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'Twas four weeks before Christmas: Retail sales and the length of the Christmas shopping season

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Abstract

I study the effect of the length of the Christmas "shopping season" on aggregate retail sales. I find a statistically significant increase in per-capita retail sales in November and December (combined) of approximately $6.50 per additional day over the relevant range.

Keywords: Christmas; Retail; Shopping

JEL classification: L81; D12

1. Introduction

The traditional Christmas "shopping season" in the United States varies from 26–32 days: the shopping season begins the day after Thanksgiving, which falls on the fourth Thursday in November.[1] US media reports speculate each year whether the length of the shopping season will affect sales. News

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[1] Thanksgiving has been a national holiday since 1863, but its date was not set in law. Because Lincoln celebrated Thanksgiving on the last Thursday of November, it was celebrated on that day until 1939, when Franklin Roosevelt proclaimed Thanksgiving a week earlier in order to lengthen the Christmas shopping season, spurring confusion and controversy. In 1941, Congress set Thanksgiving to its current date, the fourth Thursday in November.

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stories typically argue that shorter shopping seasons reduce consumers' opportunities to make "impulse" purchases, affecting purchases of both of gifts and items for personal consumption. In an unscientific on-line poll by the publication Retail Merchandiser in December 2002, 31% of respondents thought that a shorter shopping season would have a "major impact" on their sales; only 15% felt that "fewer days have nothing to do with the amount that consumers need to spend on holiday gifts each year" (Retail Merchandiser, 2002).

In this paper, I use data on aggregate retail sales in the US from 1967–2000 to test whether the number of shopping days really does affect retail sales. I find that it does. The number of days each year for 1967–2000 is plotted as a solid line in Fig. 1 (leap years prevent the number of days from following a regular 7-year cycle). Holiday retail sales (defined below), in 2000–2002 dollars, are plotted as a dotted line (using the right axis). Per capita, US consumers spend approximately $6.50 (in 2000–2002 dollars) more in November and December (combined) for every additional shopping day between Thanksgiving and Christmas over the relevant range (26–32); this amounts to an increase of about 3.5% in holiday-related sales per person for each additional shopping day. The implied difference between the shortest and longest shopping seasons is $39 in spending per capita, or 20% of holiday spending in an average year. The sectors most strongly affected are electronics, apparel, food and general merchandise.

2. Data

The data come from the US Census Bureau's Monthly Retail Trade Survey. The survey covers over 10,000 retail businesses each month, selected from the Business Register, a comprehensive listing of all

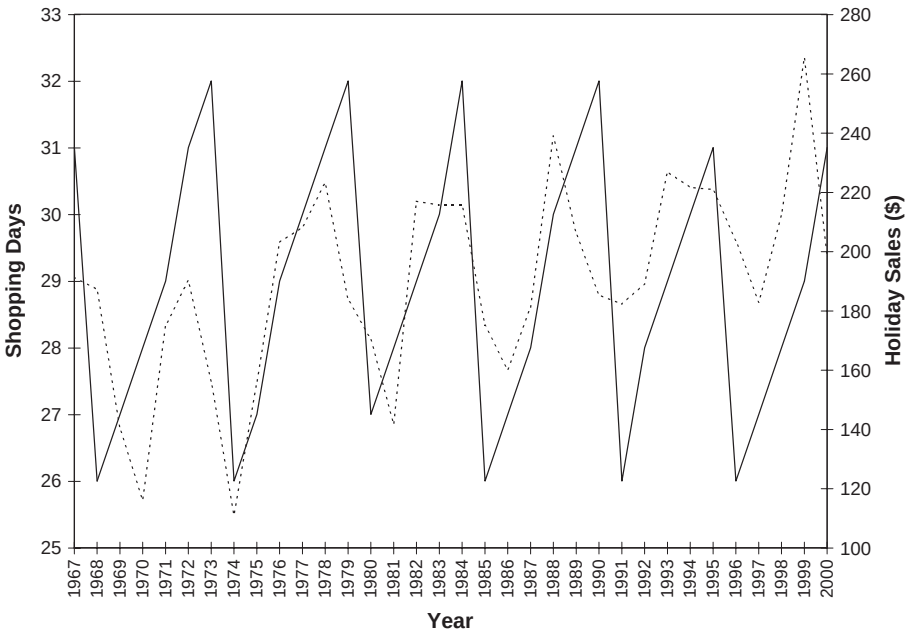

Fig. 1. Length of shopping season, 1967–2000.

Employer Identification Numbers (EINs).[2] Nominal, seasonally unadjusted retail sales data are available for selected two- and three-digit SIC codes such as apparel, drugstores, general merchandise stores (including department stores and many discount retailers) and hardware stores. Total sales across all retail SIC codes are also given. I use the Consumer Price Index (all items) to convert nominal sales to real dollars.

For each retail subsector, I calculate the Christmas sales increase — excess sales over other months — as

$$\text{HolidayExcess}_{jt} \equiv \left(\text{NovSales}_{jt} + \text{DecSales}_{jt}\right) - \left(\text{SeptSales}_{jt} + \text{OctSales}_{jt}\right) \tag{1}$$

where j indexes industry and t indexes year, and SeptSales, OctSales, NovSales and DecSales are, respectively, September–December real (per-capita) retail sales. The variable HolidayExcess is therefore interpretable as excess sales over November and December relative to a counterfactual in which September- and October-level sales would have been observed in November and December. The purpose of using September and October sales to "deflate" holiday sales is to control for the overall size of the economy. I also calculate

$$\text{NovExcess}_{jt} \equiv \text{NovSales}_{jt} - \frac{1}{2}\left(\text{SeptSales}_{jt} + \text{OctSales}_{jt}\right) \tag{2}$$

$$\text{DecExcess}_{jt} \equiv \text{DecSales}_{jt} - \frac{1}{2}\left(\text{SeptSales}_{jt} + \text{OctSales}_{jt}\right) \tag{3}$$

$$\text{JanExcess}_{jt} \equiv \text{JanSales}_{jt} - \frac{1}{2}\left(\text{SeptSales}_{j,t-1} + \text{OctSales}_{j,t-1}\right). \tag{4}$$

Summary statistics are shown in Table 1. Industries included in the table (and in the analysis) are those from which gifts are likely to be selected, and others selling goods associated with the holidays (specifically, food stores and liquor stores).

To gauge the effect of the length of the shopping season on holiday sales, I estimate

$$\text{ExcessSales}_{jt} = \alpha_j + \gamma_j \cdot \text{ExcessDays}_t + \beta_j \cdot X_t + \varepsilon_{jt} \tag{5}$$

where ExcessSales may be NovExcess, DecExcess or HolidayExcess, and ExcessDays is the number of days between Thanksgiving and Christmas minus 26 (the minimum number of shopping days).[3] Because of the short time-series dimension (34 years), I add only unemployment rates as control variables.

Since the timing of Christmas is fixed, and only the date of Thanksgiving varies from one year to the next, a pure substitution effect may occur where more shopping days lead to relatively more sales in November, but correspondingly fewer sales in December. Alternatively, November sales may increase while December sales remain unchanged (or may not fall by the full amount).[4] Finally, if there is a "habit-formation" element in shopping, the longer consumers are exposed to advertising and shopping, the more spendthrift they become, in which case a longer shopping season can translate into higher December

[2] Details about the survey are available from the Census Bureau's web site, http://www.census.gov/mrts/www/noverview.html.

[3] Regressions estimating the effect on January sales use the previous year's number of days.

[4] While consumers can still do their Christmas shopping in November, before Thanksgiving, simultaneous planning for two holidays limits this possibility. This constraint is reflected in — and exacerbated by — the fact that price markdowns begin in earnest only after Thanksgiving (Warner and Barsky (1995)).

Table 1
Retail sales per capita, 1967–2000

Type of business	September	October	November	December	January	Holiday excess ($)
Total sales	754.59	779.10	787.40	936.13	677.28	189.85
Apparel	38.93	40.45	44.22	66.57	31.28	31.41
Drugstores	26.42	27.41	27.30	36.62	26.53	10.09
Electronics[a]	14.83	14.86	17.37	26.16	14.69	13.84
Sporting goods	5.17	4.88	5.42	8.54	4.28	3.90
Furniture	25.25	26.23	27.70	30.81	23.05	7.03
General merchandise	87.86	94.48	112.52	169.56	69.02	99.74
Hardware	5.56	5.79	5.64	6.59	4.46	0.87
Jewelry	5.02	5.33	6.78	16.98	4.25	13.41
Food stores	154.78	157.20	155.63	170.69	152.59	14.33
Liquor stores	11.09	11.34	11.73	16.20	10.44	5.50
Nonstore retailers	20.18	23.10	25.29	25.87	17.52	7.87

Average sales per capita, 2000–2002 dollars. Holiday excess is the difference between November+December sales and September+October sales.
[a] 1992–2000 only.

sales as well as higher November sales. The latter case is consistent with a model such as Laibson's "cue theory" (Laibson (2001)) or with an intertemporal increasing-returns shopping technology.

3. Implementation and results

Results for retail sales in several categories are shown in Table 2. Column (1) shows the effect of an added shopping day on November sales, and column (2) shows December sales. Columns (3) and (4) show total holiday sales. Columns (1)–(3) have no control variables, while the regressions in column (4) include the US unemployment rates for September–December for each year (4 controls). Each of these regressions is estimated with 34 data points, with the exception of electronics sales, which are available only for 1992–2000 (9 years). Finally, column (5) shows the effect on January sales (with no controls); these regressions are estimated with 33 data points due to the lag structure.

As expected, November sales increase with the number of shopping days in almost all categories; food and liquor stores are the only exceptions. For example, adding a shopping day increases excess November sales in drugstores by $0.14 per capita, or 0.35%, and sales in jewelry stores by $0.06, about 1%. Somewhat surprisingly, sales in December in apparel and food stores (and, to a lesser extent, in general merchandise stores) also increase significantly; only sales in furniture stores and nonstore retailers decrease in December when the number of shopping days increases, and these negative effects are statistically insignificant. As a result, overall holiday sales increase in many categories. These results are not sensitive to the inclusion of unemployment rates as control variables.[5] Regressions including a linear trend (not shown) yield extremely similar results, often slightly larger in absolute terms.

[5] Using only October sales (instead of the average of September and October sales) to normalize holiday sales increases these point estimates. Using September sales alone decreases them substantially. This is probably due to a combination of two factors. First, the later is Thanksgiving, the more likely is September to have five weekends instead of four, which will mechanically increase September sales and depress October sales. Second, anticipating a late Thanksgiving, consumers may in fact start their holiday shopping as early as October.

Table 2
Effect of shopping days on retail sales

	November	December	Holiday	Holiday[a]	January
Total	3.9022*** (1.2319)	2.8993 (2.1681)	6.8014** (2.6742)	6.4988** (2.4915)	−0.6774 (1.5324)
Apparel	0.1468 (0.1351)	0.4290** (0.1581)	0.5758*** (0.2008)	0.5615*** (0.1681)	−0.1530 (0.1629)
Drugstores	0.1444*** (0.0390)	0.0404 (0.0676)	0.1848** (0.0841)	0.2080** (0.0856)	−0.0246 (0.0543)
Electronics[b]	0.1559 (0.0935)	0.5086 (0.3662)	0.6645 (0.4465)	0.7157** (0.1888)	0.2382 (0.1462)
Sporting goods	0.0280 (0.0242)	0.0591 (0.1013)	0.0871 (0.1083)	0.1011 (0.1100)	0.0145 (0.0302)
Furniture	0.1770** (0.0683)	−0.0114 (0.1036)	0.1657 (0.1500)	0.1430 (0.1402)	0.1213 (0.0844)
General merchandise	0.5246 (0.3751)	0.9910* (0.5639)	1.5155* (0.8611)	1.5597* (0.8148)	−0.3477 (0.2567)
Hardware	0.0120 (0.0154)	0.0016 (0.0527)	0.0136 (0.0598)	0.0037 (0.0630)	−0.0063 (0.0365)
Jewelry	0.0588** (0.0245)	0.1154 (0.1409)	0.1742 (0.1606)	0.1724 (0.1619)	−0.0402 (0.0376)
Food stores	−0.2213 (0.3713)	1.1983*** (0.2279)	0.9770** (0.3941)	0.8685** (0.4025)	−0.9898*** (0.3381)
Liquor stores	−0.0332 (0.0322)	0.1708 (0.1228)	0.1377 (0.1436)	0.1149 (0.1400)	−0.1355*** (0.0303)
Nonstore retailers	0.4555*** (0.1170)	−0.0365 (0.3301)	0.4190 (0.4198)	0.2813 (0.4287)	−0.0133 (0.1382)

*Significant at 10%; **significant at 5%; ***significant at 1%.
Coefficients represent the marginal effect of an added shopping day on sales per capita.
Each cell is a separate regression. Standard errors are in parentheses.
[a] Includes covariates: October–December unemployment rates.
[b] 1992–2000 only.

Total per-capita retail sales over the 2-month period November–December increase by approximately $6.50 (in 2000–2002 dollars) with every additional shopping day between Thanksgiving and Christmas. With average sales in November and December (combined) about $190 higher than the counterfactual of constant sales at the average of September and October over this period (from Table 1), this amounts to an increase of approximately 3.5% in sales per person for each additional shopping day. The implied difference between a 26-day shopping season and a 32-day shopping season is $39 in spending per capita, or 20% of holiday spending in an average year. The effect is therefore both statistically and economically significant.

For electronics, the implied increase in sales per capita is approximately $0.70 per additional shopping day, an increase of approximately 5% in "excess" holiday spending. Increased sales in apparel stores amount to approximately $0.50 per day, and general merchandise sales increase by just over $1.50 for each additional shopping day. Sales at food stores (a category that includes grocery stores as well as specialty food stores) increase by approximately $0.90, most likely due to the fact that holiday parties traditionally do not begin until after Thanksgiving. In addition, some of the increase in food- and liquor-store sales may be gift purchases, and not all of that amount will be consumed immediately.

Since consumers operate within a budget constraint, increased Christmas sales must come at the expense of either spending (in other months) or saving. With the notable exception of food and alcohol, whose January sales decline exactly offset holiday increases, there does not appear to be a "hangover effect" on January sales (results using combined January and February sales are extremely similar, and are not reported). An effect on January sales would also be observed if shorter shopping seasons cause more gift-givers to give cash or gift certificates instead of physical gifts.[6] By process of elimination, savings over this period must be reduced, although I do not have direct evidence of such an effect.

[6] Gift certificates are included in the Census sales figures when they are redeemed, not at the time of purchase.

4. Conclusion

For most items, I find that increasing the number of shopping days increases spending in November while leaving December sales unaffected, suggesting that consumers may be constrained by the time available for Christmas shopping. For several retailer categories, including apparel, electronics and general merchandise, I find that December sales increase when the number of shopping days (in November) increases, suggesting either high-frequency "habit-formation" or intertemporal increasing returns to shopping. This could be due to fixed costs of learning the layout of the stores and the identity of the stores with the best deals, or to increasing returns to internalizing the "Christmas spirit."

If Waldfogel (1993, 2002) is right, these findings imply that a longer shopping season is associated with a larger "deadweight loss" of Christmas. These issues should be studied further, preferably using micro-level data.

This finding has potential macroeconomic implications. Wen (2002) finds a large role for seasonal shocks in explaining aggregate business cycles, and argues that large synchronized shocks such as those induced by Christmas almost inevitably have effects on economic output. If longer shopping seasons have larger effects, as this paper suggests, this could provide a powerful exogenous instrument for studying the effect of demand shocks on business cycles.

Finally, seasonal adjustments of macro data may be inaccurate in the presence of moving holidays. Alper and Aruoba (2004) use data from Turkey, where holidays follow an Islamic calendar while the official calendar is Gregorian, to show that a deterministic seasonal component remains even in "de-seasonalized" data in the presence of moving holidays, resulting in series that overstate volatility and understate persistence. My findings suggest that seasonal adjustments need to take this issue into account also in the US.

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