“Fundamental Analysis for Investors, Managers and Entrepreneurs”
B7010

Class meetings: Thursdays 6-9 pm as indicated below in the grid
Shiva Rajgopal, 610 Uris, tel# 206 724 6056, sr3269@columbia.edu

Course Description and Objectives

Most of the decisions of analysts, consultants, entrepreneurs, investors and managers require us to look ahead and assess an uncertain future. In this class, you will learn a unique approach to decision making that will help you consider the fundamentals of enterprises and how to link these fundamentals to underlying measures, which in turn will help you make better investment or management decisions. Students who have taken this course often comment on how it has transformed their thinking and understanding of companies. It also serves as a useful “capstone” to the MBA program as we draw on what was taught in most core courses.

In developing this line of reasoning and performing the analysis, we consider how to think about a new business as well as a publicly traded company. Having considered the basic building blocks, we next examine how the business resources and activities are translated into financial statements (whether for an early stage or public company) and consider what we learn from financial statements. We consider the extensive information increasingly available from outside sources, including various websites as well as Bloomberg and CapIQ. We also consider how certain accounting measures and practices impact the measures of the key elements of the business.

IMPORTANT: While you will be able to use the approach to analyze a public company for your assignments and final project, you can (and students in the past have) also used private companies ranging from startups to family businesses, or use internal data of public companies or their subsidiaries if you have access to this information.

Focusing on the future, we take a different approach to many topics/concepts that are covered in various ways in other financial statement analysis, earnings quality, and security analysis and valuation classes. Many students take this course as well as other seemingly similar courses, and we have never received any feedback that the coverage in this course is redundant, irrespective of the other courses taken by students.

We will focus on understanding how entities create or destroy value for various stakeholders and what it would take to change this, how to consider uncertainty more explicitly in plans, and whether this fundamental value is reflected in the price or not (for entities that it applies to).

We will also take some time each week to address any topics that are in the financial press that bear on the subjects and the approach.
Graded Learning

The only way you will internalize the information in the course is by actually preparing a forecast (plan) of the business that allows you to see the impact of different potential outcomes.

In the assignments, you will be asked to analyze some of the key aspects (e.g., revenue, labor, etc.) of ANY company of your choosing (following the framework provided in the class) on an individual basis. For each topic area of the assignments, you will also do a base forecast for a minimum of two years into the future. However, feel free to talk with each other or with others to help you maximize your learning.

At the end of the class, the deliverable is a final project for your chosen company. However, for the final project, you will make sure all the elements of your semester’s work are linked appropriately in your model, and add the extra topics not covered in the assignments (e.g., taxes) plus your own individual perspective on the original forecasts (as explained in text).

Ideally the entity you choose to analyze will be one that you are interested in understanding deeply, e.g. the company (or a company in the industry) you work for/cover (or a customer, client or competitor), your family business, or perhaps a startup that you are developing.

The grades will be based on your engagement in the class, the assignments, and the final deliverable but we have no exams.

What you will get out of this

Every student who puts in effort should walk away with an approach and concepts that you can use in almost any business or position in which you find yourself. It is usually a fun and stimulating journey for students. At the same time, I want to emphasize that a “30,000” foot perspective does not work in this class. This is a detail-heavy intense experience.

Is financial expertise critical?

The course presumes that you have a solid understanding of the subject matter covered in B6013 and other core courses. We have had many students who have no additional financial accounting or finance backgrounds, and by investing in their learning, they end up with H or even H+ grades. So, while financial analysis expertise may be helpful it is not necessary at all.
High quality investment decisions in the real world are grounded in a lot of detail about the sustainability of the business model. Without careful analysis, we cannot hope to ferret out price moving information that the market has overlooked. Following that objective, this is a detail-heavy class that gets deep into financial and non-financial data to assess the business.

Moreover, forecasting, by definition, is difficult and requires the analyst to (i) be creative and open to various traditional and new data sources, especially with the vast amount of detailed data likely to be available via big data; (ii) be comfortable with uncertainty as the best we can do is come up with a range of forecasted earnings, not an exact number or a “right” answer.

You may want to take the class only if (i) you feel that you can devote enough time to the class assignments and the final project; (ii) you have an appetite for detailed data; and (iii) you believe you will be comfortable with the uncertainty inherent in forecasting.

**Required Text and Readings**

1. Weekly handouts/posts on Canvas substitute for a course packet

2. There is no required text. Business Planning, Financial Statement Analysis and Valuation texts can be helpful but in certain topics each of them will argue for approaches that are sometimes at odds with what I am teaching.

3. Some of you usually ask for texts you can refer to (note these don't deal with forecasting, so these are references for students who need the comfort of looking back at a text for more the basic/intermediate level concepts):


4. There will also be additional references provided for those students who want to get more background and a deeper understanding of some of the technical accounting aspects of any topic, but this is **not required**. I am more interested in the willingness to learn and less in prior technical accounting backgrounds. Some of my best students in the past have surprisingly have had nothing more than introductory accounting. But they probably worked the hardest they ever had on this course.

**Grading**

You have three sets of deliverables with different grading components as follows:

1. In class 1, I would like you to submit your forecast of Home Depot’s financial statements for the year ended January 31, 2020 (see detailed assignment enclosed). We will follow Home Depot throughout the class. Hence, it is useful to
start thinking about the company at the beginning. This assignment is mandatory and counts for 10% of your final grade.

2. There will be approximately seven other written assignments during the semester. All these assignments relate to the understanding and forecasting of the specific line items on the income statement and balance sheet for an actual company of your choosing. These assignments will be done by you using the Type B assignment scheme (see below) and cover 50% of the grade.

3. The remaining 40% of your grade will be based on short in-class quizzes based on the material covered in previous classes, your attendance at class in general and my perception of your preparation and understanding of the class.

How are the seven weekly assignments graded?

TAs grade each assignment looking for whether or not the team has satisfactorily covered the checklist we assign for evaluating every important line item on the financial statements: revenue, capacity, labor costs, supply chain and other operating expenses, funding and capital structure and taxation. Note that the taxation assignment is voluntary. I review the TA’s grading process and add my own comments.

How is the project related to the company of your own choosing graded?

We get assignments from diverse industries. So the grading scheme for the project is based on individual components of the project. Last year, we graded students’ projects on the following 11 categories.

<table>
<thead>
<tr>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
</tr>
<tr>
<td>Capacity</td>
</tr>
<tr>
<td>Labor</td>
</tr>
<tr>
<td>Material</td>
</tr>
<tr>
<td>Other operating expenses</td>
</tr>
<tr>
<td>Funding</td>
</tr>
<tr>
<td>Taxes</td>
</tr>
<tr>
<td>Linkage of these components</td>
</tr>
<tr>
<td>Write up</td>
</tr>
<tr>
<td>Valuation</td>
</tr>
<tr>
<td>Scenario: Bull/bear/base</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

A few qualitative comments:

· We look for supporting spreadsheets for any of the above modules. Please don’t turn in just a text based report. We were looking for p*q*FX times model for revenue and a decomposition of costs into fixed and variable, as will be discussed in class.
· Under the component based grading scheme, excellence in one component cannot completely offset weaknesses in the other components.

· Some of you will take management guidance as a given and that’s fine but we want to see what kind of p*q*FX analyses can support that guidance. Failing that, it is hard to know what the management is assuming while giving us the guidance.

· In capacity analysis, we definitely want to see, at a minimum, a discussion of (i) what is the level of PPE the firm expects to need to meet its revenue projections; (ii) operating leases, if any, the capitalization thereof and what that does to capacity and debt; (iii) an aging of PPE, assumptions about age and how depreciation schedules might reflect the aging of PPE (as will be discussed in class).

· In the labor analysis, we look for a p*q analysis relating labor at various levels to their wage rates from Glassdoor or other sources.

· Absent a spreadsheet, it is somewhat hard for us to verify how each of these components articulate with one another into a comprehensive whole. We look for forecasted income statements for two years at a very minimum.

· We like to see a bull/bear/base scenario in the underlying p*q*FX and the fixed/variable cost decomposition to understand how sensitive the valuation is to changes in assumptions.

Company selection

I STRONGLY suggest that you pick a relatively simple company that you can handle the analysis for. Unless you have a strong interest in a complex company and have some expertise in how the business is managed, I’d suggest that you stick with a single segment company without a massive international footprint.

Seeking Alpha

In the past, students with outstanding project reports have had their case for shorting or longing a stock accepted for publication at the website “Seeking Alpha” http://seekingalpha.com/. I encourage you to shoot for such a publication at the end of the class. Well written and well analyzed articles get thousands of page views in Seeking Alpha and might represent a credible way to get noticed in the analysis world.

Audits

I do not encourage auditing/observing the class. The only way you learn the material is by actually working through the assignments and quizzes.

TA

The TAs are Venkat Peddireddy (email address is VPeddireddy19@gsb.columbia.edu) and Quinn Wang (KWang21@gsb.columbia.edu).
You can communicate with Venkat/Quinn via email to discuss the course and assignments. You should also copy me on all correspondence.

**Office Hours:** By appointment

**Relation to the Core:**

This course incorporates elements of every core class.

**This course adheres to the Columbia Core Culture. Students are expected to be:**

**Present:**
- On time and present for every session
- Attendance tracked

**Prepared:**
- Complete pre-work needed, expect cold calls
- Bring nameplates and clickers

**Participating:**
- Constructive participation expected and part of grade
- No electronic devices unless explicitly called for by the instructor (look under “tablets/computers” below)

**Code of Conduct: aka our Contract**

The value of the course will depend on how much effort you are willing to put in, and on attendance and participation in the lectures and assignments.

You are expected to treat the class as you would your job, i.e., as a business professional, demonstrating mutual respect for each other, and performing as if it is an important business assignment. This means you need to be prepared, be on time, and be attentive during the class.

**Tablets/Computers:** I am open to letting you use these for access to the class materials or to take notes. BUT if this is abused for personal activities and distracts other students I will change the policy.

**Cellphones:** All classes in this course have a ‘no cellphone’ policy. In respect to your fellow classmates and myself, please have your phone’s volume and vibration turned off during class and keep your phone in your bag/pocket. We will have one break (10 to 15 minutes) when you can catch up on calls, emails, etc.

If you need to be reachable immediately during class (e.g. your wife is going into labor any minute), please let me know ahead of time.

**My commitment to you:**

I will give you as much personal attention as feasible to maximize the benefit from your work. A sign-up sheet with tentative meeting times will be put out on the first day of class.
You are expected to meet with me at least once during the semester to talk about your final project. As people come in with different expertise, we can (partially) tailor the output to your strengths and expertise. I appreciate constructive feedback during the course to help optimize your learning, but I have to consider the class as a whole, so individual needs are best dealt with by me or Venkat/Quinn one-on-one.

<table>
<thead>
<tr>
<th>Type</th>
<th>Designation</th>
<th>Discussion of Concepts</th>
<th>Preparation of Submission</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Group/Individual</td>
<td>Permitted with designated group*</td>
<td>Individually (No sharing of any portion of the submission.)</td>
<td>Individual</td>
</tr>
</tbody>
</table>

*The designated group is a self-selected study group to be used for the duration of the course.*
<table>
<thead>
<tr>
<th>Date</th>
<th>Class #</th>
<th>Subject matter</th>
<th>Specific Topics</th>
</tr>
</thead>
</table>
| Thu Jan 23, 6-9 pm  | 1       | Overview - Approach to Fundamental Analysis of any Business | • A general framework for understanding and then forecasting a business and its potential value in an uncertain environment  
• The “Cycle of Life” of a business  
• Relating this to financial statements, other information and intrinsic value  
• A critical review of what we see in practice by companies (early stage and established) and analysts |
| Thu, Jan 30, 6-9 pm | 2 and 3 | Understanding Revenue  
JAN 30: OP/FIN CUT AND OP CYCLE DUE | • Understanding the product or service  
• To whom, how and where is it being sold  
• Pricing  
• What are the market size and the competitive situation?  
• How is the revenue recognized?  
• How and when are customers paying? |
| Thu, Feb 6, 6-9 pm  |         |                                                     |                                                                                 |
| Thu Feb 13, 6-9 pm  | 4 and 5 | Understanding Productive Capacity, R&D and Intangibles.  
FEB 13: REVENUE ANALYSIS DUE | • What property and equipment (including technology) do they need to sustain the revenue and/or grow (match to the revenue expectations)?  
• How much does this cost and how will it be financed?  
• Where and How are(should) the physical and financing needs (be) reflected in the financial statements?  
• Considering IP and patents, what R&D or other intangibles are needed, how are they “acquired” and paid for, and how are/should they be reported?  
• How do these all compare to competitors? |
<p>| Thu Feb 20, 6-9 pm  |         |                                                     |                                                                                 |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Topic</th>
<th>Key Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thu Feb 27, 6-9 pm</td>
<td>6 and 7</td>
<td>Understanding Human Resources and Labor Costs</td>
<td>• What type of talent do you need to sustain and/or grow the business, how many and where are they located?</td>
</tr>
<tr>
<td>Thu Mar 5, 6-9 pm</td>
<td>6 and 7</td>
<td>FEB 27: CAPACITY ANALYSIS DUE</td>
<td>• What are(/should) they (be) paid?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• How are(/should) they (be) compensated Cash vs Benefits (pensions and health/opeb) vs share-based compensation (shares vs employee stock options)?</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Where and How is the cost reflected in financial statements?</td>
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<tr>
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<td></td>
<td><strong>NO CLASSES FOR THIS COURSE BETWEEN MARCH 6 AND APRIL 1</strong></td>
<td></td>
</tr>
<tr>
<td>Thu Apr 2, 6-9 pm</td>
<td>8</td>
<td>Understanding Material and other costs</td>
<td>• What are primary materials/components needed?</td>
</tr>
<tr>
<td></td>
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<td>APR 2: LABOR ANALYSIS DUE</td>
<td>• How are they sourced (supply chain) and what do they cost?</td>
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<td></td>
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<td></td>
<td>• What are key sales and marketing approaches and costs?</td>
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<td></td>
<td>• Where and how are these reflected in financial statements?</td>
</tr>
<tr>
<td>Thu Apr 9, 6-9 pm</td>
<td>8-9</td>
<td>Funding, Capital Structure</td>
<td>• Funding choices (equity vs debt) for different types of entity (early stage, high growth and steady state; small vs large)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>APR 9: MATERIALS AND OTHER EXP DUE</td>
<td>• How much and when is funding needed?</td>
</tr>
<tr>
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<td></td>
<td>• How are these reflected in financial statements and performance measures?</td>
</tr>
<tr>
<td>Thu Apr 16, 6-9 pm</td>
<td>10</td>
<td>Funding: Financial Investments, Strategic and M&amp;A and Intangibles from Acquisition</td>
<td>• Considering liquidity and financial investments and how they are reflected in financial statements</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Impacts of strategic investments, mergers and</td>
</tr>
<tr>
<td>Date</td>
<td>Time</td>
<td>Event</td>
<td>Details</td>
</tr>
<tr>
<td>----------------------</td>
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<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Thu Apr 23, 6-9 pm   | 11    | The Impact and Understanding of Taxation                              | • Tax considerations: what is taxed, where is it taxed, when is it taxed and at what rate?  
• How is tax reflected in the financial statements and what can we learn from this? |
|                      |       | APR 23: CAP STRUCTURE DUE                                             |                                                                          |
| Thu Apr 30, 6-9 pm   | 12    | Catch up, valuation and putting it all together                        | • Bringing all the pieces together and relating them to forecasts and valuation analysis  
• Considering the trade-offs of various valuation approaches for managers and different investors. |
<p>|                      |       | APR 30: VOLUNTARY TAX ASSIGNMENT DUE                                  |                                                                          |
|                      |       | MAY 6: FINAL PROJECT DUE                                              |                                                                          |</p>
<table>
<thead>
<tr>
<th>Assignment #</th>
<th>Topic</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Forecast for Home Depot</td>
<td>First class on Jan 23</td>
</tr>
<tr>
<td>2</td>
<td>Drawing-describing the “Operating and Funding Cycles of a Business” (small, but investing time in this step will pay off)</td>
<td>Jan 30</td>
</tr>
<tr>
<td>3</td>
<td>Revenue analysis and 2-year forecast (large)</td>
<td>Feb 13</td>
</tr>
<tr>
<td>4</td>
<td>Capacity analysis and 2-year forecast (large)</td>
<td>Feb 27</td>
</tr>
<tr>
<td>5</td>
<td>Labor analysis and 2-year forecast (large)</td>
<td>Apr 2</td>
</tr>
<tr>
<td>6</td>
<td>Materials and Other Costs and 2–year forecast (small)</td>
<td>Apr 9</td>
</tr>
<tr>
<td>7</td>
<td>Capital structure analysis and 2-year forecast (small)</td>
<td>Apr 23</td>
</tr>
<tr>
<td>7A</td>
<td>Taxation analysis and 2-year forecast (voluntary)</td>
<td>Apr 30</td>
</tr>
<tr>
<td>8</td>
<td>Write-up and valuation of final project</td>
<td>May 6</td>
</tr>
</tbody>
</table>
Outline

• Considering the type and source of materials/components bought or manufactured, and the processing to get these to the final product or service
• Relating materials and other operating expenses to the overall profitability of a company
• Questions to address when analyzing expenses in general and inventory/materials suppliers in particular
• Supply chain considerations
• Selling and marketing expenses
• Other expenses
Which Operating Costs and Related Categories have we not covered?

Restaurant

Hardware
Services
Software

Purchases, Supplies and Marketing are Key Costs

IBISWorld Industry Report 72211b
Single Location Full-Service Restaurants in the US

The Supply Chain

Supply Industries
Butt & Pack Wholesaling
Beer Wholesaling
Dairy Wholesaling
Egg & Poultry Wholesaling
Fish & Seafood Wholesaling
Frozen Food Wholesaling
Fruit & Vegetable Wholesaling

Demand Industries
Consumers

Key Economic Drivers
Consumer Income
Gross Domestic Product
Households earning more than $100,000

Columbia Business School
@Harris and Rajgopal
Component Costs Translate into Aggregate Costs over Various Periods

Would we expect these to be constant over time?

Would we expect these to be constant over time or a constant % of sales?

Would we expect these to be constant over time or a constant % of sales?
Input Prices Have and are Expected to Vary

How would this impact your plan?

A Restaurant Analyst’s Approach to Monitoring Food Costs

Source: John Glass Morgan Stanley
November 4, 2014

@Harris and Rajgopal
Understanding How Material/Supply Costs and Revenue Interact and the Impact on Margins

Proportion of Sales

<table>
<thead>
<tr>
<th>Product</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product 1</td>
<td>0.6</td>
</tr>
<tr>
<td>Product 2</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Change Analysis

<table>
<thead>
<tr>
<th>Product</th>
<th>SALES</th>
<th>% impact of VOLUME</th>
<th>% impact of MIX</th>
<th>% impact of PRICE (Cost)</th>
<th>% impact of FX</th>
<th>Total % change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product 1</td>
<td>5.0%</td>
<td>0.0%</td>
<td>2.0%</td>
<td>0.0%</td>
<td>7.1%</td>
<td></td>
</tr>
<tr>
<td>Product 2</td>
<td>3.0%</td>
<td>0.0%</td>
<td>4.5%</td>
<td>0.0%</td>
<td>7.6%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.2%</td>
<td>0.0%</td>
<td>3.0%</td>
<td>0.0%</td>
<td>7.3%</td>
<td></td>
</tr>
</tbody>
</table>

Supplies

<table>
<thead>
<tr>
<th>Product</th>
<th>COST</th>
<th>% impact of VOLUME</th>
<th>% impact of Input MIX</th>
<th>% impact of PRICE (Cost)</th>
<th>% impact of FX</th>
<th>Total % change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product 1</td>
<td>5.0%</td>
<td>1.5%</td>
<td>3.5%</td>
<td>0.0%</td>
<td>10.3%</td>
<td></td>
</tr>
<tr>
<td>Product 2</td>
<td>3.0%</td>
<td>-1.2%</td>
<td>2.0%</td>
<td>0.0%</td>
<td>3.8%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.2%</td>
<td>0.4%</td>
<td>2.9%</td>
<td>0.0%</td>
<td>7.7%</td>
<td></td>
</tr>
</tbody>
</table>

Takeaway: Even with “variable” costs we expect changes to occur that are different to the underlying sales themselves which will impact gross and operating margins (“Fixed” Costs Have a Greater Impact)

Note startup costs that require cash and may be expensed.
### Other Non-Supply Costs

<table>
<thead>
<tr>
<th>Monthly Ave</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Expense</td>
<td>300</td>
</tr>
<tr>
<td>Catering &amp; Banquet Expenses</td>
<td>260</td>
</tr>
<tr>
<td>Cleaning Supplies</td>
<td>500</td>
</tr>
<tr>
<td>Contract Cleaning</td>
<td>750</td>
</tr>
<tr>
<td>Disabled</td>
<td>500</td>
</tr>
<tr>
<td>Flowers &amp; Decorations</td>
<td>500</td>
</tr>
<tr>
<td>heralds</td>
<td>500</td>
</tr>
<tr>
<td>Laundry &amp; Linen</td>
<td>750</td>
</tr>
<tr>
<td>Licenses &amp; Permits</td>
<td>400</td>
</tr>
<tr>
<td>Menus &amp; Wine Lists</td>
<td>200</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>500</td>
</tr>
<tr>
<td>Paper Supplies</td>
<td>1,025</td>
</tr>
<tr>
<td>Security System</td>
<td>250</td>
</tr>
<tr>
<td>Tableware &amp; Serveware</td>
<td>500</td>
</tr>
<tr>
<td>Uniforms</td>
<td>200</td>
</tr>
<tr>
<td>Total Direct Operating Expenses</td>
<td>4,395</td>
</tr>
<tr>
<td>Music &amp; Entertainment -</td>
<td></td>
</tr>
<tr>
<td>Musicians</td>
<td>0</td>
</tr>
<tr>
<td>Mobile &amp; Sound System</td>
<td>250</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Total Music &amp; Entertainment</td>
<td>250</td>
</tr>
<tr>
<td>Marketing -</td>
<td></td>
</tr>
<tr>
<td>Selling &amp; Promotions</td>
<td>2,000</td>
</tr>
<tr>
<td>Advertising</td>
<td>1,000</td>
</tr>
<tr>
<td>Printed Materials</td>
<td>0</td>
</tr>
<tr>
<td>Research</td>
<td>250</td>
</tr>
<tr>
<td>Total Marketing</td>
<td>3,250</td>
</tr>
<tr>
<td>Utilities -</td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td>2,500</td>
</tr>
<tr>
<td>Gas</td>
<td>800</td>
</tr>
<tr>
<td>Water</td>
<td>700</td>
</tr>
<tr>
<td>Trash Removal</td>
<td>250</td>
</tr>
<tr>
<td>Total Utilities</td>
<td>4,550</td>
</tr>
</tbody>
</table>

Would we expect these to be a constant % of sales over time?

### Typical Components of General and Administrative Expenses

<table>
<thead>
<tr>
<th>Monthly Ave</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting Services</td>
<td>1,200</td>
</tr>
<tr>
<td>Bank Charges</td>
<td>60</td>
</tr>
<tr>
<td>Bank Deposits Service</td>
<td>500</td>
</tr>
<tr>
<td>Cash (Over/Short)</td>
<td>50</td>
</tr>
<tr>
<td>Credit Card Charges</td>
<td>3,150</td>
</tr>
<tr>
<td>Due &amp; Subscriptions</td>
<td>400</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>500</td>
</tr>
<tr>
<td>Office Supplies</td>
<td>1,950</td>
</tr>
<tr>
<td>Payroll Processing</td>
<td>250</td>
</tr>
<tr>
<td>Telephone</td>
<td>600</td>
</tr>
<tr>
<td>Training Costs</td>
<td>550</td>
</tr>
<tr>
<td>Total General &amp; Administrative</td>
<td>9,235</td>
</tr>
</tbody>
</table>

Would we expect EACH of these to be constant over time or a constant % of sales?

---

*Columbia Business School* © 2015 RestaurantOwner.com

@Harris and Rajgopal
The costs of Occupancy and Sundry Costs are the Last Items to Get to Income

Would we expect these to be constant over time or a constant % of sales?
## When do the Items get Paid for?

<table>
<thead>
<tr>
<th>Product</th>
<th>Main Supplier</th>
<th>Terms</th>
<th>Alternate Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grocery, supplies</td>
<td>Sysco Food Service</td>
<td>15 days</td>
<td>Ben E. Keith</td>
</tr>
<tr>
<td>Seafood</td>
<td>Coastline Seafood</td>
<td>7 days</td>
<td>Gulf Coast Surveyors</td>
</tr>
<tr>
<td>Beverage</td>
<td>Coca-Cola Bottling</td>
<td>COD</td>
<td>Restaurant Services, Inc.</td>
</tr>
<tr>
<td>Alarm Monitoring</td>
<td>ADT</td>
<td>Net 30</td>
<td>N/A</td>
</tr>
<tr>
<td>Pest Control</td>
<td>Rollins</td>
<td>Net 30</td>
<td>Integrated Pest Control</td>
</tr>
</tbody>
</table>

## Basic Questions to Answer on Materials/Supplies and Other Operating Costs

<table>
<thead>
<tr>
<th>Issue</th>
<th>Previous (optional)</th>
<th>Current</th>
<th>What has changed and Why?</th>
<th>What is likely to change and Why?</th>
<th>Future Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the primary types of materials/components/parts the company uses in its products or services, and how are they sourced?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How scarce are these materials/parts and are there any key suppliers or key regions that provide the materials/parts? Who has pricing power (supplier or your company?)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the portion of total cost of products that is represented by materials/parts?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What are the “commodities” that are significant components of the cost of product/service? How sensitive is the company to price changes in the commodity(ies)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What are the cost trends in the key components/supplies etc.?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there changes in productivity or mix that have or might change the proportion of components/materials/supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When does the company pay for its supplies? How does this compare when the product is sold and paid for? (One thing to do is to consider the days payable outstanding to the days inventory on hand)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the portion of selling and marketing costs and what drives them?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there other major costs categories (e.g., warranties) and what drives them?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Basic Questions to Answer on Materials/Supplies and Other Operating Costs

<table>
<thead>
<tr>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

Home Depot’s Basic Operating Cycle: Materials and other costs
Where materials show up in the financial statements – The Home Depot

Our Products. Our product portfolio strategy is aimed at delivering innovation, assortment and value. A typical The Home Depot store stocks approximately 30,000 to 40,000 products during the year, including both national brand name and proprietary items. We also offer over 600,000 products through our Home Depot and Home Decorators Collection websites.
What Can You Learn From the Historical Breakdown of Product Net Sales?

<table>
<thead>
<tr>
<th>Net sales by merchandising department (and related services) follow.</th>
<th>Fiscal 2017</th>
<th>% of Net Sales</th>
<th>Fiscal 2016</th>
<th>% of Net Sales</th>
<th>Fiscal 2015</th>
<th>% of Net Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appliances</strong></td>
<td>$8,147</td>
<td>8.1 %</td>
<td>$7,362</td>
<td>7.8 %</td>
<td>$6,539</td>
<td>7.4 %</td>
</tr>
<tr>
<td><strong>Building Materials</strong></td>
<td>7,342</td>
<td>7.3 %</td>
<td>6,774</td>
<td>7.2 %</td>
<td>6,416</td>
<td>7.2 %</td>
</tr>
<tr>
<td><strong>Décor</strong></td>
<td>3,057</td>
<td>3.0 %</td>
<td>2,906</td>
<td>3.1 %</td>
<td>2,730</td>
<td>3.1 %</td>
</tr>
<tr>
<td><strong>Electrical (1)</strong></td>
<td>5,037</td>
<td>5.0 %</td>
<td>4,551</td>
<td>4.8 %</td>
<td>4,291</td>
<td>4.8 %</td>
</tr>
<tr>
<td><strong>Flooring</strong></td>
<td>7,078</td>
<td>7.0 %</td>
<td>6,477</td>
<td>6.8 %</td>
<td>6,215</td>
<td>7.0 %</td>
</tr>
<tr>
<td><strong>Hardware</strong></td>
<td>8,591</td>
<td>8.6 %</td>
<td>5,629</td>
<td>6.0 %</td>
<td>5,296</td>
<td>6.0 %</td>
</tr>
<tr>
<td><strong>Indoor Garden</strong></td>
<td>9,639</td>
<td>9.6 %</td>
<td>9,204</td>
<td>9.7 %</td>
<td>8,237</td>
<td>9.3 %</td>
</tr>
<tr>
<td><strong>Kitchen and Bath</strong></td>
<td>7,377</td>
<td>7.3 %</td>
<td>7,184</td>
<td>7.6 %</td>
<td>6,909</td>
<td>7.8 %</td>
</tr>
<tr>
<td><strong>Lighting (1)</strong></td>
<td>4,409</td>
<td>4.4 %</td>
<td>4,423</td>
<td>4.7 %</td>
<td>4,249</td>
<td>4.8 %</td>
</tr>
<tr>
<td><strong>Lumber</strong></td>
<td>7,790</td>
<td>7.7 %</td>
<td>6,828</td>
<td>7.2 %</td>
<td>6,284</td>
<td>7.1 %</td>
</tr>
<tr>
<td><strong>Millwork</strong></td>
<td>5,362</td>
<td>5.3 %</td>
<td>5,139</td>
<td>5.4 %</td>
<td>4,937</td>
<td>5.6 %</td>
</tr>
<tr>
<td><strong>Outdoor Garden</strong></td>
<td>7,030</td>
<td>7.0 %</td>
<td>6,789</td>
<td>7.2 %</td>
<td>6,505</td>
<td>7.3 %</td>
</tr>
<tr>
<td><strong>Paint</strong></td>
<td>7,990</td>
<td>7.9 %</td>
<td>7,666</td>
<td>8.1 %</td>
<td>7,497</td>
<td>8.5 %</td>
</tr>
<tr>
<td><strong>Plumbing</strong></td>
<td>7,356</td>
<td>7.3 %</td>
<td>6,985</td>
<td>7.4 %</td>
<td>6,364</td>
<td>7.2 %</td>
</tr>
<tr>
<td><strong>Tools</strong></td>
<td>7,379</td>
<td>7.3 %</td>
<td>6,668</td>
<td>7.0 %</td>
<td>6,060</td>
<td>6.8 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$100,904</td>
<td>100.0 %</td>
<td>$94,595</td>
<td>100.0 %</td>
<td>$88,519</td>
<td>100.0 %</td>
</tr>
</tbody>
</table>

Recall from Revenue: Product Categories and Customers Drive the Business

Craig Menear - The Home Depot, Inc. - EVP of Merchandising

All merchandising departments posted positive comps. Kitchens, lighting, decor, lumber, electrical, indoor garden, paint and bath were above the company average. Millwork, flooring, plumbing, outdoor garden, building materials, hardware and tools performed positively, but were below the company average.

In the core of the store, maintenance and repair categories saw continued positive comp performance in products like ladders, light bulbs, air circulation, wiring devices, pipes and fittings, fasteners and builders’ hardware. There was also strength in decor, with comps above the company average in categories such as lighting, countertops, floor and wall tile, window coverings, faucets, vanities, fixtures and special-order carpet.

As Frank mentioned, Pro customer sales continue to gain strength, and while Pros shop across the store, we saw double-digit comp growth in categories such as gypsum, concrete, pressure-treated lumber and moldings.

Mild weather throughout much of the quarter and across the country continued to drive sales in our exterior project categories. For example, sales in exterior stains and water sealers, pressure washers and exterior paint all posted comps above the company average.

Total transactions grew by 4%, while average ticket increased 3.2% for the quarter. Our average ticket increase was positively impacted somewhat by commodity price inflation from products such as lumber and copper. The total impact to comp growth from commodity inflation was approximately 45 basis points.

Transactions for tickets under $50, representing approximately 20% of our U.S. sales, were up 3.1% for the third quarter. Transactions for tickets over $500, also represented in approximately 20% of our U.S. sales, were up 10.3% in the third quarter. The drivers behind the increase in big-ticket purchases were continued strength in our Pro business, appliances, HVAC, countertops and in-stock kitchens.
Who Provides the Products: Lists of Suppliers from CapitalIQ – Home Depot

Who supplies the products or services (SPLC)?

Guide to the Related Products
Understanding the impact of and on key Suppliers -

Our sales are concentrated with two significant customers. In 2017, our net sales to The Home Depot were $2.5 billion (approximately 33 percent of our consolidated net sales), and our net sales to Lowe's were less than 10 percent of our consolidated net sales. Our reliance on these significant customers may further increase if the mix of our business operations changes, including as a result of acquisitions or divestitures. These home center retailers can significantly affect the prices we receive for our products and the terms and conditions on which we do business with them. Additionally, these home center retailers may reduce the number of vendors from which they purchase and could make significant changes in their volume of purchases from us. Although other retailers, dealers, distributors and homebuilders represent other channels of distribution for our products and services, we might not be able to quickly replace, if at all, the loss of a substantial portion of our sales to The Home Depot or the loss of all of our sales to Lowe's, and any such loss would have a material adverse effect on our business, results of operations and financial position.

Further, as these home center retailers expand their markets and targeted customers and as consumer purchasing practices change and e-commerce increases, conflicts between our existing distribution channels have and will continue to occur, which could affect our results of operations and financial position. Our relationships with these customers may be affected if we increase the amount of business we transact directly with consumers and professionals. In addition, these home center retailers are granted product exclusivity from time to time, which increases the complexity of our product offerings and our costs and may affect our ability to offer products to other customers.

Source: Masco 10-K FY 2017

The link to commodity costs and who has pricing power

Variability in commodity costs or limited availability of commodities could affect our results of operations and financial position.

Various commodities, including, among others, brass, resins, titanium dioxide, zinc, wood and glass, are used to produce our products. Fluctuations in the availability and prices of these commodities could increase the costs of our products. Our production of products could also be affected if one of our suppliers is unable to procure our requirements for these commodities or if a shortage of these commodities drives their prices to levels that are not commercially feasible. Further, increases in energy costs could increase our production and transportation costs. In addition, water is a significant component of many of our architectural coatings products and may be subject to restrictions in certain regions. These factors could adversely affect our results of operations and financial position.

It can be difficult for us to pass on to customers cost increases to cover our increased commodity and production costs. Our existing arrangements with customers, competitive considerations and customer resistance to price increases may delay or make us unable to adjust selling prices. If we are not able to increase the prices of our products or achieve cost savings to offset increased commodity and production costs, our results of operations and financial position could be adversely affected. If we are able to increase our selling prices, sustained price increases for our products may lead to sales declines and loss of market share, particularly if our competitors do not increase their prices. When commodity prices decline, we have experienced and may in the future receive pressure from our customers to reduce our prices. Such reductions could adversely affect our results of operations and financial position.

From time to time we enter into long-term agreements with certain significant suppliers to help ensure continued availability of key commodities and to establish firm pricing, but at times these contractual commitments may result in our paying above market prices for commodities during the term of the contract. Occasionally, we also may use derivative instruments, including commodity futures and swaps. This strategy increases the possibility that we may make commitments for these commodities at prices that subsequently exceed their market prices, which has occurred and could occur in the future and may adversely affect our results of operations and financial position.

Source: Masco 10-K FY 2017
The Sensitivity to Suppliers: Financial Condition -

<table>
<thead>
<tr>
<th>Product Type</th>
<th>2017 (in Millions)</th>
<th>2016 (in Millions)</th>
<th>2015 (in Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumbing Products</td>
<td>$3,735</td>
<td>$3,526</td>
<td>$3,341</td>
</tr>
<tr>
<td>Decorative Architectural Products</td>
<td>2,205</td>
<td>2,092</td>
<td>2,020</td>
</tr>
<tr>
<td>Cabinetry Products</td>
<td>934</td>
<td>970</td>
<td>1,025</td>
</tr>
<tr>
<td>Windows and Other Specialty Products</td>
<td>770</td>
<td>769</td>
<td>756</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$7,644</strong></td>
<td><strong>$7,357</strong></td>
<td><strong>$7,142</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Type</th>
<th>2017 (in Millions)</th>
<th>2016 (in Millions)</th>
<th>2015 (in Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumbing Products</td>
<td>$608</td>
<td>$642</td>
<td>$512</td>
</tr>
<tr>
<td>Decorative Architectural Products</td>
<td>434</td>
<td>430</td>
<td>403</td>
</tr>
<tr>
<td>Cabinetry Products</td>
<td>90</td>
<td>93</td>
<td>51</td>
</tr>
<tr>
<td>Windows and Other Specialty Products</td>
<td>52</td>
<td>(3)</td>
<td>57</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,274</strong></td>
<td><strong>$1,162</strong></td>
<td><strong>$1,023</strong></td>
</tr>
</tbody>
</table>

What can we infer from this?

Source: Masco 10-K FY 2017

Do companies really understand their supply chain?

We are dependent on third-party suppliers.

We are dependent on third-party suppliers for many of our products and components, and our ability to offer a wide variety of products depends on our ability to obtain an adequate and/or timely supply of these products and components. Failure of our suppliers to timely provide us quality products on commercially reasonable terms, or to comply with applicable legal and regulatory requirements, could have a material adverse effect on our results of operations and financial position. Resourcing these products and components to another supplier could take time and involve significant costs. Accordingly, the loss of critical suppliers, or a substantial decrease in the availability of products or components from our suppliers, could disrupt our business and adversely affect our results of operations and financial position.

Many of the suppliers upon whom we rely are located in foreign countries. The differences in business practices, shipping and delivery requirements and laws and regulations, together with the limited number of suppliers, have increased the complexity of our supply chain logistics and the potential for interruptions in our production scheduling. If we are unable to effectively manage our supply chain or if there is a disruption in transporting the products or components, our results of operations and financial position could be adversely affected.

Source: Masco 10-K FY 2017
GM, Ford parts shortages cut output for second day

Automotive News | December 15, 2010 - 1:27 pm EST
UPDATED: 12/15/10 8:37 pm ET
DETROIT (Bloomberg) — Auto parts shortages caused by winter storms in Canada and the U.S. Midwest reduced production for a second day at General Motors Co. and Ford Motor Co.

GM's Lansing Grand River plant in Michigan is shut down, and six other plants have shortened or suspended shifts, said Chris Lee, a company spokesman. Shifts have been shortened at the CAMI assembly plant in Ingersoll, Ontario, which makes the Chevrolet Equinox sport-utility vehicle, and a plant in Fort Wayne, Ind., that builds full-size pickup trucks Lee said.

GM's plant in Lordstown, Ohio, where the Chevrolet Cruze is built, is running half shifts, and its Oshawa Assembly in Ontario is running half a shift on one line and is shut down on the other, Lee said. The automaker's heavy-duty pickup plant in Flint, Mich., is receiving some parts and will run two shifts through tomorrow, said Tom Wickham, a spokesman.

Automakers record revenue when vehicles are assembled. So the loss of production may affect the companies' fourth-quarter sales if the output isn't recouped during the rest of the month.

How would this impact the fundamental value of the company?
How would/might this affect the prices of the company?

Auto Part Shortages to Change Competitive Landscape

By Tom Murphy
WardsAuto.com, Feb 10, 2011 9:00 AM

It didn't take an expert to see this crisis looming: Auto-part suppliers that downsized in the face of historic-low vehicle sales likely would face capacity shortages once the market recovered.

That day has arrived.

Ford, Chrysler, Volkswagen and Daimler have suffered plant closures in recent weeks because suppliers could not ship enough components, particularly microchips and certain plastic resins.

The shortages have been temporary, and the worst of them have passed, thanks to premium-fee air shipments and other suppliers stepping in to fill the void.

But the problem is sure to resurface if vehicle-production volumes continue their upward trajectory, industry sources say.

How would this impact the fundamental value of the company?
How would/might this affect the prices of the company?
When should/could we have known the impact of the Thai Floods?
Additional Information on Suppliers to HD

What is striking about these suppliers

Lowes’ Key Suppliers – What is Different to HD here?
**What the Company Says About Supply Chain 1 of 2 - HD**

*Logistics.* We continue to invest in our supply chain by optimizing our network through initiatives like Supply Chain Synchronization, or “Project Sync”. As described in more detail below, Project Sync is a recent initiative to improve our in-stock rates, inventory productivity and logistics costs. During fiscal 2016, we rolled out the first phase of Project Sync to all U.S. stores, and we continue to onboard new suppliers. This is a multi-year, multi-phase endeavor, which we plan to implement in each of our distribution flow paths.

Our overall distribution strategy is to provide the optimal flow path for a given product. Rapid Deployment Centers ("RDCs") play a key role in optimizing our network as they allow for aggregation of product needs for multiple stores to a single purchase order and then rapid allocation and deployment of inventory to individual stores upon arrival at the RDC. This results in a simplified ordering process and improved transportation and inventory management. Through Project Sync, we can significantly reduce our average lead time from supplier to shelf. Project Sync requires deep collaboration among our suppliers, transportation providers, RDCs and stores, as well as rigorous planning and information technology development to create an engineered flow schedule that shortens and stabilizes lead time, resulting in more predictable and consistent freight flow. As we continue to roll out Project Sync throughout our supply chain over the next several years, we plan to create an end-to-end solution that benefits all participants in our supply chain, from our suppliers to our transportation providers to our RDC and store associates to our customers.

*Source: Home Depot 10-K FY 2016*

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**What the Company Says About Supply Chain 2 of 2 - HD**

We operate multiple distribution center platforms tailored to meet the needs of our stores and customers, based on the types of products, local geography, and transportation and delivery requirements. The following table sets forth the number and type of distribution centers in our network as of the end of fiscal 2016:

<table>
<thead>
<tr>
<th>Facility</th>
<th>Purpose</th>
<th>Number of Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid Deployment Centers</td>
<td>Flow through centers that enable last minute allocation of incoming product to stores</td>
<td>U.S.: 18, Canada: —, Mexico: —</td>
</tr>
<tr>
<td>Bulk Distribution Centers</td>
<td>Handle products distributed optimally on flat bed trucks</td>
<td>U.S.: 30, Canada: 4, Mexico: —</td>
</tr>
<tr>
<td>Stocking Distribution Centers</td>
<td>Handle imported, &quot;big and bulky&quot; and special event products</td>
<td>U.S.: 23, Canada: 1, Mexico: —</td>
</tr>
<tr>
<td>Specialty Distribution Centers</td>
<td>Include offshore consolidation, return logistics centers and cross-dock operations</td>
<td>U.S.: 12, Canada: 1, Mexico: —</td>
</tr>
<tr>
<td>Transload Facilities</td>
<td>Operated by third parties near ocean ports to handle imported product that is later shipped to RDCs or SDCs</td>
<td>U.S.: 4, Canada: —, Mexico: —</td>
</tr>
<tr>
<td>Direct Fulfillment Centers</td>
<td>Stock and handle product for online orders</td>
<td>U.S.: 5, Canada: 2, Mexico: —</td>
</tr>
<tr>
<td>Stock-Flow Centers</td>
<td>Unique to Canada, combine both RDC and SDC capabilities</td>
<td>U.S.: —, Canada: 2, Mexico: 2</td>
</tr>
<tr>
<td>Multi-Channel Distribution Centers</td>
<td>Unique to Mexico, combine RDC, BDC and SDC capabilities</td>
<td>U.S.: —, Canada: —, Mexico: 2</td>
</tr>
</tbody>
</table>
What the Company Says About Supply Chain re: E-commerce - HD

To better serve our online customers, we offer a variety of delivery methods to get product to each customer’s preferred location. We completed the rollout of three new U.S. DFCs in fiscal 2015 to support our online growth. We also operate one DFC for our Home Decorators Collection orders and one DFC for "big and bulky" orders. Our DFCs enable us to reduce delivery costs and lead time, and improve the overall customer experience by shipping online orders directly to the customer. In addition, with our acquisition of Interline in fiscal 2015, we added more than 100 distribution points with fast delivery of a broad assortment of MRO products. We remain committed to leveraging our supply chain capabilities to fully utilize and optimize our improved logistics network.

Source: Home Depot 10-K FY 2016

Given their supply chain initiatives what does it suggest for Profitability

Merchandise Inventories

We value the substantial majority of our inventory under the retail inventory method, using the first-in, first-out method, with the remainder of our inventories valued under a cost method. Under the retail inventory method, inventories are stated at cost, which is determined by applying a cost-to-retail ratio to the retail value of inventories. The retail value of our inventory is adjusted as needed to reflect current market conditions. Because these adjustments are based on current prevailing market conditions, the value of our inventory approximates the lower of cost or market.

As the valuation under the retail inventory method is based on estimates such as markups, markdowns, and inventory losses (or shrink), there exists an inherent uncertainty in the final determination of inventory cost and gross profit. We do not believe there is a reasonable likelihood for a material change in the estimates or assumptions we use to value our inventory under the retail inventory method. We believe that the retail inventory method provides an inventory valuation which approximates cost and results in valuing our inventory at the lower of cost or market.

Cost of Sales

Cost of sales includes the actual cost of merchandise sold and services performed; the cost of transportation of merchandise from vendors to our distribution network, stores, or customers; shipping and handling costs from our stores or distribution network to customers; the operating cost and depreciation of our sourcing and distribution network and online fulfillment centers; and the cost of deferred interest programs offered through our PLCC programs.

Source: Home Depot 10-K FY 2017
How does cost of products and the efficiency initiative impact the profitability map?
### Detailed Data Available from BI – Company Measures by Stores

#### Table: Company Measures by Stores

<table>
<thead>
<tr>
<th>Category</th>
<th>Home Depot Inc/Th</th>
<th>Lowe's Inc/Th</th>
<th>Domestics Gas Inc</th>
<th>Tresters Supply</th>
<th>Lumber Liquidators</th>
<th>Home Improvement Stores - US</th>
<th>Home Improvement Stores - CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>510,000.0</td>
<td>510,000.0</td>
<td>510,000.0</td>
<td>510,000.0</td>
<td>510,000.0</td>
<td>510,000.0</td>
<td>510,000.0</td>
</tr>
<tr>
<td>Home Improvement Stores - US</td>
<td>510,000.0</td>
<td>510,000.0</td>
<td>510,000.0</td>
<td>510,000.0</td>
<td>510,000.0</td>
<td>510,000.0</td>
<td>510,000.0</td>
</tr>
</tbody>
</table>

### Key Inventory Data for Home Improvement Companies

#### Table: Key Inventory Data

<table>
<thead>
<tr>
<th>Category</th>
<th>Home Depot Inc/Th</th>
<th>Lowe's Inc/Th</th>
<th>Domestics Gas Inc</th>
<th>Tresters Supply</th>
<th>Lumber Liquidators</th>
<th>Home Improvement Stores - US</th>
<th>Home Improvement Stores - CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory per Store (#/#)</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>Home Depot Inc/Th</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
</tr>
<tr>
<td>Lowe's Inc/Th</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
</tr>
<tr>
<td>Tresters Supply</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
</tr>
<tr>
<td>Lumber Liquidators</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
<td>11,071.0</td>
</tr>
</tbody>
</table>

What do these tell us about the business and its profitability?
Adjustments to Costs and Advertising Costs

Vendor Allowances

Vendor allowances primarily consist of volume rebates that are earned as a result of attaining certain purchase levels and co-op advertising allowances for the promotion of vendors' products that are typically based on guaranteed minimum amounts with additional amounts being earned for attaining certain purchase levels. These vendor allowances are accrued as earned, with those allowances received as a result of attaining certain purchase levels accrued over the incentive period based on estimates of purchases.

Volume rebates and certain co-op advertising allowances earned are initially recorded as a reduction in merchandise inventories and a subsequent reduction in cost of sales when the related product is sold. Certain co-op advertising allowances that are reimbursements of specific, incremental, and identifiable costs incurred to promote vendors' products are recorded as an offset against advertising expense in SG&A and were as follows:

<table>
<thead>
<tr>
<th>in millions</th>
<th>Fiscal 2017</th>
<th>Fiscal 2016</th>
<th>Fiscal 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific, incremental, and identifiable co-op advertising allowances</td>
<td>$108</td>
<td>$166</td>
<td>$129</td>
</tr>
</tbody>
</table>

Advertising Expense

Television and radio advertising production costs, along with media placement costs, are expensed when the advertisement first appears. Gross advertising expense is included in SG&A. Certain co-op advertising allowances are recorded as an offset against advertising expense.

<table>
<thead>
<tr>
<th>in millions</th>
<th>Fiscal 2017</th>
<th>Fiscal 2016</th>
<th>Fiscal 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross advertising expense</td>
<td>$995</td>
<td>$955</td>
<td>$868</td>
</tr>
</tbody>
</table>

How would you project advertising costs? Why the bump in advertising?

Source: Home Depot 10-K FY 2017

Cisco Splits the expenses more

<table>
<thead>
<tr>
<th>Year Ended</th>
<th>July 29, 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>NET SALES:</td>
<td>$36,326</td>
</tr>
<tr>
<td>Product</td>
<td>$36,326</td>
</tr>
<tr>
<td>Service</td>
<td>$9,735</td>
</tr>
<tr>
<td>Total net sales</td>
<td>46,061</td>
</tr>
</tbody>
</table>

COST OF SALES:

| Product | $14,505 |
| Service | $3,347 |
| Total cost of sales | 17,852 |

GROSS MARGIN | 28,209 |

OPERATING EXPENSES:

| Research and development | $5,088 |
| Sales and marketing | $9,647 |
| General and administrative | $2,322 |
| Amortization of purchased intangible assets | $385 |
| Restructuring and other charges | $364 |
| Total operating expenses | 18,144 |

OPERATING INCOME | 10,065 |

| Interest income | $650 |
| Interest expense | ($596) |
| Other income, net | $40 |
| Interest and other income, net | $94 |

INCOME BEFORE PROVISION FOR INCOME TAXES | 10,159 |

| Provision for income taxes | $2,118 |

NET INCOME | $8,041 | @Harris and Rajgopal 44
During fiscal 2015, we opened four new The Home Depot stores in Mexico. We also opened one new store in Canada.

Of our 2,274 stores operating at the end of fiscal 2015, approximately 90% were owned (including those owned subject to a ground lease), consisting of approximately 212.5 million square feet, and approximately 10% of such stores were leased, consisting of approximately 24.8 million square feet.

At the end of fiscal 2015, we operated 263 warehouses and distribution centers located in 43 states or provinces, consisting of approximately 52.5 million square feet, of which approximately 1.5 million is owned and approximately 51.0 million is leased.

How can we use this for our forecast of Materials and Marketing?

What do these tell us about the business and its profitability?

What more do you need to make a forecast?
## Inventory Turnover and Days Payable Outstanding

### The Home Depot

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Sales</td>
<td>43,764</td>
<td>44,693</td>
<td>46,133</td>
<td>48,912</td>
<td>51,422</td>
</tr>
<tr>
<td>Merchandise Inventory</td>
<td>10,188</td>
<td>10,625</td>
<td>10,325</td>
<td>10,710</td>
<td>11,057</td>
</tr>
<tr>
<td>Inventory Turnover AVG</td>
<td>4.20</td>
<td>4.29</td>
<td>4.40</td>
<td>4.65</td>
<td>4.72</td>
</tr>
<tr>
<td>Days Inventory on Hand (DIH) AVG</td>
<td>86.99</td>
<td>84.99</td>
<td>82.88</td>
<td>78.49</td>
<td>77.25</td>
</tr>
<tr>
<td>Trade Accounts Payable</td>
<td>4,863</td>
<td>4,717</td>
<td>4,856</td>
<td>5,376</td>
<td>5,797</td>
</tr>
<tr>
<td>Days Payable Outstanding (DPO) AVG</td>
<td>40.39</td>
<td>39.12</td>
<td>37.87</td>
<td>38.18</td>
<td>39.65</td>
</tr>
<tr>
<td>Ratio of DIH to DPO AVG</td>
<td>2.15</td>
<td>2.17</td>
<td>2.19</td>
<td>2.06</td>
<td>1.95</td>
</tr>
</tbody>
</table>

### Why are these distorted?

---

## CFO guidance for inventory levels in 2018

**Driving Towards 5.7x Inventory Turns**

- **2015F**
  - Sales Growth
  - Supply Chain Sync

- **2018T**
  - Working Capital Expected to be a Source of Cash 2016-2018

Source: Carol Tome presentation 2015
Did they achieve 5.7X last year?

Matt McClintock - Barclays - Analyst

And Carol, if I could just ask one follow-up. Just inventory turns for the quarter were flattish year-over-year. How should we think about inventory as we progress through the remainder of the year?

Carol Tomé - The Home Depot, Inc. - EVP, Corporate Services & CFO

Yes. Well, on an unrounded basis, inventory turns were slightly better than last year. And for the full year, we're expecting inventory turns to be up year-on-year, a few 10.

Inventory in the Channel?

Contractual Obligations

Our significant contractual obligations as at January 28, 2018 were as follows:

<table>
<thead>
<tr>
<th>Payments Due by Period</th>
<th>in millions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Short-term debt</td>
<td>$1,559</td>
</tr>
<tr>
<td>Long-term debt – principal payments</td>
<td>$24,750</td>
</tr>
<tr>
<td>Long-term debt – interest payments</td>
<td>$15,167</td>
</tr>
<tr>
<td>Capital lease obligations</td>
<td>$1,753</td>
</tr>
<tr>
<td>Operating lease obligations</td>
<td>$7,138</td>
</tr>
<tr>
<td>Purchase obligations</td>
<td>$1,848</td>
</tr>
<tr>
<td>Unrecognized tax benefits</td>
<td>$187</td>
</tr>
<tr>
<td>Total</td>
<td>$52,188</td>
</tr>
</tbody>
</table>

(1) Excludes capital lease obligations.
(2) Interest payments are calculated at current interest rates, including the impact of active interest rate swaps.
(3) Includes $769 million of imputed interest.
(4) Purchase obligations include all legally binding contracts such as firm commitments for inventory purchases, utility purchases, capital expenditures, software acquisitions and license commitments, and legally binding service contracts. Purchase orders that are not binding agreements are excluded from the table above.
(5) Excludes $450 million of noncurrent unrecognized tax benefits due to uncertainty regarding the timing of future cash tax payments.

What do purchase obligations mean for a forecast?

Source: Home Depot 10-K FY 2017
What would these imply for:
- Balance Sheet items
- Income Statement Items
- Profitability measures?
Inventory management improvements

What would these imply for:
• Balance Sheet items
• Income Statement Items
• Profitability measures?

Current: Channel Specific Customer Fulfillment

Evolving Customer Fulfilment

We continue to target a best-in-class supply chain at The Home Depot. Our intent is to be the best in-stock, the most productive on inventory, the low cost provider and to provide our customers whether in-store or online with the best service possible.

Future: Flexible Portfolio of Customer Fulfillment Options

What would these imply for:
• Balance Sheet items
• Income Statement Items
• Profitability measures?
What would these imply for:

- Balance Sheet items
- Income Statement Items
- Profitability measures?

What do these mean for your forecast?
Supply Chain and Internal Productivity

What would these imply for:
- Balance Sheet items
- Income Statement Items
- Profitability measures?

Basic Questions to Answer on Materials/Supplies and Other Operating Costs

<table>
<thead>
<tr>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the primary types of materials/components/parts the company uses in its products or services, and how are they sourced?</td>
</tr>
<tr>
<td>How scarce are these materials/parts and are there any key suppliers or key regions that provide the materials/parts? Who has pricing power (supplier or your company)?</td>
</tr>
<tr>
<td>What is the portion of total cost of products that is represented by materials/parts?</td>
</tr>
<tr>
<td>What are the “commodities” that are significant components of the cost of product/service? How sensitive is the company to price changes in the commodity(ies)?</td>
</tr>
<tr>
<td>What are the cost trends in the key components/supplies etc.?</td>
</tr>
<tr>
<td>Are there changes in productivity or mix that have or might change the proportion of components/materials/supplies</td>
</tr>
<tr>
<td>When does the company pay for its supplies? How does this compare when the product is sold and paid for? (One thing to do is to consider the days payable outstanding to the days inventory on hand)</td>
</tr>
<tr>
<td>What is the portion of selling and marketing costs and what drives them?</td>
</tr>
<tr>
<td>Are there other major costs categories (e.g. warranties) and what drives them?</td>
</tr>
</tbody>
</table>
Note 7. Inventories

The following table summarizes the components of inventory:

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productive material, work in process and supplies</td>
<td>$4,849</td>
<td>$6,207</td>
</tr>
<tr>
<td>Finished products, including service parts, etc.</td>
<td>9,426</td>
<td>10,095</td>
</tr>
<tr>
<td>Total Inventories at FIFO</td>
<td>14,225</td>
<td>16,362</td>
</tr>
<tr>
<td>Less LIFO allowance</td>
<td>(1,233)</td>
<td>(1,423)</td>
</tr>
<tr>
<td>Total inventories and Other inventories, less allowances</td>
<td>13,022</td>
<td>14,939</td>
</tr>
<tr>
<td>FIO off-lease vehicles, included in FIO Other assets</td>
<td>153</td>
<td>254</td>
</tr>
<tr>
<td>Total consolidated inventories, less allowances</td>
<td>$13,175</td>
<td>$15,193</td>
</tr>
</tbody>
</table>

How does the activity and accounting flow really work?  
As managers of the business, what costs do you want to include?  
How would you approach measuring/incorporating these costs?

The Basics: Beg Inventory + Purchases – Ending Inventory = Cost of Good Sold

Example of Manufacturing Cost Flows

To clarify the practical nature of cost flows, consider the following example (for simplicity, assume all costs paid in cash):

**Raw Materials Inventory**
- Beginning balance $100
- Ending balance $120

**Work in Process Inventory**
- Beginning balance $230
- Ending balance $440

**Finished Goods Inventory**
- Beginning balance $400
- Ending balance $670

Other events during current year:
1. Raw material purchases $2,200,
2. Labor costs attributable to the products $1,800,
3. Other direct costs were $2,900,
4. Sales were 640 units at $15 each.

What were the cost flows relating to inventory during the year?  
What was the average cost per unit of goods sold?  
What was the income for the year?
### Transaction Summary for Cost Flow Analysis

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning Balance</td>
<td>XX</td>
<td>100</td>
<td>230</td>
<td>400</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchases/Supplies</td>
<td>(2,200)</td>
<td>2,200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor costs</td>
<td>(1,800)</td>
<td>1,800</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other direct costs</td>
<td>(1,300)</td>
<td>1,300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,600</td>
<td>(1,600)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RM to WIP</td>
<td>(2,180)</td>
<td>2,180</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WIP to FG</td>
<td></td>
<td>(6,670)</td>
<td></td>
<td>6,670</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>9,600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9,600</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td></td>
<td>(6,400)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(6,400)</td>
</tr>
<tr>
<td>Ending Balance</td>
<td>XX</td>
<td>120</td>
<td>440</td>
<td>670</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* is a derived figure

### Details on Inventory and Cost of Sales

**Inventories**

Inventories decreased by $1.9 billion (or 12.8%) to $13.0 billion at December 31, 2008 from $14.9 billion at December 31, 2007. This decrease is due to closing facilities, down-time and inventory reduction efforts at GMNA of $1.3 billion and at GME of $0.3 billion, offset by increases of $0.5 billion at GMAP and $0.3 billion at GMLAAM. Foreign Currency Translation contributed to the decrease by $0.8 billion at GMAP, $0.6 billion at GME and $0.3 billion at GMLAAM. 

**Automotive Cost of Sales (N America Only similar analysis for other regions)**

In the year ended 2008, Automotive cost of sales decreased $14.7 billion (or 13.8%) primarily due to: (1) decreased costs related to lower production volumes of $14.0 billion; (2) net curtailment gain of $3.8 billion related to the Settlement Agreement; (3) manufacturing savings of $1.4 billion from lower manufacturing costs and hourly headcount levels resulting from attrition programs and productivity improvements; (4) favorable Foreign Currency Translation gains of $1.4 billion due primarily to the appreciation of the U.S. Dollar against the Canadian Dollar; (5) pension prior service costs of $1.3 billion recorded in 2007; and (6) a favorable adjustment of $0.9 billion related to the fair value of commodity, foreign exchange and currency derivatives. These decreases were partially offset by: (1) charges related to restructuring and other costs associated with our special attrition programs, certain Canadian facility idlings and finalization of our negotiations with the CAW of $5.8 billion; (2) expenses of $1.2 billion related to the salaried post-65 healthcare settlement; (3) unfavorable commodity derivative fair value adjustments of $0.8 billion; (4) increased Delphi related charges of $0.6 billion related to certain cost subsidies reimbursed during the year; and (5) increased warranty expenses of $0.5 billion.

**What does this all mean about past decisions and going forward?**
Description of the Business: Using the Information they Provide

Raw Materials, Services and Supplies

We purchase a wide variety of raw materials, parts, supplies, energy, freight, transportation and other services from numerous suppliers for use in the manufacture of our products.

The raw materials primarily consist of steel, aluminum, resins, copper, lead and platinum group metals.

What does this suggest about your analysis?

We have not experienced any significant shortages of raw materials and normally do not carry substantial inventories of such raw materials in excess of levels reasonably required to meet our production requirements. Over most of the past three years the global automotive industry has experienced increases in commodity costs, most notably for raw materials such as steel, aluminum, copper, lead and platinum group metals. These price increases have been driven by increased global demand largely reflecting strong demand in emerging markets, higher energy prices and a weaker U.S. Dollar. During the second half of 2008, the prices of these commodities decreased significantly reflecting the drop in global demand brought about by the tightening of the credit markets, recession in the U.S. and Western Europe and volatile oil prices.

We manage our commodity price risk by using derivatives to economically hedge a portion of raw material purchases.

Auto Manufacturing: Cost of Inputs

Motor Vehicle Manufacturing - Inputs Price Changes

Source: US Bureau of Labor
Warranty Related Provisions – The policy and basic accounting

Policy and Warranty
Provisions for estimated expenses related to policy and product warranties are made at the time products are sold. These estimates are established using historical information on the nature, frequency, and average cost of claims. Revision to the reserves for estimated policy and product warranties is made when necessary, based on changes in these factors. We actively study trends of claims and take action to improve vehicle quality and minimize claims.

Recall Campaigns
Provisions for estimated expenses related to product recalls based on a formal campaign soliciting return of that product are made when they are deemed to be probable and can be reasonably estimated.

How does the accounting work?
What is the related cash flow?
Which is a better reflection of economic reality?
Other Costs: Warranty Obligations

The following table summarizes activity for policy, product warranty, recall campaigns and certified used vehicle warranty liabilities:

<table>
<thead>
<tr>
<th>Warranty Obligations</th>
<th>2008 (Dollars in millions)</th>
<th>2007 (Dollars in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warranties issued in period</td>
<td>4,272</td>
<td>5,125</td>
</tr>
<tr>
<td>Payments</td>
<td>(5,008)</td>
<td>(4,239)</td>
</tr>
<tr>
<td>Adjustments to pre-existing warranties</td>
<td>277</td>
<td>(165)</td>
</tr>
<tr>
<td>Effect of foreign currency translation</td>
<td>(627)</td>
<td>223</td>
</tr>
<tr>
<td>Liabilities transferred to the sale of Allison (Note 4)</td>
<td>—</td>
<td>(183)</td>
</tr>
<tr>
<td>Balance at December 31</td>
<td>$8,493</td>
<td>$9,615</td>
</tr>
</tbody>
</table>

Current Expenses Can Go Down But Can Current Spending?

What does this pattern tell you about Revenue?
How would you forecast future Costs and Cash flows?