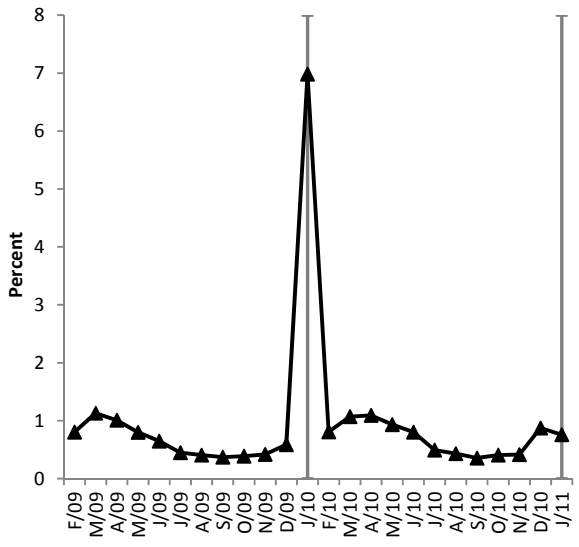

FIGURE 1. SHARE OF TOP MANAGERS SHIFTING INCOME BY MONTH

If we narrow down the sample to the 4,861 chief executives and directors (category 121 in the ISCO-88 classification) and repeat the analysis using the 50 percent cut-off criterion then we find that the share of shifters is 10 percent, i.e. considerably higher than the 6 percent obtained for the full sample of top managers.

Finally, we have calculated a rough estimate of the amount of income shifted by comparing income growth in January 2010 to income growth in January 2009 and January 2011. According to this estimate, the total amount of income shifted from 2009 to 2010 corresponds to 15 percent of the average monthly wage income of all top managers in 2009.[7]

V. Timing of Bonuses versus Timing of Wage Income

In this section, we analyze whether the detected income shifting primarily arises because top managers exploit the opportunity to postpone the payment of a year-end bonus or because they defer wage payments from December to January.

In Panel A of Figure 2, we have divided all the top managers engaging in year-end tax avoidance, according to the 50 percent cut-off criterion, into two groups: those who received a year-end bonus in 2008 and those who did not.

The black curve shows the average monthly wage payment of those who have received a bonus in December 2008, where individuals are classified as receiving a bonus if the wage payment in December 2008 is 50 percent higher than the individual's average monthly wage level in 2008. The black curve reveals that these individuals also have extraordinarily high income in December 2010, corresponding to the timing of their bonus payment in 2008.

[7] On average, the difference between the wage income of an individual in January 2010 and in January 2008 equals 20 percent of the average monthly income level in 2008. From this, we subtract 5 percent, which is the corresponding difference between wage income in January 2009 and January 2008, and also the difference between wage income in January 2011 and January 2008.

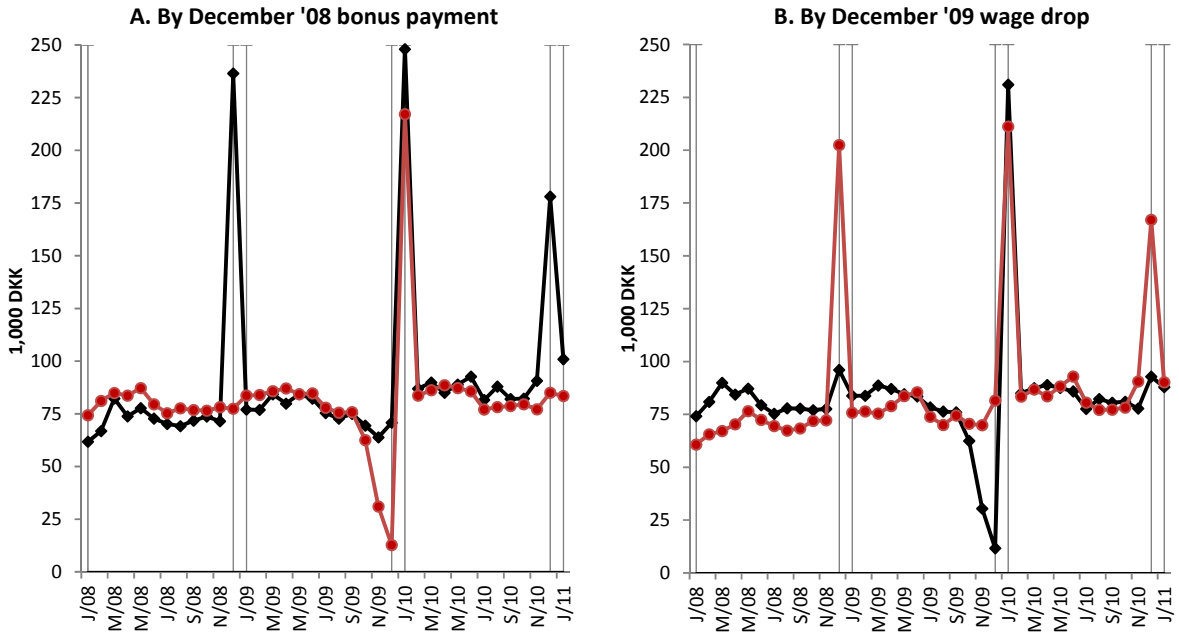

FIGURE 2. MONTHLY WAGES OVER TIME FOR TOP MANAGERS BY TYPE OF SHIFTING

Note: Panel A splits the sample into top managers receiving a year-end bonus in 2008 (black) and top managers who do not receive a year-end bonus in 2008 (red). Panel B splits the sample into top managers who shift regular wage payments from December 2009 to January 2010 (black) and those who do not (red).

However, this is not the case in December 2009. Instead, income is extraordinarily high in January 2010 and at the same level as in December 2008. This indicates that these 478 top managers, corresponding to 29 percent of the year-end tax shifters, have shifted a bonus. Note that the December 2009 wage income level is only slightly lower than the average monthly wage level in 2008, indicating that only few of them also shift regular wage payments.

They red curve in Panel A shows the development in average wage income of those not receiving a bonus in December 2008. For these individuals, we observe a major drop in income in November and December of 2009, and a corresponding increase in January 2010, indicating that these individuals shift regular wage income and not bonuses.

In Panel B of Figure 2, we do a similar analysis, but now decomposing the tax avoiders into two groups depending on whether or not they shift regular wage income. The black curve is the average monthly wage payment of those who defer regular wage payments, identified as individuals with a wage payment in December 2009 that is 50 percent below the average monthly 2008 level. According to this criterion, 1,245 top managers, corresponding to 75 percent of the

year-end tax shifters, shift regular wage income. For these individuals, we see only a small spike in December 2008 and December 2010, indicating that only very few of these top managers normally receive a year-end bonus. This is consistent with the red curve in Panel B showing the development of wages of the group not shifting regular wage payments. Clearly, top managers belonging to this residual group normally receive a bonus in December and have decided to shift the December 2009 bonus to January 2010.

Overall, the evidence in Figure 2 points toward the existence of two nearly distinct groups: those shifting bonuses (29 percent) and those shifting regular wage income (75 percent) with only little overlap between the two groups.

Slemrod (1995) describes a hierarchy of responses to taxation with low expected responsiveness of labor supply/effort at the one end of the spectrum and high responsiveness in income timing decisions at the other end of the spectrum. Our result of substantial year-end tax planning is consistent with this view.

The discrete nature of bonus payments makes it easy to adjust the timing of these payments. It is likely more complicated to defer payment of regular wage income, for example because regular payouts are processed automatically by a computerized wage system. The hierarchy reasoning then implies that the timing of bonuses is more sensitive to a changing tax environment than the timing of regular wage income. Our results are consistent with this hypothesis. Out of all top managers, 1,698 receive a bonus payment at the end of 2008, according to the 50 percent cut-off criterion, and 28 percent of these individuals engage in year-end tax planning by postponing the bonus payment. For the 22,194 top managers not receiving a bonus, only 5 percent shift regular wage income. This indicates that bonus shifting is higher in the behavioral response hierarchy than shifting of regular wage income.

VI. Conclusion

We use Danish high-frequency payroll data to identify the extent of year-end tax avoidance of top managers. Using a tax reform that reduced the marginal tax rate for this group, we show that 5-7 percent of all top managers exploit year-end tax planning strategies in order to save taxes. Around 30 percent of the top managers engaging in this type of tax avoidance do so by retiming bonus payments while the rest shift regular wage income.

Among top managers receiving a December bonus, we find that more than 1 out of 4

retime the payment in order to reduce tax payments. In comparison, only 1 out of 20 of those not receiving a bonus engages in shifting of regular wage income. This is consistent with Slemrod's (1995) hierarchy of responses presuming that bonuses are shifted more easily than regular wage income.

These results for year-end tax planning of top managers complement the results in Kreiner et al. (2013) showing among other things that income shifting takes place at all income levels, but is more common among taxpayers with high incomes.

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