Impact of India’s annual budget on SENSEX values

ECON 494 Finance

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Motivation

Why

- Budget announcements carry global importance
- India(Canada too) has a budget announcement day each year.
- Higher returns after announcement of budget?

Literature Review

- Vardharajan and Vikraman(2011) research SENSEX pre-budget and post-budget difference from 2001 to 2010. Provides a foundational research framework. 1 day, 5 day and 15 days.
- Saraswat & Banga(2016) find impact is greatest in the short-term

Data

Time-series panel

- Daily market data of **BSE: SENSEX** from **2014 - 2024**
- **Budget announcement dates between 2014 to 2024**
- Return Calculations:
  - % return, 1 day after budget date
  - % return, 3 days after budget date
  - % return, 30 days after budget date
- Same for Volatility calculations
- Post-period is assigned 1, pre-period is assigned 0

Date	Open	High	Low	Close*	Adj Close**
Apr 05, 2024	74,287.02	74,361.11	73,946.92	74,248.22	74,248.22
Apr 04, 2024	74,413.82	74,501.73	73,485.12	74,227.63	74,227.63
Apr 03, 2024	73,757.23	74,151.21	73,540.27	73,876.82	73,876.82
Apr 02, 2024	74,022.30	74,099.78	73,743.77	73,903.91	73,903.91
Apr 01, 2024	73,968.62	74,254.62	73,909.39	74,014.55	74,014.55
Mar 28, 2024	73,149.34	74,190.31	73,120.33	73,651.35	73,651.35
Mar 27, 2024	72,692.16	73,138.73	72,600.73	72,996.31	72,996.31

Example SENSEX Daily Data

Methods

Binary Regression - Returns & Volatility

Beta_1: Increase in return after announcement of budget

- Returns pre-announcement = 0
- Returns after announcement = 1

Regression Specification *- Returns (Pre-Announcement/Post-Announcement)*

Reg Specification 1: $Y[\text{Return}] = B_0 + B_1[1\text{DAYRETURN}] + \varepsilon$

Reg Specification 2: $Y[\text{Return}] = B_0 + B_1[3\text{DAYRETURN}] + \varepsilon$

Reg Specification 3: $Y[\text{Return}] = B_0 + B_1[30\text{DAYRETURN}] + \varepsilon$

Regression Specification - Volatility (Pre-Announcement/Post-Announcement)

Regression Specification 1: $Y(\text{Return}) = B_0 + B_1[1\text{DAYVOLATILITY}] + \varepsilon$

Regression Specification 2: $Y(\text{Return}) = B_0 + B_1[3\text{DAYVOLATILITY}] + \varepsilon$

Regression Specification 3: $Y(\text{Return}) = B_0 + B_1[30\text{DAYVOLATILITY}] + \varepsilon$

- Coefficients: **Beta_0 & Beta_1**
- **Beta_0:** Constant
- **Beta_1:** Differential Return - Increase in return(percentage points) after budget announcement?

Results

Regression data - Returns

‘Dummy’ coefficient: Increase in return(percentage points) after announcement

Figure 1: *Return Regression Results (1 day)*

```
Linear regression                               Number of obs     =      2,532
                                                F(1, 2530)        =       0.08
                                                Prob > F          =     0.7743
                                                R-squared         =     0.0001
                                                Root MSE          =     .00875

------------------------------------------------------------------------------
             |               Robust
     returns |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       dummy |   .0011704   .0040815     0.29   0.774    -.0068331    .0091738
       _cons |  -.0009976   .0001738    -5.74   0.000    -.0013385   -.0006568
------------------------------------------------------------------------------
```

0.11 percent point increase in return after announcement

Results

Regression data - Volatility

Figure 4: *Volatility Regression Results (1 day)*

Source	SS	df	MS	Number of obs	=	2,532
				F(1, 2530)	=	1.45
Model	1.2234e-07	1	1.2234e-07	Prob > F	=	0.2286
Residual	.000213447	2,530	8.4366e-08	R-squared	=	0.0006
				Adj R-squared	=	0.0002
Total	.000213569	2,531	8.4381e-08	Root MSE	=	.00029

volatility	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
announcement	.0001057	.0000878	1.20	0.229	-.0000664	.0002778
_cons	.0000771	5.78e-06	13.33	0.000	.0000658	.0000885

'Dummy' coefficient: Increase in volatility (percentage points) after announcement of the budget

P > | t | = 0.774 — Statistically Insignificant. Null hypothesis cannot be rejected

Conclusion

Can money be made from budget announcements?

- Results provide coefficients for 1 day, 3 day and 30 day returns
- High p-values. No statistical significance.

Conclusion

Can money be made from budget announcements?

Takeaways

- Not statistically significant increase from budget announcements.
- Does that mean no profits at all?
- No; This is a differential coefficient between pre-budget to post-budget.
- Returns can still be positive!
- Scope for further research with a longer time period dataset, or additional countries.