

Testing the Tax-Loss Selling Explanation of the January Effect:  
Evidence from a “Confiscatory” Tax Implemented in France in 1921

David Le Bris<sup>ϕ</sup>

Sandrine Tobelem<sup>ξ</sup>

First Version: December 2016

This version: November 2017

**Abstract:**

Using 160 years of data, we document a significant January effect on the French equity market. We find strong evidence in favor of the tax-loss selling explanation for this phenomenon. Indeed, the January effect was insignificant before the introduction of a “confiscatory tax” on capital gains in 1921, and became strongly significant afterward. Moreover, the rate of taxation is a statistically significant explanation of the strength of the January effect over time. Studying individual stock returns, a Differences-In-Differences investigation shows that past losers, outperform past winners at the turn of the year but only after 1921, which reinforces further the tax-loss selling explanation of the January effect.

**Key words:** Calendar anomalies, market efficiency, January effect, Taxation, Historical finance.

**JEL Codes:** G10, G12, G14, N20.

---

<sup>ϕ</sup> University of Toulouse, Toulouse Business School, 20 boulevard Lascrosses, 31068 Toulouse, France.  
[d.le-bris@tbs-education.fr](mailto:d.le-bris@tbs-education.fr)

<sup>ξ</sup> Taranis Partners LLP, 3 More London Riverside, London, SE1 2RE, UK.

Many tentative explanations have been produced to reconcile the calendar anomalies with the efficient market hypothesis. One of the most puzzling, and studied, phenomena is the January effect (also called the Turn of the Year effect - hereafter ToY effect), whereby ToY returns are generally significantly stronger than returns computed during the rest of the year. A fiscal explanation of this higher ToY return has been suggested early by researchers: because of the tax on capital gains, investors sell losing stocks at the end of the fiscal year in order to reduce their tax basis. These stocks are subsequently bought back at the beginning of the following year, putting upward pressure on returns at the ToY. In France, this practice is called the “acheté-vendu”.

The best way to test this theoretical explanation is to study the ToY effect before and after such a tax on capital gain is introduced. That is what Schultz (1985) did by studying the tax loss selling hypothesis in the US. He finds that before the War Revenue Act of 1917 introducing a tax on financial market asset gains, the ToY effect did not exist. He also finds strong statistical evidence that the effect appeared after the introduction of the tax, hence a solid argument in favor of the tax-loss selling explanation of the ToY effect in the US market. However, this historical evidence is contradicted by Jones et al. (1987) but confirmed again by Lakonishok et al. (1991). Overall, studies on the US market did not provide clear answers on the effects of the tax introduction to explain the ToY effect.

The debate on the theoretical explanations of the January effect is still open and opposite arguments are widespread. Roll (1983) considers the tax-loss selling hypothesis as absurd arguing that despite the fact that some investors may trade for tax purposes, others would have already bought the oversold stocks in anticipation of higher returns in January. Reinganum (1983) shows that abnormal returns can also be observed in small firm stocks in January, even though their price did not go down previously. Constantinides (1984) opposes the tax-loss selling hypothesis by arguing that delaying a stock loss until December is not an optimal tax trading strategy. Moreover, Hang and Hirschey (2006) have proven persistence of the January effect after the Passage Tax Reform Act of 1986, when all seasonal tendencies associated with tax-motivated selling by institutional investors should have been eliminated, indicating that a tax-loss selling explanation for institutional investors should be rejected.

The studies mentioned above mainly concern the US case. In terms of other geographical zones, Thaler (1987) points out that international evidence suggests that the tax-loss selling hypothesis may partially explain the abnormal returns in January, however it

could not be the only explanation. For instance in Japan, a ToY effect is also observed, despite the fact that there is no capital gains and loss offset system in place (Kato and Schallheim, 1985). Canada had a January effect before 1972 when capital gains tax was still not implemented (Berges et al., 1984). In Great Britain and Australia we can still find the ToY effect, although their tax years begin on April 1 and July 1, respectively (Thaler, 1987). But, the identification of the ToY effect in foreign countries in the recent decades is complicated by the fact that the US market has been leading other markets. The January effect observed in foreign countries can only just be a consequence of a US phenomenon spilled over to other markets. Thus, empirical evidences to support the tax-loss selling hypothesis provided mixed results so far in the existing literature.

In this paper, we revisit such a clear-cut test of the fiscal explanation of the ToY effect by studying the French market before and after the introduction of a capital gain tax taking advantage of the availability of a fiscal series (Piketty, 2001) and of 76,000 individual monthly stock return since 1854 (Le Bris and Hautcoeur, 2010). We believe that studying the French case offers a unique experimental field to test the tax-loss hypothesis as an explanation for the January effect because the tax on capital gains is implemented directly at a very high rate in 1921 (up to 90 % in 1924) and also because the annual rate of taxation time series has been made available in France, thanks to the exhaustive work of Piketty (2001). The availability of such a time series is rare, which makes the French case rather unique to study. Studying the introduction of this tax allows us to operate a clear test of the fiscal explanation of the ToY effect, along the same lines as what has been originally studied on the US market. As the US and French markets were weakly correlated at the beginning of the last century compared to levels currently observed, this study provides a good out of sample case of the January effect first identified on the US market.

Moreover, studying the ToY effect at the time when the tax is introduced allows to clearly distinguish the tax-loss selling explanation from the window dressing one (whereby investors sell the losing stocks they held before a reporting period). As pointed out by Poterba and Weisbenner (2001), one difficulty in validating the tax-loss-selling hypothesis is that many of its predictions coincide with those of the window-dressing hypothesis for institutional investors. Our French investigation is interesting because the tax related to capital gains is introduced at a time when the window dressing of institutional investors can be assumed to be of negligible effect (because institutional investment was limited at this time and not subject to strict reporting constraints).

We implement tests on the French data to show how the introduction of a high tax is concomitant with the appearance of a ToY effect on the French market. By regressing the yearly ToY effect on several explanatory variables, we find further evidence that the yearly level of the tax rate on capital gains is significant to explain the strength of the ToY of a given year. To our best knowledge, it is the first time such a statistical relationship between the tax rate and the strength of the ToY effect is found. A third form of evidence is provided at the individual stock level using a Diff-In-Diff setting, showing that post 1921, past losers outperform at the ToY, which was not the case pre-1921. Such a past loser overperformances at the ToY after 1921 is exactly what the tax loss selling explanation supposes.

The paper is organized as follows: In the next section, we offer a description of the main hypothesis put forward in the literature to explain the ToY effect. The third section provides the historical background and describes the data used in this study. The fourth section provides evidence that the ToY effect appears with the implementation of a tax on capital gains in France. The fifth section demonstrates that the strength of the ToY effect depends on the rate of taxation of the capital gains. The sixth section provides evidence at the individual stock level. The last section concludes.

## **2. The ToY effect and its theoretical explanations**

In this section, we describe more precisely the ToY effect and the main theories put forward in the literature to explain the anomaly. The ToY effect describes a seasonal anomaly on financial markets whereby equity returns at the ToY are higher on average than in any other period of the year. This calendar effect is puzzling as it goes against the efficient market hypothesis. On an efficient market, there is no reason to observe higher returns at the ToY and, if the effect existed, investors could buy stocks in advance and sell them back in at the ToY, so that ultimately the abnormal ToY returns would revert to zero.

The January effect was first observed around 1942 by investment banker Sidney B. Wachtel (1942) on the US market. The author noted that since 1925, small stocks had outperformed the broader market in the month of January, and therefore coined the expression “January effect”. A similar abnormal return at the ToY was subsequently observed in several countries over different time periods.

Several hypotheses have hitherto been considered and tested to explain the apparent ToY anomaly. We detail these hypotheses and whether or not they are relevant to our investigation on French data:

**Tax-loss selling hypothesis:** investors sell losing stocks at the end of the fiscal year, in order to reduce their tax basis and thus the amount of the capital gain tax, as capital losses are deductible from capital gains. These stocks are subsequently bought back at the beginning of the following year, creating artificially higher returns at the ToY.

**Window dressing hypothesis:** the leading alternative explanation for the ToY effect is the window dressing hypothesis (Haugen and Lakonishok, 1988). According to this hypothesis, portfolio managers sell losing stocks before a reporting period end in order to avoid revealing that they have held poorly performing stocks. They buy back those stocks after the reporting. This effect can be disentangled from the Tax-loss selling hypothesis in our paper because the personal tax on capital gains was introduced long before the development of delegated investment management in France.

**Information hypothesis:** according to Chen and Singal (2004), the excess returns in January can be attributed to the influence of significant information releases at the ToY. Chen and Singal (2004) test the differential information hypothesis based on stock returns and turnover. More specifically, if the hypothesis holds, higher returns should not be observed only in January but also in other months when listed firms submit their accounting information. In the 1920s, there is no legal obligation to publish financial information for listed companies on the French stock market and it is not a common practice to provide specific information at the ToY.<sup>1</sup> The information hypothesis to explain the ToY effect can therefore be excluded as potential explanation in our investigation.

**Liquidity hypothesis:** Ogden (1990) argues that the January effect in U.S. market can be, at least in part, due to the standardization in payment system, which leads to a concentration of cash flow to investors at ToY. Specifically, substantial cash receipts at the ToY enable investors to invest in a wide range of stocks resulting in higher demand of stocks and a surge in stock returns at this time. This hypothesis is not relevant to our investigation as end of year bonuses for employees were very infrequent during the 1920s.

---

<sup>1</sup>The first legal obligation to publish accounting information for listed firms voted in the 1960s (law of July, 24, 1966, see Véron et al., 2004).

**Dividend effect:** according to this theory, the ToY effect would result from the reinvestment of dividend received at the ToY. In France dividends are primarily distributed semi-annually, once at the end of the first quarter of the year and the balance at the end of the third quarter around October. Thus, the dividend effect could not explain the ToY phenomena we observe on the French market.

**Holiday effects:** as Ziemba (2011) has studied thoroughly for the US markets on all main official holidays, the market activity is assumed to drop during major holidays, the end of the year holiday being the most common across countries. Therefore, a bounce is expected on financial markets post the main holiday periods, hence the higher returns in January that correspond to higher activity in the markets after the quiet and more illiquid period of the end of the year. There were no official market holidays in France before the middle of the twentieth century therefore, this hypothesis is of little relevance to our investigation.

### 3. Data and historical background

In this section, we discuss the historical context of the capital gain tax in France and describe precisely the data available for this study.

#### *Individual Capital Gain taxation*

A “quasi-confiscatory”<sup>2</sup> taxation is instigated in France on capital gains in 1921. Due to the severity of the measure as well as the high rate of taxation implemented, our empirical study provides a unique way to identify clearly the fiscal explanation of the ToY effect.

A general fiscal reform is implemented in 1914 in France in order to finance the war. This reform instigated tax for all incomes at an initial low rate of 2%. This rate is quickly increased to 20% in 1918. In 1920, a new law increased further the marginal tax rate to 50 % and even to a maximum marginal rate of 62.5 % for single taxpayers with no offspring. Since they were not considered yet as revenues, the capital gains were

---

<sup>2</sup>There is no generally accepted definition of a confiscatory tax at the tax payer level. Confiscatory tax could refer to the descending part of a potential “Laffer curve” whereby an increase in taxation level results in a decrease of economic incitation and therefore on tax revenue base (see for instance Wanninski, 1978). Whatever the definition retained, the rate being above 70 % for several decades in France, the term confiscatory seems appropriate.

theoretically exempted. However, the fiscal administration decided in 1920 to tax the capital gains of those who “regularly buy and sell securities” (Allix and Lecerclé, 1926: 184); the fiscal administration decided to consider that capital gains were a form of revenue for active investors.<sup>3</sup> Thus, in 1921 a very high rate of taxation (up to 62.5%) is imposed on active investors, who are therefore implicitly encouraged to sell losing stocks at the end of the tax year and buy them back at the beginning of the following year in order to reduce their tax burden.

Due to other later increases, the maximum marginal tax rate was raised to a whopping 90 % in 1924. The incentive to make arbitrage at the ToY became at that time very high. The application of the new income laws remained subject to some unsuccessful challenges in administrative courts since the taxation of capital gains was an interpretation of the fiscal administration. In 1934, a law clarified and confirmed the administrative practice of taxation of the capital gains of active investors. In 1941, Vichy France created a short-lived generalized tax on capital gains with a universal rate of 33 % although the active investors were still taxed on their capital gains as an income (Société fiduciaire juridique et fiscale, 1944). After the Libération the initial situation of a taxation only for active investors’ capital gains was applied again until 1982. A generalized taxation of capital gains was voted in 1976 but was not applied to active investors. A law of 1982 erased the specific case of active investors leading to a single tax on capital gains which was set to only 15 %. Thus, at this date the rate of taxation of the capital gains dramatically fell from about 60 % to only 15 % allowing to examine the impact of large changes in the tax rate on the ToY effect. Since this date, the tax rate on capital gain gradually increased again to reach 35%.

A crucial set of data we use in this study is the series of capital gain tax rates. As active investors capital gains were taxed as income up to 1982, we use the series built by Piketty (2001) for income tax rate in France until 1982. Since 1921, the capital gains of a professional speculator are taxed as a “Bénéfice non commercial”. Between 1921 and 1969, a double taxation system prevailed that cumulated an almost flat taxation rate

---

<sup>3</sup>The definition of an active investor by the fiscal administration is gradually more accurate. At the beginning in 1920, the fiscal administration distinguishes the standard saver that can sometime sell one securities with a gain (exonerated) from the speculator that “buy and sell on a habitual basis” (...) “to speculate on the prices changes” (Allix and Lecerclé, 1926: 184). In the late 1970s, there is four clear alternative criterion: i. to use market credit, ii. to use option, iii. if the value of the sales realized during the year is above 1.6 times the total value of the portfolio at the end of the year or iv. if capital gains are the main source of revenue of the investor during the year (Law of July 5, 1978).

with a highly progressive one (Piketty, 2001, chapter 4). Assuming that active investors with transactions big enough to create the ToY effect are rich people paying the highest tax rate, we focus on the marginal tax rate (TAXM). Since 1969, we focus on the marginal tax rate of the unified income tax. But, we also study the average tax rate effectively paid by French taxpayers (TAXA) that Piketty (2001) built using fiscal archives. From 1982, we link these two series with the rate of the specific tax on capital gains applied since this date. Since 1982, we have collected the tax rate on capital gain in the fiscal documentation.

### *Corporate Capital Gain taxation*

Companies' capital gains were initially taxed as a benefit only when it was materialized, leading to the possibility for firms to contribute to the ToY effect. But, in 1925, the fiscal administration decided to tax capital gains as soon they were recorded in the accounts of the firm even if the securities had not yet been sold i.e. this amounted to marked-to-market accounting (Allix and Lecerclé, 1926: 382). Conversely, the marked-to-market losses could contribute directly to reduce the tax basis, thus rendering the sale/buy back operations at the ToY irrelevant. Quickly, the record in the accounting became unnecessary: the values of the listed securities held by firms were evaluated at the end of each year. The fiscal administration measured potential profit (mark to market) taking into account both gains and losses, thus making unnecessary to sell losing stocks at the end of the year (Ministère des finances, 1928: 32). Since 1925, the financial companies (insurance, reinsurance and saving firms) pay a specific 20 % taxation rate on all profits including the non-materialized capital gains of the fiscal year while they are allowed to deduct losses for the following five taxable years. Because the company taxation could only incite to end of year sales for a few years (1918 to 1925) and because most of the shareholders were individuals at this time, we focus on the taxation of individual investors only in this study.

### *Financial and economic data*

To assess the ToY effect in France, we combine two series of stock prices. From 1854 to 1987 we use the data of the reconstituted historical CAC 40 (Le Bris and Hautcoeur, 2010). Note that a potential weakness of the French dataset is that prices are collected the first Friday of each month (whereas for most long-term stock series the last day of

the month is considered) but this timing allows removing the effects of future operations settlements which were very important in the 1920s; Most of the transactions of that time on the Paris-Bourse were made “à terme” with both settlement and payment taking place at the end of each month (Riva and Lagneau-Ymonet, 2011). As a result, 2.4 days of January are attributed to December on average over our period (i.e. the first Wednesday of January occurs on average 2.4 days after the beginning of the month). Since 1988, we use the Euronext official CAC 40 series but for consistency concerns, we keep the first Friday of each month as the reference date to compute the monthly returns. For, individual stock investigations we use stock prices coming from these two successive sources.

We also use these stock price series to build additional control variables. We compute a measure of volatility of the previous year (called VOLAT) as the standard deviation of the previous 12 monthly returns, a measure of the stock performance of the previous year (PERF) defined as the price change between January and December of the previous year (t-1). Finally, we compute a measure of the maximum capital gain potentially enjoyed over the previous year (MAXMIN) defined as the capital gain from the lowest to the highest price recorded over the past 12 months. Our assumption is that higher returns during the past year (measured through PERF or MAXMIN) should lead to a stronger tax effect, as higher gains would translate into higher incentives for investors to sell losing stocks at the end of the year and buy back the positions at the beginning of the following year. Similarly, higher volatility (VOLAT) should entail important capital gains or losses and thus create an incentive to selling losing stocks to reduce the taxable capital at the end of the tax year.

We also use as control variables two macroeconomic data provided by the French National Statistics Institute (INSEE): the French inflation rate (INF) and the French GDP growth (GROWTH) of the year considered. Our assumption is that higher inflation or higher economic growth should translate into a higher tax basis for rich investors and therefore enhance the tax motivations for a ToY effect the following year.

Finally, to control for the US January effect, we build a variable called USCORR as the ToY effect (January return minus average following month's returns) observed in the US (using the Old NYSE from Goetzman et al. (2001) and the S&P after 1925) multiplied by the correlation computed between the French and US returns over the past 12 months. This variable allows to control for the strength of the US January effect spillover on the

French ToY effect (note that the CAC and S&P index were only 3% correlated pre-1921 and became gradually more correlated, 40% post-1970).

#### **4. Does a ToY effect appear after the implementation of a tax on capital gains?**

##### *The ToY effect in France*

First, we document the ToY effect in long-term French stock prices comparing the average return observed each month. Figure 1 exhibits the monthly average returns over two sub-periods (1854-1920 and 1921-2013) allowing to distinguish the returns before and after the introduction of the tax on capital gains. Consistent with the tax-loss selling hypothesis, it appears that the average return in January is markedly higher since 1921 than the returns observed in other months. But it is also true and even stronger for December.<sup>4</sup>

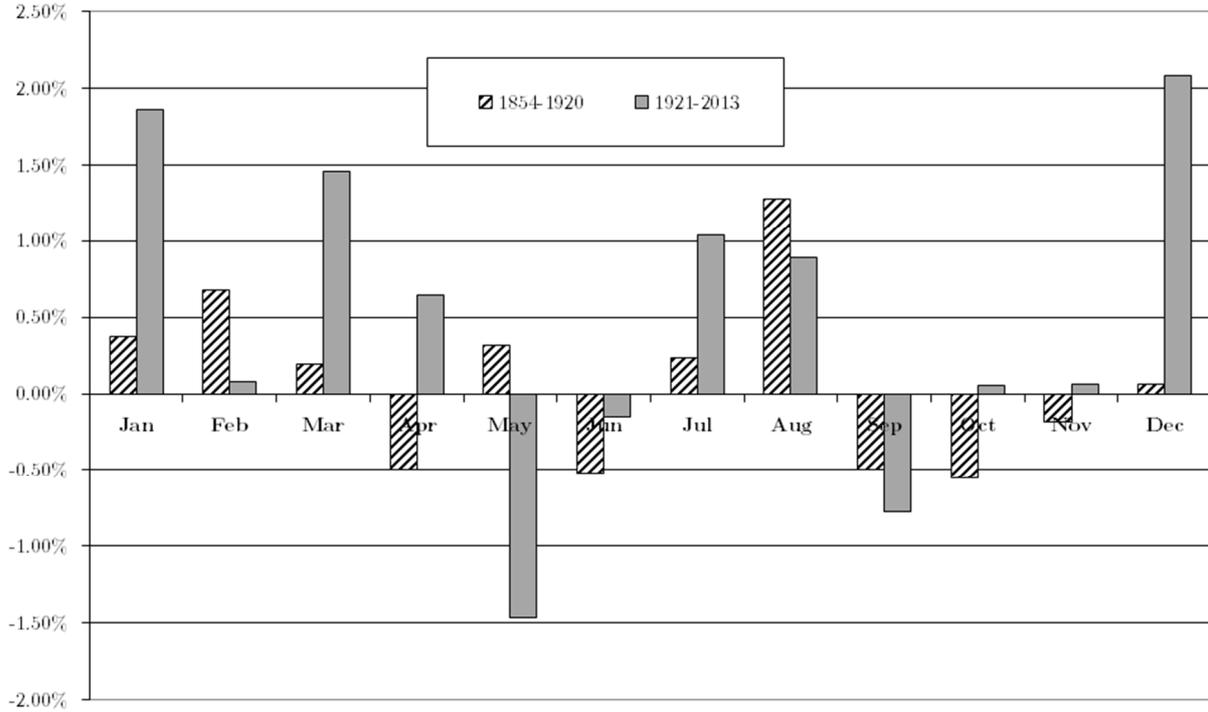
To assess the statistical significance of the differences we observed, we run standard T-test as done by Jones and al. (1991) for the US case. First, we compare the monthly returns before and after 1921. January is significantly higher than the other months since 1921 whereas it was not the case before the implementation of the tax on capital gains (see Table 1, (I) and (II)). December exhibits a similar pattern. Conversely, May and September exhibit significant lower returns than the other months (a difference which was already significantly negative before 1920 for the month of September). Second, we compare a given month before and after 1921. The average return observed in January after 1921 is significantly higher than the average January return observed before this date. The same is true in December and, we can make the opposite observation for the returns in May (higher returns pre 1921 than post 1921).

---

<sup>4</sup> We have to note that Post 1921, on average, 52% of the French stock returns are realized during December and January whereas this two month represent only 16.6% (2/12) of the time.

**Figure 1.** Average monthly returns pre and post 1921.

This figure shows the average monthly return over the period before the introduction of the tax on capital gain in 1921 and after.



Sources: Le Bris and Hautcoeur, 2010 and Euronext.

Whereas there is no theoretical reason to explain the May effect, the higher return observed in December since 1921 is consistent with the Tax-loss selling hypothesis for two reasons. First, the buying back of losing stocks sold to reduce the fiscal basis could be done as soon as December; it is even sometimes a legal obligation to record sales a few days before December 31st, which leads the investors to buy back shares of losing stocks as early as the end of December. Second, the French stock index price is observed the first Friday of each month (to avoid the noise of the settlement of futures transactions at the end of each month) so that the first days of January are actually taken into account in the December returns. As a consequence, we prefer, in the following investigations, to consider as the ToY effect, the average of December and January returns minus the returns of the others remaining months.

We denote the December-January average excess return minus the other months as ToY:

$$ToY_t = \frac{1}{2} * (Ret_{.Dec\ t-1} + Ret_{.Jan\ t}) - \frac{1}{10} * (Ret_{.Feb\ t} + \dots + Ret_{.Nov\ t}) \quad (1)$$

With *Ret.* corresponding to the capital gain recorded during one month.

**Table 1. Monthly returns**

This table exhibits the average return observed each month as well as the ToY which is the average of December and January minus the average of the rest of the year. We compute T-test to assess if one given monthly return is different from the others. These investigations are realized on two sub-samples: (1854-1920) and 1921-2013). A last analysis compares the returns of one given month and of the ToY effect after and before 1921 to assess if performances observed in December and January after 1921 are significantly higher than the one observed before this date.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ToY
1854-1920 (I)													
Mean (%)	0.395	0.742***	-0.106	-0.170	0.091	-0.374*	0.392	1.010***	-0.742***	-0.149	-0.344	0.258	0.304
pvalue	0.281	0.009	0.581	0.418	0.973	0.056	0.272	0.000	0.001	0.355	0.110	0.463	0.172
1921-2013 (II)													
Mean (%)	1.919**	0.109	1.447	0.653	-1.437***	-0.087	1.037	0.838	-0.752**	0.050	0.075	2.098***	2.061***
pvalue	0.027	0.503	0.148	0.794	0.006	0.350	0.390	0.559	0.041	0.489	0.431	0.001	0.000
Difference after minus before 1921 (II) - (I)													
Mean (%)	1.524*	-0.633	1.552*	0.824	-1.528*	0.287	0.645	-0.172	-0.009	0.199	0.419	1.841***	1.757***
pvalue	0.070	0.389	0.074	0.309	0.075	0.714	0.420	0.819	0.991	0.808	0.558	0.007	0.001

*Sources:* Le Bris and Hautcoeur, 2010 and Euronext.

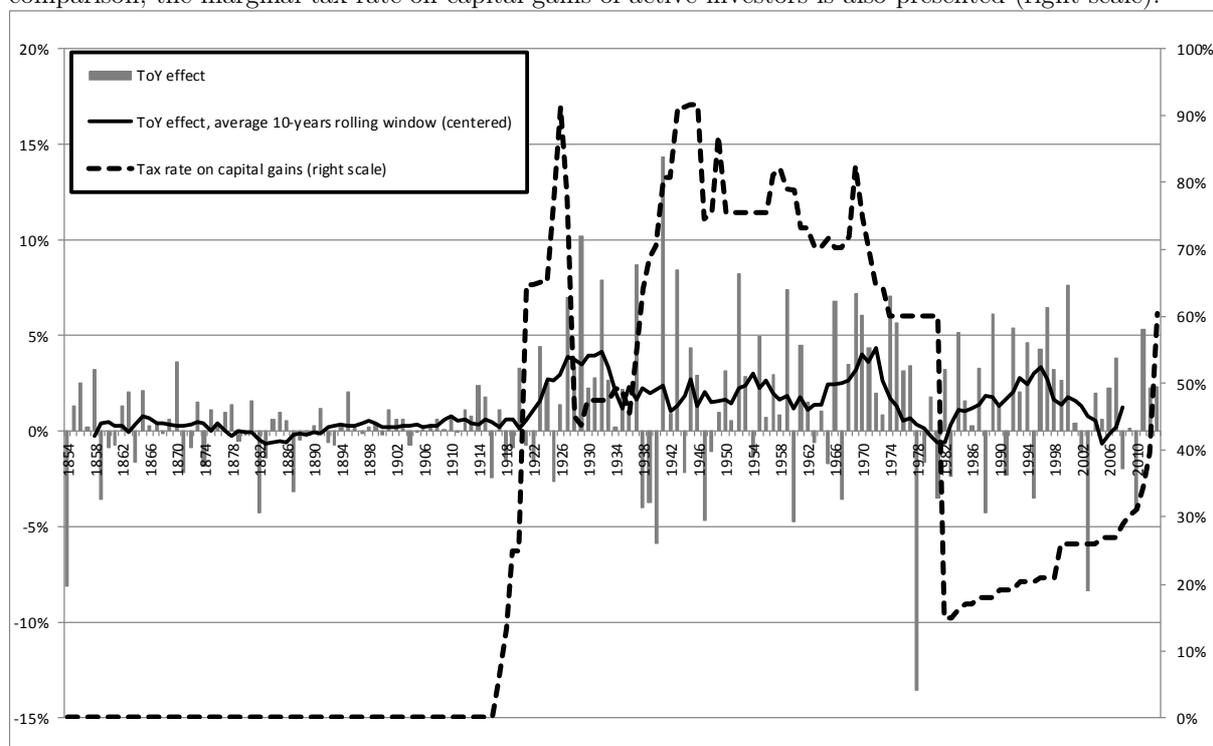
*Notes:* \*, \*\*, \*\*\* denote significance at 10%, 5% and 1% respectively.

## The ToY effect over time in France

The appearance of the ToY effect after 1921 is clearly visible in a graphical analysis. Figure 2 shows the ToY effect observed each year through the sample period. To obtain a smoothed view of the phenomenon, Figure 2 also exhibits the average ToY over a 10-years centered rolling window. The ToY effect was clearly inexistent before 1921 and became strongly pronounced thereafter. The appearance of this French ToY effect is more clear-cut than the one observed in the US around the introduction of the income tax in 1917 as discussed by Schultz (1985), Jones et al. (1987) and Lakonishok et al. (1991). Moreover, we also report in this figure the capital gains rate of taxation over time and therefore the importance of the incentive of sale and buy-back operations leading to the ToY effect in line with the Tax-loss selling hypothesis. It is highly interesting to observe that the magnitude of the ToY effect declines at the end of the 1970s as the rate of taxation falls. In section 5, we study more formally the statistical relationship between the ToY effect and the rate of taxation of capital gains in France.

**Figure 2.** ToY effect and capital gain tax rate

This figure shows the ToY (average of December and January minus average of the rest of the year) observed each year since 1854 as well as an 10-years average of these annual ToY effects. As a matter of comparison, the marginal tax rate on capital gains of active investors is also presented (right scale).



Sources: Le Bris and Hautcoeur (2010) and Euronext for stocks and Piketty (2001) for tax rate.

### *Robustness checks for size and industry*

As a test of robustness of the ToY effect we have identified, we study the anomaly depending of the size of the firms. Indeed, several US studies pointed out a concentration of the ToY effect in the small stocks (as most recently, see Asness et al., 2015). The French database available only contains the forty largest stocks by market capitalization. We build two sub-indices composed of the ten biggest and the ten smallest market capitalizations from 1854 to 2013.

As frequently observed, smallest French firms exhibit a higher average return than bigger firms which is also accompanied by a higher risk (see Table 2). The average ToY effect observed on small or big firms is close to the one observed on the historical CAC 40 during both period. In the second period, the ToY effect is also higher for the smallest firms. This observation confirms the evidence reported in previous US studies establishing that the ToY effect is stronger in small firms. But, small firms are not the only driver of the effect we observe on the overall market because the ToY effect is also observed for the ten biggest firms. The ToY effect is significantly higher after 1921 for the three indices.

**Table 2:** Robustness controls for size of firms

This table provides the ToY (average of December and January minus average of the rest of the year) of the complete index as well as two sub-index composed by the 10 biggest and 10 smallest firms in terms of market capitalization as identified at the beginning of each year. Pvalues of T-test demonstrates the difference is significant whatever the size. N. Obs is the number of monthly returns used to compute these values.

	HCAC 40	10 biggest	10 smallest
	1854-1920		
ToY (%) (I)	0.304	0.331	0.321
N. Obs	804	804	804
	1921-2013		
ToY (%) (II)	2.061	1.784	2.479
N. Obs	1,104	1,104	1,104
Diff ToY (%) (II)-(I)	1.757***	1.453**	2.158**
pvalues	0.001	0.006	0.006

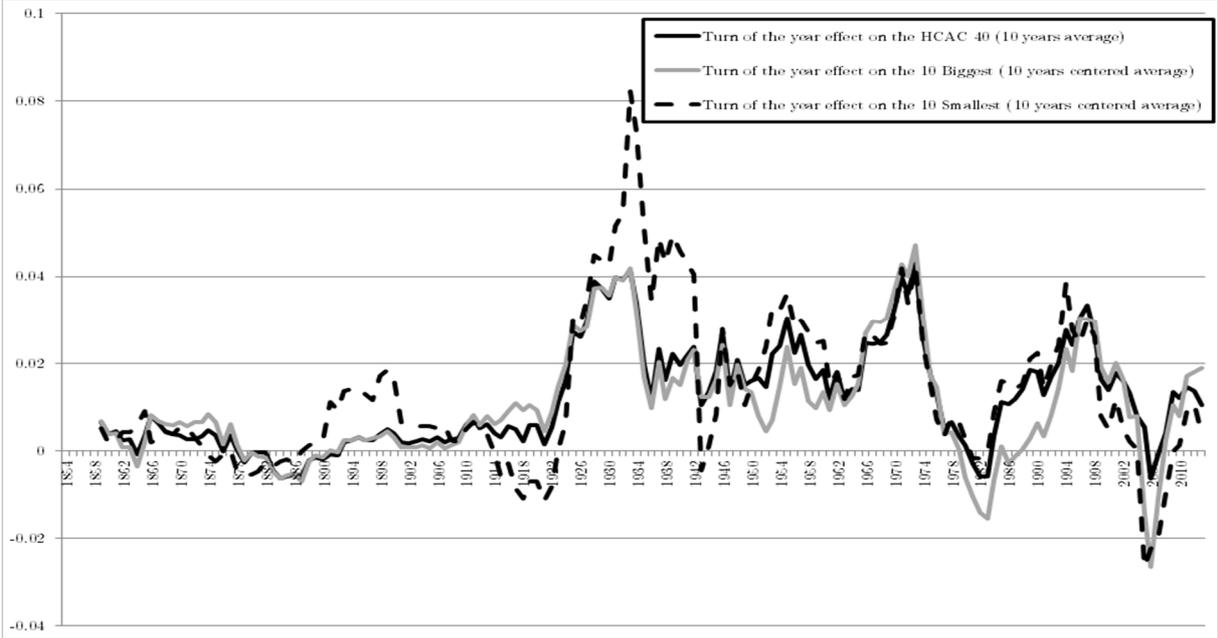
*Sources:* Le Bris and Hautcoeur (2010) and Euronext.

More important for our investigation of the Tax-loss selling explanation, the ToY effect is highly correlated among our three series. The effect we have observed on the historical

CAC 40 index exhibits a correlation of 0.83 with the effect observed on the 10 biggest index and 0.71 with the 10 smallest index. Moreover, the timing of the appearance of the ToY effect is similar on the three indices. As shown by Fig. 3, the ToY effect appears consistent and high after 1921 for the two sub-sample indices. The effect observed on the 10 smallest index is slightly more volatile than the other two.

**Figure 3.** 10-years rolling average of the ToY effect on three indices.

This graphs depicts the 10-years average of the ToY (average of December and January minus average of the rest of the year) for the complete index as well as the two sub-indices composed by the 10 biggest and the 10 smallest firms in terms of market capitalization as identified at the beginning of each year.

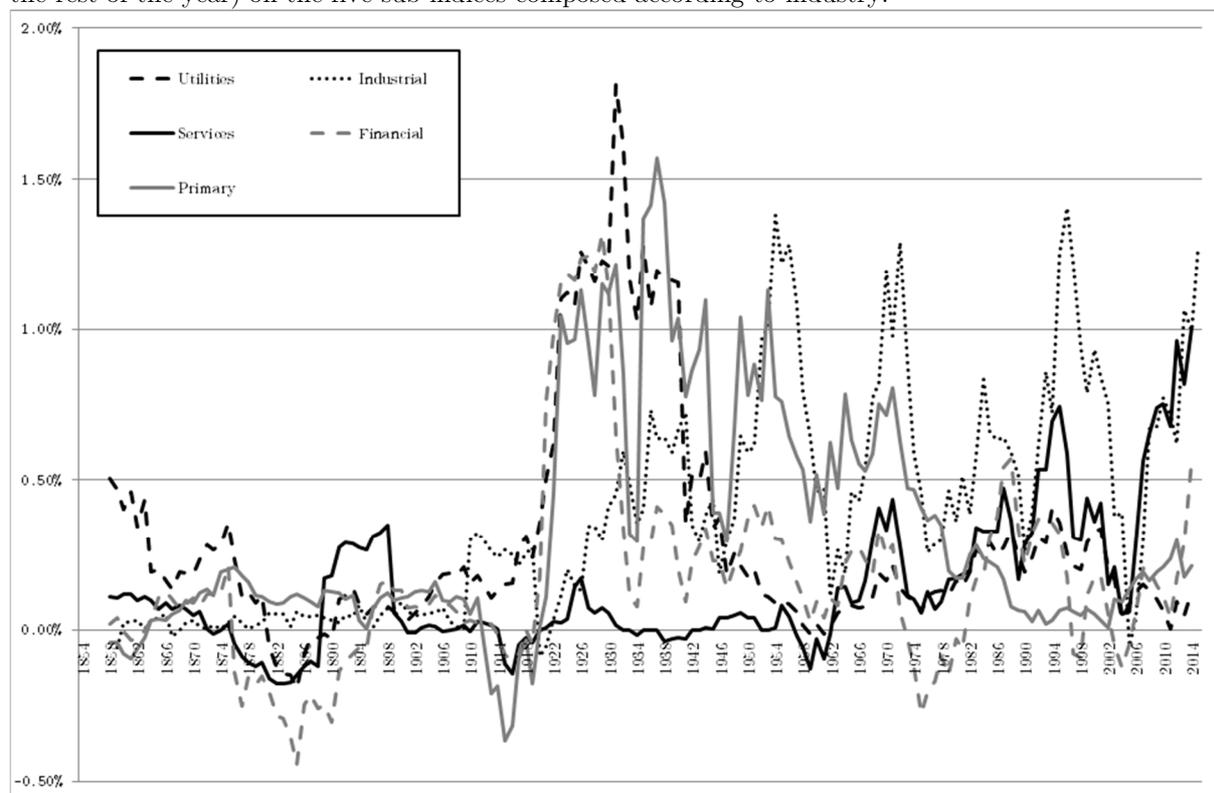


Sources: Le Bris and Hautcoeur (2010) and Euronext.

A second control is for the industry since one can suspect that the seasonality of some industry could lead the ToY effect. Each firm is classified in one of the five broad industries defined as Utilities, Industrial, Services, Financial activities and Primary sector. The behavior of the ToY effect over time is depicted in Figure 4. Whatever the industry index, the ToY effect appears very low before the 1920s. This is confirmed in Table 3 where we compare the monthly returns characteristics and ToY effect by industry before and after 1921. Here again, the ToY effect appears significantly higher after 1921 whatever the industry considered.

**Figure 4.** 10-years rolling average of the ToY effect on sectors.

This graphs depicts the 10-years average of the ToY (average of December and January minus average of the rest of the year) on the five sub-indices composed according to industry.



Sources: Le Bris and Hautcoeur (2010) and Euronext.

**Table 3:** Robustness controls for industries

This table provide the ToY (average of December and January minus average of the rest of the year) of the 40 stocks (i.e. unweighted index, thus slightly different from what has been previously exposed using the market cap. weighted CAC 40) as well as five sub-index composed according to industries. Pvalues of T-test comparing the ToY after and before 1921 demonstrates that the difference is significant whatever the industry. N. Obs is the number of monthly returns used to compute these values.

	All	Utilities	Industrial	Services	Financial	Primary
1854-1920						
ToY (%) (I)	0.432	0.786	1.441	0.426	-0.261	0.131
N. Obs	2,637	1,075	237	290	754	272
1921-2013						
ToY (%) (II)	4.185	6.299	3.925	3.056	3.534	5.020
N. Obs	44,160	541	1,547	431	643	649
Diff ToY (%) (II)-(I)	3.752***	5.513**	2.484**	2.630***	3.795***	4.889***
pvalues	0.00	0.00	0.02	0.01	0.00	0.00

Sources: Le Bris and Hautcoeur (2010) and Euronext.

Notes: \*, \*\* and \*\*\* denote significance at 10, 5 and 1% respectively.

## 5. Does the rate of taxation on capital gains explain the strength of the ToY effect?

We first demonstrate that the magnitude of the ToY effect depends on the marginal tax rate and the previous market performance. Then, we control for macro-economic and international contexts to evaluate the robustness of the marginal tax rate and market performance explanative power.

*The ToY effect magnitude depends both on the marginal tax rate and the previous year performance*

In this section, we implement statistical tests to confirm the relationship between the rate of taxation and the strength of the ToY effect suggested by Figure 2. For this purpose, we regress the yearly ToY effect on several potential explanatory variables especially our variables of interest which are the series of taxation rates.

First, we run the following regression to test if the tax rate on capital gains explain the ToY effect observed over time:

$$ToYEFF_t = \alpha + \beta TAXX_t + \varepsilon_t \quad (2)$$

with TAXX a measure of taxation. We run univariate regressions estimating three different measures of taxation (TAXX): the average tax rate (defined as the average percentage of the tax paid with respect to total revenue) observed in France (TAXA), the marginal tax rate (TAXM) and a dummy that takes the value 1 after 1921 and 0 before (TAXD). Table 4 reports coefficients and standard errors for these explanatory variables.

Our three measures of taxation rate are highly significant to explain the strength of the ToY. The most significant is the marginal tax rate (TAXM) which is consistent because stockholder at the origins of the January effect are probably more sensitive to this rate because we can assume they are among rich people. Because of the strong statistical significance and the theoretical relevance of the marginal tax rate (TAXM) for assessing the behavior of active investors, we therefore only consider the TAXM series in the following analyses.

**Table 4.** ToY effect and tax series (1854-2013)

This table exhibits the result of univariate regressions explaining the ToY observed a given year by three different tax series: average tax rate (TAXA), marginal tax rate (TAXM), and a dummy taking value 1 for the years during which capital gains are taxed (TAXD).

	Turn of the Year Effect (ToYEFF)		
	(I)	(II)	(III)
TAXA	0.151*** (0.039)		
TAXD		0.041*** (0.008)	
TAXM			0.065*** (0.015)
R <sup>2</sup>	0.11	0.18	0.16
N. Obs	159	159	159

*Sources:* Le Bris and Hautcoeur (2010) and Euronext for stocks and Piketty (2001) for tax rates.

*Notes:* Robust standard errors are reported in brackets. \*, \*\* and \*\*\* denote significance at 10, 5 and 1% respectively.

We now consider the different market variables susceptible to generate an important ToY effect according to the Tax-loss explanation. We run the following regression:

$$ToYEFF_t = \alpha + \beta TAXM_t + \beta_i X_{i,t} + \varepsilon_t \quad (3)$$

with  $X_i$  a matrix of market variables susceptible to create the conditions for an higher ToY effect (PERF, MAXMIN and VOLAT). According to the Tax-loss selling explanation, a higher performance of the stock market (as measured by PERF or MAXMIN) over the previous year (t-1) should lead to a higher taxable income (as capital gains) for investors and therefore to a stronger ToY effect, through a stronger incentive to sell and buy back losing stocks. A similar consequence is to be expected from a higher volatility of the index (VOLAT) in the previous year.

Univariate regressions (see Table 5) indicate that VOLAT, MAXMIN and PERF variable are highly significant explaining the ToY (when one of these three market measure are high, the ToY effect is stronger). Note that, unsurprisingly, MAXMIN and PERF are highly correlated at 80% since they both aim at measuring the investor's potential capital gains. Therefore, for the following investigations, we capture investor's portfolio gain only through PERF, the variable that is the most consistent with the actual returns obtained by investors (i.e. MAXMIN implies a perfect foresight of the maximum and

minimum in prices during a year), as running regressions combining highly correlated explanatory variables can lead to spurious results.

Adding our main variable of interest which is TAXM, both PERF and TAXM appear highly significant to explain the ToY effect (Table 5, column V and VI). Adding the variable TAXM increases the adjusted R squared compared to the one observed using only VOLAT and PERF. This significant positive effect of PERF altogether with the significant positive marginal tax rate (TAXM) effect supports the Tax-loss selling explanation.

#### *Robustness checks for macro-economic and international context*

To check the robustness of previously reported results, we carry out two additional tests. First, we control for the macroeconomic environment, adding the inflation and growth rates variables (INF and GROWTH) into regression (2) to explain the ToY effect (Table 5, column VII). We find that the TAXM variable remains strongly significant (with a p-value falling well below the 1% significance level).

In a second specification (column VIII), we add the variable measuring the strength of the US January effect adjusted for the correlation between the French and US markets (USCORR). USCORR is not significant whereas our variables of interest, TAXM and PERF remain highly significant meaning that, over the long run, the French ToY effect is not driven by the US ToY effect.

**Table 5.** Explaining the ToY effect (1855-2013)

This table shows the result of regressions explaining the annual ToY observed over time by the marginal tax rate (TAXM), the volatility of the monthly price variations of the previous year (VOLAT), the maximum potential capital gain during the previous year (MAXMIN) and the capital gain recorded over the entire previous year (PERF). According to the Tax-loss selling explanations, all these variables support an higher ToY effect. We also control for economic growth (GROWTH), inflation (INF) and the US January effect\*French-US stock market correlation (USCORR).

	ToY							
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
TAXM					0.050** (0.019)	0.055*** (0.013)	0.078*** (0.015)	0.079*** (0.016)
VOLAT	0.158*** (0.043)			0.123*** (0.037)	0.016 (0.054)			
MAXMIN		0.151*** (0.044)						
PERF			0.157*** (0.038)	0.130*** (0.036)	0.130*** (0.036)	0.132*** (0.036)	0.124*** (0.036)	0.128*** (0.039)
GROWTH							-0.118*** (0.045)	-0.103* (0.058)
INF							0.030 (0.069)	-0.023 (0.105)
USCORR								0.010 (0.019)
R <sup>2</sup>	0.135	0.126	0.165	0.241	0.268	0.272	0.310	0.315
N. Obs	159	159	159	159	159	158	154	87

*Sources:* Le Bris and Hautcoeur (2010) and Euronext for stocks and Piketty (2001) for tax rates, see text for others data.

*Notes:* Robust standard errors are reported in brackets. \*, \*\* and \*\*\* denote significance at 10, 5 and 1% respectively.

## 6. Do past losers outperform at the ToY, as expected according to the Tax-loss selling explanation?

In this section, we test the fiscal explanation of the ToY effect on individual stock returns over time. Monthly prices are available for the 40 constituents of the CAC 40 in a given year between 1854 and 2013. We thus rely on about 6,360 firm-years (40 firms for 159 years) or 76,320 monthly prices. According to the Tax-loss selling hypothesis, the owner of a stock whose price has declined over a given year sells it at the end of the year in order to record a fiscal loss and buys it back quickly. This loss can be deducted from his gains on others stocks and thus reduces his fiscal basis. Therefore, we can expect that past loser stocks (negative return during the year between previous January and

November), will exhibit an abnormal positive return in December of this year and January of the following year only in the period after the introduction of the tax on capital gains in 1921.

To test the ToY effect on individual stock returns, we run a “Diff-In-Diff” regression, where we use as explanatory variables a dummy variable for post-1921 to capture the existence of a fiscal incentive of the tax-loss selling (zero before 1921), a dummy variable equal to one if the stock considered was a previous year loser (i.e. if its return from January to November the previous year was negative) and other control variables to explain the individual stock ToY effect observed per stock each year.

Note that the Diff-In-Diff regressions can be biased in presence of time series autocorrelations in the variables to be explained (Bertrand et al., 2004). It is the case that returns tend to be autocorrelated. This effect is well documented and known as the “Momentum effect” whereby past winners continue to outperform the market for a certain time and vice versa. The momentum effect has been documented on many markets and many assets across time (see Asness et al., 2013). It is therefore not a surprise to also observe it on the French market. We find that the long-short Momentum strategy (each month, the investor buys the 20 best performing stocks the previous year -excluding the previous month return- and sell the 20 worst performing stocks) provides a yearly Sharpe of about 1, whereas the buy and hold strategy across the period considered has a very low yearly Sharpe of 0.22. This momentum effect plays in a direction opposite to what is expected according to the fiscal explanation of the ToY effect; the momentum implies a pursuit of the previous performance whereas according to the fiscal explanation of the ToY effect, we expect that past losers reverse their momentum exhibiting abnormal positive returns at the ToY.

Therefore, to account for the outperformance of past losers, one has to correct for the momentum effect. For each stock, we have corrected the ToY effect to adjust for its momentum by subtracting the average returns observed from January to November of the previous year (i.e. the one year Momentum effect on individual stock returns)<sup>5</sup>; recall that the ToY effect is the average of December to January returns minus the average returns of February to November of the following year.

---

<sup>5</sup>We consider the one year Momentum effect minus the one month Contrarian effect (a contrarian effect compared to the previous month is well documented) as defined by Jegadeesh and Titman (1993), i.e. the return between the price 12 month ago and the price last month.

For all stocks, we calculate each year a ToY effect adjusted for the momentum (AdToY) as:

$$AdToY_t^s = ToY_t^s - \frac{1}{11} * (Return_{January\ t-1}^s + \dots + Return_{November\ t-1}^s) \quad (4)$$

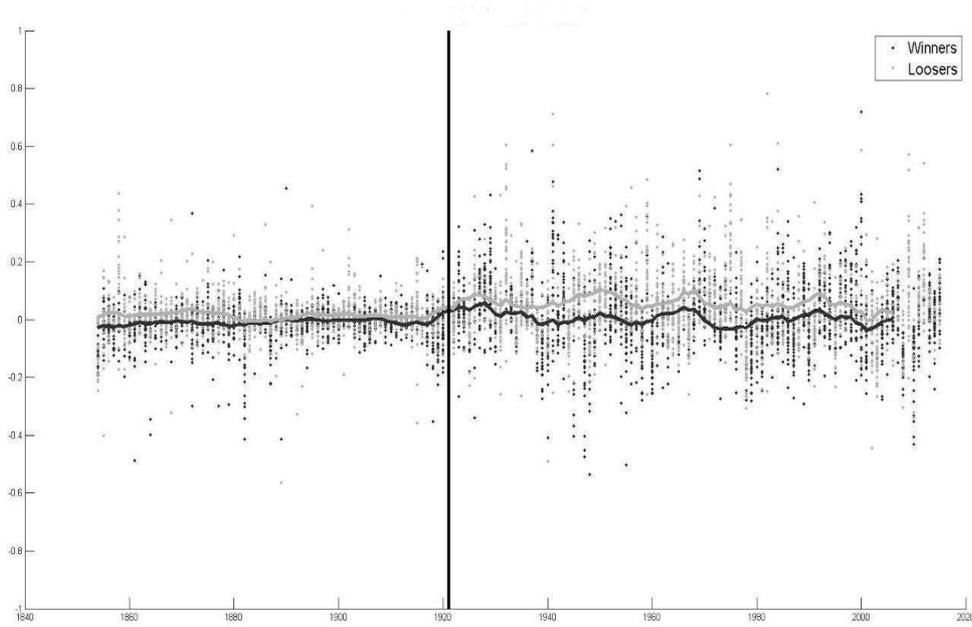
With as in equation (1)  $ToY_t^s = \frac{1}{2} * (Return_{December\ t-1}^s + Return_{January\ t}^s) - \frac{1}{10} * (Return_{February\ t}^s + \dots + Return_{November\ t}^s)$

The average autocorrelation of these series adjusted for momentum (AdToY) is only 5.22 % (lag one) thus reliable for a Diff-In-Diff investigation.

We have plotted in Figure 5 the ToY effect adjusted for momentum (AdToY) per stock each year distinguishing past losers and past winners in nominal terms (i.e. without adjustment for momentum since tax payers are interested in their nominal gains). Black dots represent previous year losers - and grey dots - previous year winners. We have included a 10-years rolling average of the adjusted ToY effect observed on past winners and losers to stress the mean effect. This figure shows that the adjusted ToY effect of past losers clearly increased after the implementation of the tax on capital gains in 1921 whereas the adjusted ToY effect of past winners remained about the same.

**Figure 5.** ToY Effect (adjusted for momentum) at individual stock level

The points of this figure depict, the AdToY effect (momentum adjusted ToY) each year for the 40 stocks we have in our database. We distinguish the AdToY effect of past losers (stocks with a negative nominal capital gain between January and November of the previous year) in grey from past winners in black. The curves exhibit rolling 10-years average of the AdToY of the past winners and past losers. The average between  $t$  and  $t+10$  years is indicated at date  $t$ . The vertical line marks 1921. The AdToY effect of past losers become higher than the one of past winners after the introduction of the tax on capital gains in 1921.



Sources: Le Bris and Hautcoeur (2010) and Euronext.

To statistically analyse this effect, we then run the following Diff-In-Diff regression on individual stock returns:

$$AdToY_t^s = \alpha + \beta_1 PASTLOSER_t^s + \beta_2 POST1921_t^s + \beta_3 PASTLOSER_t^s * POST1921_t^s + \beta_i X_i \quad (5)$$

This regression explains the ToY effect for individual stocks adjusted for the Momentum effect where PASTLOSER is a dummy variable equal to one if the stock return was negative the year before year  $t$  and POST1921 is a dummy variable equal to one for observations after 1921 and  $X_i$ , a matrix of other variables. Our variable of interest is the interaction PASTLOSER\*POST1921. Results of this regression establish that both past losers and observations after 1921 exhibits significantly higher ToY effect but more crucially for the tax-loss selling hypothesis, the interaction term capturing the impact of being a past loser after 1921 reveal a highly significant positive value (Table 6, column I).

We add controls for other variables that can potentially influence the ToY effect. We add control for the average stock performance during the past year (PERF). The incentive to sell and buy-back losing stocks in order to get tax relief exists only if the investor recorded gains for the other stocks in his portfolio; i.e., in a year where all stocks had negative price change, nobody will pay a tax on non-existing capital gain and therefore the Tax-selling strategy will not be followed. We cannot observe the potential gains of investors each year but we can assume that such potential gains are higher after a year characterized by an overall increase of the stock index. As a consequence, according to the fiscal theory, PERF should be positively associated to the ToY effect; the incentive to realize arbitrage leading to the ToY is higher when investor enjoyed important capital gains as measured on the overall market. The Tax-loss explanation is supported because PERF is significant whereas the coefficient of our interaction variable slightly increases whereas the significance remain very high (Table 6, Column II).

To estimate more accurately the effect of the fiscal explanation, we switch the POST 1921 dummy for the TAXM variable (which is a continuous variable between 0 and 1). Indeed, the fiscal explanation assumes that the ToY effect of past losers should be higher when the tax rate is high. Compared to the POST1921 dummy, TAXM is also equal to 0 before 1921 but evolves between 15 and 92 % after this date. The interaction variable PAST LOSERS\*TAXM appears to be also positively associated with the ToY effect exhibiting a higher significance than the one observed using PAST LOSERS\*POST21 (T-stat of 6.23 instead of 4.49). It is a very interesting result because it does not only show that the January effect appears after 1921, but also that the magnitude of the ToY effect is influenced by the tax level (Column III). These results are robust when controlling for the stock performance of the year (Column IV).

We control for other potential confounding variables. On the previous graph, the ToY effect broadly appears more volatile, as do stock returns in general, during the 20<sup>th</sup> century compared to what was recorded before WWI. We thus add to our previous specifications, the variable capturing the volatility observed at the index level during a given year (VOLAT). We also use MAXMIN (higher price gap of the given year) as measure of investor capital gains alternative to PERF. These two variables are significant showing that the ToY effect is higher during volatile periods and when investors enjoyed higher capital gains but our variable of interest remains highly significant (Columns V and VI). We then add USCORR in the regression, to control if the US January effect is not the driver our French observations (Column VII). Our main result remains unaffected by this controls.

Finally, we control for the firm industries, using dummy variables as previously defined, together with our controls for the volatility of the market and the performance enjoyed by investors (Column VIII). Our main variable of interest, PAST LOSERS\*TAXM, remain highly significant to explain the ToY.

**Table 6.** Diff-In-Diff at individual stock level (AdToY, ToY effect momentum adjusted) This table shows the result of Diff-in-Diff regressions of the AdToY effect observed each year on each stock. The rationale is to test if past losers exhibit higher AdToY after 1921 only. The variable of interest is PASTLOSER\*POST1921 (Columns I and II). In a second step, we switch the POST1921 dummy for the marginal tax rate (TAXM also equal to 0 before 1921 but then changing according to the fiscal policy). The variable of interest becomes PASTLOSER\*TAXM. This design allows to check if the rate of the tax on capital gains influence the strength of the AdToY effect of past loser stocks. Several variables are controlled for.

	AdToY at individual stock level							
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
PASTLOSER	0.014*** (0.004)	0.016*** (0.004)	0.013*** (0.004)	0.016*** (0.004)	0.008*** (0.004)	0.009*** (0.003)	0.013*** (0.004)	0.016*** (0.003)
POST1921	0.012*** (0.001)	0.007*** (0.001)						
PASTLOSER*POST192	0.020*** (0.006)	0.027*** (0.007)						
TAXM			0.017*** (0.002)	0.010*** (0.002)	-0.001 (0.005)	-0.001 (0.005)	0.015*** (0.002)	-0.001 (0.000)
PASTLOSER*TAXM			0.043*** (0.009)	0.052*** (0.010)	0.052*** (0.010)	0.052*** (0.010)	0.043*** (0.010)	0.054*** (0.008)
PERF		0.053*** (0.008)		0.055*** (0.007)				0.053*** (0.006)
VOLAT					0.201*** (0.052)			0.200*** (0.048)
MAXMIN						0.057*** (0.013)		
USCORR							0.007*** (0.002)	
INDUSTRY FE	No	No	No	No	No	No	No	Yes
R <sup>2</sup>	0.032	0.038	0.032	0.04	0.035	0.035	0.033	0.042
N. Obs	6,360	6,360	6,360	6,360	6,360	6,360	6,360	6,360

*Sources:* Le Bris and Hautcoeur (2010) and Euronext for stocks and Piketty (2001) for tax rates, see text for others data.

*Notes:* Robust standard errors are reported in brackets. \*, \*\* and \*\*\* denote significance at 10, 5 and 1% respectively.

## Conclusion

In this paper, we examine the ToY effect on long-term French data: the historical CAC 40 stock index reconstructed by Le Bris and Hautcoeur (2010) as well as the French tax rates series as reconstructed by Piketty (2001). Our findings support the fiscal explanation of the ToY effect. We found a clear evidence that the instauration of a capital gain tax in 1921 is concomitant with the emergence of the ToY effect on the French market. Moreover, to our best knowledge we provide the first evidence of a statistical link between the level of taxation and the magnitude of the ToY effect. The ToY effect appears slightly stronger for the 10 smallest firms of the index but is also present when considering the 10 biggest firms of the French index. The ToY effect does not seem to depend on the firm industry. Focusing on more than 76,000 individual monthly stock returns over the long period 1854-2013, we find that the ToY return is statistically higher for past losers (compared to past winners) after 1921 only. This Diff-In-Diff demonstration is even stronger when using the marginal income tax rate. We believe that this paper is the first one to identify such a relationship.

## References :

- Allix, E., Lecerclé, M. (1926) L'impôt sur le revenu (impôt cédulaire et impôt général). *Traité théorique et pratique*. Paris: Rousseau.
- Asness, C., Frazzini, A., Israel, R., Moskowitz, T., Pederson, L. H. (2015), Size Matters, If You Control Your Junk, AQR Working Paper, Winter 2015.
- Asness, C., Moskowitz, T., Pederson, L. H. (2013), Value and Momentum Everywhere, *Journal of Finance*, 48(3): 929-986.
- Hurst, B., Hua, O. Y., Pedersen L. H. (2014) A Century of Evidence on Trend-Following Investing, AQR White Paper, Fall 2014.
- Berges, A., McConell, J. J., Schlarbaum G. G. (1984) The Turn-of-the-Year in Canada, *Journal of Finance*, 39(1): 185-192.
- Bertrand, M., Duflo, E., Mullainathan, S. (2004) How Much Should We Trust Differences-In-Differences Estimates?, *Quarterly Journal of Economics*, 119(1): 249-275.
- Carhart, M. M. (1997). "On Persistence in Mutual Fund Performance", *Journal of Finance*. 52(1): 57-82.
- Chen H., Singal V. (2004) All things considered, taxes drive the January effect, *Journal of Financial Research*, 27(3): 351-372.

- Constantinides, G. M. (1984) Optimal stock trading with personal taxes: Implications for prices and the abnormal January returns, *Journal of Financial Economics*, 13(1): 65-89.
- Dzhaharov C., Ziemba, W. T. (2011) “Seasonal Anomalies” in *The Handbook of Equity Market Anomalies: Translating Market Inefficiencies into Effective Investment Strategies*, Leonard Zacks (Editor), Wiley.
- Goetzmann, W., Ibbotson, R. G., Peng, L. (2001) A new historical database for the NYSE 1815 to 1925: Performance and predictability, *Journal of Financial Markets*, 4(1): 1-32.
- Haug M., Hirschey M. (2006) The January Effect, *Financial Analysis Journal*, 62(5): 78-88.
- Haugen R. A., Lakonishok J, (1992) *The Incredible January Effect*, McGraw-Hill Inc., Paperback.
- Heston, S. L., Sadka, R. (2010) Seasonality in the Cross-Section of Stock Returns: The International Evidence, *Journal of Financial and Quantitative Analysis*, 45(5): 1133-1160.
- Ilmanen, A, John (2012) *Expected Returns: An Investor's Guide to Harvesting Market Rewards*, Wiley & Sons.
- Jones, C., Pearce, D.K, Wilson, J.W (1987) Can Tax-Loss Selling Explain the January Effect? A Note, *Journal of Finance*, 42(2): 453-461.
- Jegadeesh, N., and Titman, S. (1993), Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency, *Journal of Finance*, 48(1): 65-91.
- Kiyoshi, K., Schallheim, J. S. (1985) Seasonal and Size Anomalies in the Japanese Stock Market, *Journal of Financial and Quantitative Analysis*, 20(2): 243-260.
- Lakonishok, J., Shleifer, A., Thaler, R., Vishny, R. (1991) Window Dressing by Pension Fund Managers, *American Economic Review*, 81(2): 227-32.
- Le Bris, D., Tobelem, S. (2012) “The Great Divergence: French Equity Premium is Lower and Riskier than the US since WWI”, *Bankers, Markets, Investors*, 118(3): 142-50.
- Le Bris, D., Hautcœur, P-C. (2010) A challenge to triumphant optimists? A blue chips index for the Paris stock exchange, 1854-2007, *Financial History Review*, 17(2): 141-183.
- Malkiel B. G. (2012) *A Random Walk Down Wall Street*. W.W Norton & Company, paperback 2012.
- Ministère des Finances (1928) *Impôts cédulaires et impôt Général sur le Revenu*, instruction Générale. Paris: Imprimerie Nationale.
- Ogden J. (1990) Turn-of-Month Evaluations of Liquid Profits and Stock Returns: A Common Explanation for the Monthly and January Effects, *Journal of Finance*, 45(4):1259-72.
- Piketty T. (2001) *Les Hauts revenus en France au 20e siècle : inégalités et redistribution, 1901-1998*. Paris: B. Grasset.

- Poterba J.M., Weisbenner S. J. (2001) Capital Gains Tax Rules, Tax-Loss Trading, and Turn-of-the-Year Returns, *Journal of Finance*, 56(1): 353-368.
- Reinganum, M. R. (1983) The Anomalous Stock Market Behavior of Small Firms in January: Empirical Evidence for Tax-Loss Effects, *Journal of Financial Economics*, 12(1): 89-104.
- Riva, A., Lagneau-Ymonet, P. (2011) Les opérations à terme à la Bourse de Paris au XIX siècle, in Levratto N. and Stanziani A. (s.d.d.), *Le capitalisme au future antérieur. Crédit et spéculation en France fin XVIIIe – début XXe siècles*. Bruxelles: Bruylant.
- Roll, R. (1983) The Turn-of-the-Year Effect and the Return Premia of Small Firms, *Journal of Portfolio Management*, 9(4): 18-28.
- Shultz, P. (1985) Personal Income Taxes and the January Effect: Small Firm Stock Returns Before the War Revenue Act of 1917: A Note, *Journal of Finance*, 40(1): 333–343.
- Société fiduciaire juridique et fiscale (1944) Nos impôts 1944 (mis à jour d'après le nouveau Code des taxes sur le chiffre d'affaires et la Loi de finances de 1944). Paris, Dalloz.
- Starks, L.T, Yong L., Zheng L. (2006) Tax-Loss Selling and the January Effect: Evidence from Municipal Bond Closed-End Funds, *Journal of Finance*, 61(6): 3049-3067.
- Steven L. J., Lee, W., Apenbrink, R. (1991) New Evidence on The January Effect Before Personal Income Taxes, *Journal of Finance*, 46(5): 1909-1924.
- Thaler, R.H. (1987) Anomalies: The January Effect, *Journal of Economic Perspectives*, 1(1): 197-201.
- Véron, N., Autret, M., Galichon, A. (2004) *L'information financière en crise: comptabilité et capitalisme*. Paris: Odile Jacob.
- Wachtel, S. B. (1942) Certain Observations on Seasonal Movements in Stock Prices, *Journal of Business*, 15: 184.
- Wanniski, Jude, (1978) Taxes, Revenues, and the `Laffer Curve, *The Public Interest*, Winter 1978.
- Zhang C. Y., Jacobsen, B. (2013) Are monthly seasonals real? a three century perspective, *Review of finance*, 17(5): 1743-1785.