Comparables

(Welch, Chapter 15)

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Quick Comps for Dummies

(*Comparable* or *Comp* means *Similar*.)
For our own firm, there is a **comparable** publicly-traded firm with a P/E of 20.

Our own firm has earnings of $5, but we do not know its value.

What do you think our firm's value could be?

- How long did you study finance before you could answer this question?

NPV Inputs

What are the NPV inputs?

Where do the public financial markets or websites tell you the inputs?

Any Comps in NPV?

Does NPV use information from comparables?

Choices of Value Attributes

The *Value Attribute* could be

- assets or sales,
- or patents or scientists,
- or earnings or price-earnings
- *or even your own PV estimates*!

(*Attribute* and *Value* can be total or per-share.)

Graph: Can You Value The Firm?

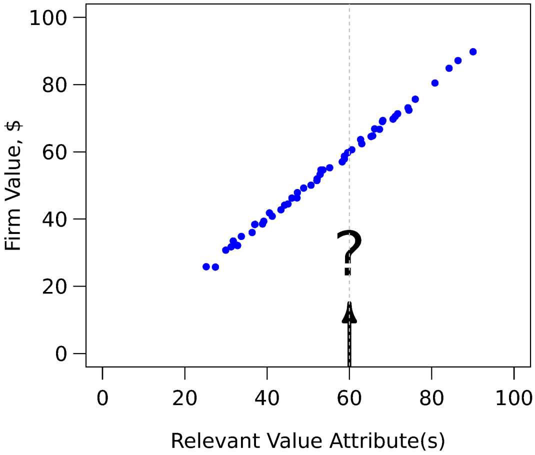

Figure 1: Law of One Price With Perfect Attribute

Graph Footnotes

Each firm is one dot.

We could include all stocks

- or just stocks from the same industry.
- or just stocks we considered similar.

Why Comps Instead of NPV?

But why not use NPV for your firm instead?

Does it matter how the plot looks like?

Graph: Can You Value The Firm? I

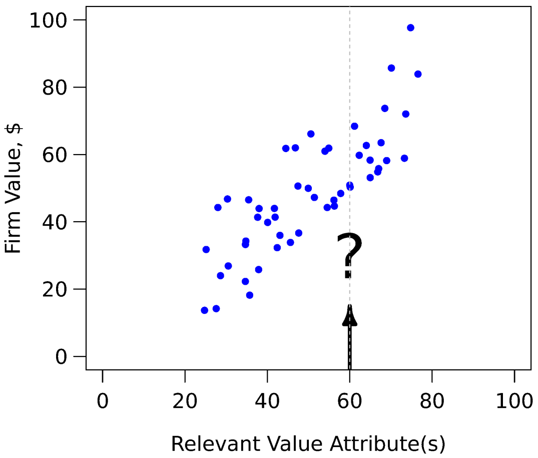

Figure 2: Law of One Price With Noisy Attribute

Graph: Can You Value The Firm? II

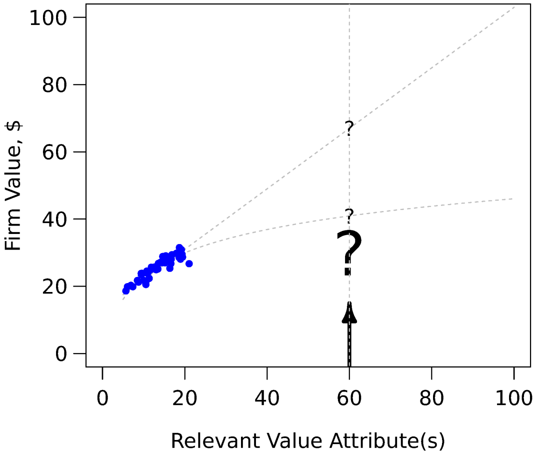

Figure 3: Law of One Price For Novel Types

Graph: Can You Value The Firm? III

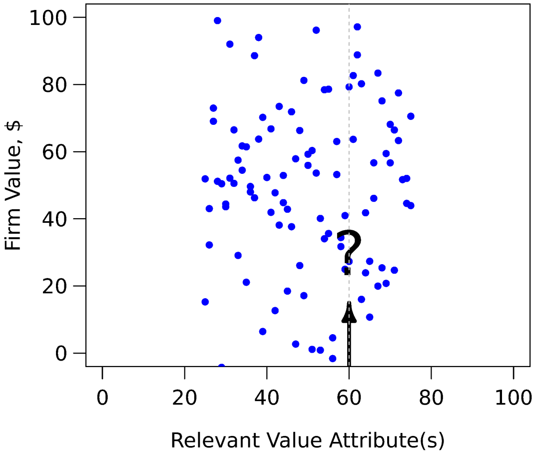

Figure 4: Law of One Price With Useless Attribute

Conceptual Basis

Does NPV have any conceptual problems?

Real-World Application Problem?

Does NPV have any real-world application problems?

Subjective Factors

Is there a subjective factor in NPV?

Is there a subjective factor in Comparables?

Comparables

Where would comparables fail?
Are comparables better or worse than NPV?

Earnings vs Cash Flow

- After a full chapter of how to transform earnings into cash flows...

Why do most analysts prefer to use *earnings* (P/E) instead of *cash flows* (P/CF) for comps?

Price-Earnings Ratio

We now investigate the most common ratio for comparables, the **Price-Earnings (P/E) ratio**.

Eternal Growth-Rate I

Assume the cost of capital is 10%.

What should be the P/E ratio of a firm with a 5% *eternal* growth-rate?

Eternal Growth-Rate II

Assume the cost of capital is 10%.
What should be the P/E ratio of a firm with a -10% eternal growth-rate?

P/E Ratios by Firm Type

Are P/E ratios higher for growth or value firms?

PVGO

Assume the cost of capital is 10%.

What is the *PVGO* of a firm with an eternal growth rate of

- $\mathbf{+0\%}$?
- $\mathbf{+10\%}$?
- $\mathbf{-10\%}$?

Firm Pairs

Give a few examples of firm pairs that you think would make great comps for one another?

- Coca-Cola (KO) vs Pepsico (PEP)
- ?
- ?
-
-

Value of PepsiCo

Value PepsiCo based on Coca-Cola's P/E ratio.

Coca-Cola vs PepsiCo

How similar *really* is Coca-Cola to PepsiCo?

P/E Ratio

Guess the P/E of your comps, plus those of

- MSFT,
- GOOG,
- Goldman-Sachs (GS),
- Ford (F),
- Altria (MO),
- and so on.

Empirical Performance of Comps?

So, how good are P/E ratios for valuing firms?

If P/E ratios are good predictors, can we buy the firm with the low P/E ratios and short its comp with the high P/E ratio?

Proof in the Pudding

The following graph is as of 2016. Any other year would look fairly similar.

P is price. Exp(E)\$ are analysts' earnings forecasts.

g is analysts' forecast of growth rate of earnings.

- Recall: Should higher-growth firms have higher or lower E/P ratios?
- How good/noisy/bad should your prediction be?

Graph: Empirical Relationship

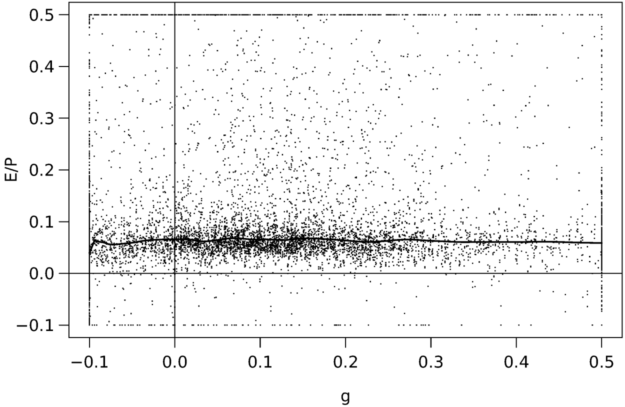

Figure 5: Xtended PE graph

Graph Notes

If you graph P vs E and it is a line through the origin, then

if you graph P/E vs E, it is a flat line with the slope as the y.

Some Conceptual Problems

P/E ratios are not just empirically not very satisfying (capable of explaining value),

. . . they also have serious conceptual flaws.

Merging Value

Firm A is worth \$200 based on comps.
Firm B is worth \$200 based on comps.
If A and B merge, what is the value of AB?

Does the merged firm have the avg PE?

Value From Industry Comps

Industry X has 3 firms:

- A has P of \$1,000, E of \$5.
- B has P of \$200, E of \$10.
- C has P of \$700, E of \$70.

Your firm is in the same industry with E = \$25.

What is your own firm worth?

Slightly Off

Oops. I was wrong.

I had overestimated A (the \$1,000 firm) by \$4.

A's earnings were not $+$\$5, but $+$\$1.

What is your own firm worth?

Worth of Firm ?!

Oops. I was wrong.

I overestimated A (a firm worth \$1,000) by \$6.

A's earnings were not $+$\$5, but $-$\$1.

What is your own firm worth?

1/X

What can you do to mitigate the 1/X problem?

- as X gets near 0 or turns negative.

IMPORTANT: Whenever you see a ratio in any context, ask yourself first: *can the denominator ever be negative?* If yes, then it is a crap ratio that should *never* have been defined.

Does Leverage Matter?

Firms should be worth their underlying projects.

The financing method should be secondary.

Assume r=10%, g=0%.

What is the firm's P/E ratio?

Does its P/E change if the firm refinances to 50% debt (with 5% cost of capital) and 50% equity (with 15% cost of capital)?

Cooked-Up Example

The firm has a P/E=10 at the start.

So, presume $1 in earnings, $10 in value.

At the refinance, our firm becomes a $5 equity firm with interest payments on $5 of 5%, or 25 cents.

It now has 75 cents in earnings.

Its P/E ratio will be $5/$0.75=6.8.

So we should adjust P/E ratios for leverage!

- We have one P/E for the firm, another for equity.

Curious Case of Leverage

Leverage can affect P/E ratios.

In the book, there are examples where leverage can have the opposite effect.

So, there is not even an obvious directional adjustment.

The same assets can be worth ... to ... ?!?!

WTH?

When Earnings Abandon You

If our firm has negative earnings,
what alternative attribute(s) could we use?

Alternative Ratios?

Will firm owners figure out how to game this?

If you switch when earnings are negative, is this good or bad? Will owners know?

And what do you use if there are also not even any sales yet?

Auto-Comps from the Web

The URLs keep changing, but if you google for combinations of

- industry,
- peers,
- ratios, and
- comparables,

you will find responses from different financial websites, such as Google itself, Bloomberg, Yahoo!Finance, etc.

Comps vs NPVs

Do you prefer Comps or NPVs?
Which one is easier?
Which one is better?

Competitive Advantage?

Comparables are more often used for firms.
NPV is more often used for individual projects.

But both are used in both cases!