

# **Text Analysis of Risk Disclosures: 2011-2020**

Amy Butler



# Introduction

- Public Companies
- Annual Reports
- Securities and Exchange Commission



UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

FORM 10-K

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended September 26, 2020

or

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from \_\_\_\_\_ to \_\_\_\_\_.

Commission File Number: 001-36743



**Apple Inc.**

(Exact name of Registrant as specified in its charter)

**California**

(State or other jurisdiction  
of incorporation or organization)

**One Apple Park Way  
Cupertino, California**

(Address of principal executive offices)

**94-2404110**

(I.R.S. Employer Identification No.)

**95014**

(Zip Code)

**(408) 996-1010**

(Registrant's telephone number, including area code)

Apple Inc.

Form 10-K

For the Fiscal Year Ended September 26, 2020

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**Form 10-K**  
**For the Fiscal Year Ended September 26, 2020**  
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# Previous Research

- Sentiment analysis as feature in stock price prediction
- Report topics as features to predict bank failures
- Risk topics of Item 1A. Risk Factors
  - Israelsen (2014)
  - 2006-2010 reports



# My Project



- 2011 – 2020
- Entire report
- Companies in S&P 500
- Paragraphs about risk
- Topic Modeling






# Top Risk Topics - 1

**15%**

## **Regulation**

result, operation, condition,  
cost, change, law





# Top Risk Topics - 1

**15%**

## **Regulation**

result, operation, condition,  
cost, change, law

The U.S. and foreign laws and regulations that apply to our operations are complex and may change rapidly, and our efforts to comply and keep up with them require significant resources and increase the costs and risks of doing business in these jurisdictions. The regulations we are subject to have become more stringent over time, may decrease the need for our services, impose significant operational limits on our business and may be inconsistent across jurisdictions. Further, the laws and regulations affecting our business are subject to change ....

# Top Risk Topics - 1

**15%**

## **Regulation**

result, operation, condition,  
cost, change, law

Additionally, success in preclinical work or early stage clinical trials does not ensure that later stage or larger scale clinical trials will be successful or that regulatory approval will be obtained. In addition, even if later stage clinical trials are successful, regulatory authorities may delay or decline approval of our product candidates. Regulatory authorities may disagree with our view of the data, require additional studies or disagree with our trial design or endpoints. Regulatory authorities may also...

# Top Risk Topics - 1

**15%**

## **Regulation**

result, operation, condition,  
cost, change, law

Delays in obtaining any required environmental regulatory approvals, failure to obtain and comply with them or changes in environmental laws or regulations to more stringent compliance levels could result in additional costs of operation for existing facilities or development of new facilities being prevented, delayed or subject to additional costs. Although it is not expected that the costs to comply with current environmental regulations will have a material adverse effect on the Duke Energy Registrants' financial position, results of operations or cash flows due to regulatory cost recovery, the Duke Energy Registrants are at risk that the costs of complying with environmental regulations in the future will have such an effect.




## Top Risk Topics -2

**10%**

### **Risk Management**

committee, policy, board,  
activity, operational, officer



## Top Risk Topics -2

10%

### **Risk Management**

committee, policy, board,  
activity, operational, officer

We manage enterprise risk using an integrated framework that includes board-level oversight, administration by a group of cross-functional management committees, and day-to-day implementation by a dedicated risk management team led by the Chief Risk Officer (“CRO”). We also utilize the "Three Lines of Defense" risk management model ...




## Top Risk Topics - 3

8%

### Interest Rate

rate, debt, swap,  
fixed, change, variable



## Top Risk Topics - 3

8%

### Interest Rate

rate, debt, swap,  
fixed, change, variable

We are exposed to interest rate risk due to the mismatch between the interest expense we pay on our loans at fixed rates and the variable rates of interest we receive from cash, cash equivalents and other short-term investments. We have issued long-term debt in U.S. dollars at fixed interest rates based on the market conditions at the time of financing. We believe that the fair value of our fixed rate debt changes when the underlying market rates of interest change, and we may use interest rate swaps to modify such market risk....




## Top Risk Topics - 4

**7%**

### **Credit**

rating, counterparty, exposure,  
collateral, customer, default





## Top Risk Topics - 4

7%

### Credit

rating, counterparty, exposure,  
collateral, customer, default

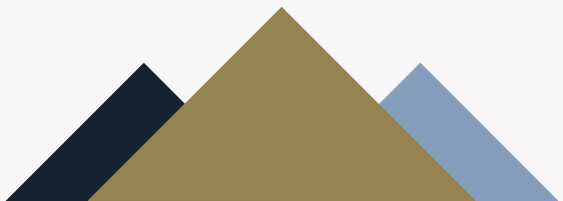
The Company's strategy for credit risk management includes well-defined, centralized credit policies, uniform underwriting criteria, and ongoing risk monitoring and review processes for all commercial and consumer credit exposures. The strategy also emphasizes diversification on a geographic, industry and customer level, regular credit examinations and management reviews of loans exhibiting deterioration of credit quality. The credit risk management strategy also includes a credit risk assessment process, ...

# Risk Topics

- |                        |                      |                   |
|------------------------|----------------------|-------------------|
| 1. Regulation          | 9. Security          | 17. Loans         |
| 2. Risk Management     | 10. Foreign Exchange | 18. Derivatives   |
| 3. Interest Rate       | 11. Capital          | 19. Liquidity - 1 |
| 4. Credit              | 12. Commodity        | 20. Liquidity - 2 |
| 5. Insurance           | 13. Fair Value       | 21. Stock         |
| 6. Product Development | 14. Disclosure       | 22. Other         |
| 7. Market              | 15. Accounting       |                   |
| 8. Investment          | 16. Internal Control |                   |

# Risk Topics of Each Report

- Weighted topic components of each paragraph by number of words
- Averaged for each annual report
- K-means clustering on report topic components



# Risk Topic Clusters, 1-4



## Financial

Loan  
Interest Rate  
Capital  
Credit



## Consumer

Product Development  
Regulation  
Disclosure



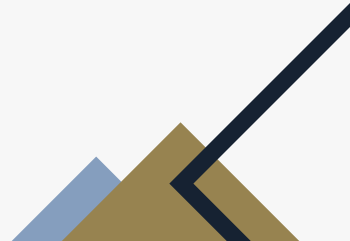
## Insurance

Insurance  
Regulation  
Interest Rate



## Energy

Commodity  
Regulation  
Market

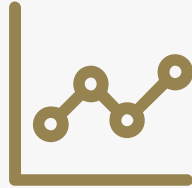


# Risk Topic Clusters, 5-8



## Rates

Interest Rate  
Regulation  
Foreign Exchange



## Investment

Regulation  
Interest Rate  
Investment



## Security

Regulation  
Security  
Product Development



## Accounting

Accounting  
Disclosure  
Other

# Future Work

- Each company over time
- 'Other' Risk Topics
- Topic components as model features



# Conclusion

- Natural Language Processing
- Topic Modeling
- K-means Clustering



# Thanks!



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