CHAPTER 27

VALUING OTHER ASSETS

One of the fundamental precepts of this book is that all assets, financial as well as real, can be valued systematically using traditional valuation models. The bulk of this book examines the valuation of stocks, but in the last chapter, we extended the reach of valuation models to cover real estate. In this chapter, we consider other assets that are usually considered as unique and different and attempt to value them using the principles we have developed in the earlier chapters. Consequently, we examine how to value a wide range of assets from franchises to a five-star restaurant.

While the assets covered in this chapter have very different characteristics and attract different investors, they can be broadly classified into three categories.

- Assets that are expected to generate cash flows over time and can be valued with discounted cash flow models.

- Assets that do not generate cash flows but attain value because they are scarce and either are perceived to be valuable (collectibles, coins) and/or generate utility to their owners (antiques, paintings). These assets can be valued using 'comparable' assets.

- Assets that do not generate cash flows but could be valuable in the event of a contingency - they have option characteristics. These assets can be valued using contingent claim valuation models.

Within each category, there are a surprising number of commonalties both across different assets and with the financial assets described in the earlier chapters.

Cash Flow Producing Assets

A number of assets derive their value from their capacity to generate cash flows to their owners. The value of such assets is a function of their capacity to generate cash flows in the future and the uncertainty associated with these cash flows. The basic principles of discounted cash flow valuation, described in earlier chapters, apply for any of these assets and require the following steps.

- Estimate cash flows on the asset for the estimation period. These cash flows can either be pre-debt (cash flows to the firm) or after-debt cash flows (cash flows to equity).

- Estimate the value of the asset, if any, at the end of the estimation period. This value will deplete over time if the asset loses value with use or has a limited life and may, in some cases, be zero.

- Estimate a discount rate that reflects the riskiness of the cash flows. This discount rate will be the cost of equity if the cash flows discounted are cash flows to equity and the cost of capital if the cash flows are cash flows to the firm.

- Calculate the present value of the cash flows to arrive at the value of the asset or the value of the equity in the assets.

There are several practical problems associated with applying these steps to assets when cash flows are difficult to estimate and risk cannot be easily quantified (and converted into a discount rate). In most cases, these problems are not insurmountable and can be overcome. Since the problems and the solutions vary from case to case, we consider a series of examples, ranging from the valuation of a simple franchise to more complex businesses.

Valuing a Franchise

A franchise gives you the right to market or sell a product or service of a brand-name company. Examples of franchises would include the thousands of McDonald's around the world, dealerships for the automobile companies and, loosely defined, even a New York City cab medallion. In each case, the franchisee (the person who buys the franchise) pays the franchisor (McDonald's or Ford) either an up-front fee or an annual fee for running the franchise. In return, he or she gets the power of the brand name, corporate support and advertising backing.

Franchise value and Excess Returns

The acquisition of a franchise provides the franchisee with the opportunity to earn above-market returns for the life of the franchise. While the sources of these above-market returns vary from case to case, they can arise from a number of different factors.

- *Brand Name Value*: The franchise might have a brand name value that enables the franchisee to charge higher prices and attract more customers than an otherwise similar business. Thus, an investor may be willing to pay a significant up-front fee to acquire

a McDonald's franchise, in order to take advantage of the brand name value associated with the company.

- *Exclusivity*: In some cases, a franchise has value because it enables a franchisee to produce a product, the rights to which are owned by the franchisor. For instance, an investor may pay a fee to Disney for the right to manufacture Mickey Mouse watches or toys and hope to recoup the fee by selling more of the product or charging a higher price for it.

- *Legal Monopolies*: Sometimes, a franchise may have value because the franchisee is given the exclusive right to provide a service. For instance, a company may pay a large fee for the right to operate concession stands in a baseball stadium, knowing that they will face no competition within the stadium. In a milder variant of this, multiple franchises are sometimes sold but the number of franchises is kept limited to insure that the franchisees earn excess returns. New York City, for example, sells cab medallions that are a pre-requisite for operating a yellow cab in the city. They also have tight restrictions on non-medallion owners offering the same service. Consequently, a market where cab medallions are bought and sold exists.

In essence, the value of a franchise is directly tied to the capacity to generate excess returns. Any action or event that affects these excess returns will affect the value of the franchise.

Special Issues in Valuing Franchises

Buying a franchise is often a mixed blessing. While the franchisee gets the backing of a well-known firm with significant resources to back up his or her efforts, there are some costs that may affect the value of the franchise. Among these costs are the following.

a. *The problems of the franchisor can spill over into the franchisee*. For instance, when Daewoo, the Korean automaker, borrowed too much and got into financial trouble, their dealers around the world felt the repercussions. Similarly, McDonald's franchisees around the world were picketed by anti-globalization activists. Thus, an efficient and well-run franchise's value can be affected by actions that it has little or no control over.

b. Since franchisors tend to be large corporations and franchisees tend to be small business people, *the former often have much more bargaining power* and sometimes take advantage of it to change the terms of franchise agreements in their favor. Franchisees can increase their power by banding together and bargaining as a collective unit.

c. The value of a franchise derives from the exclusive rights it grants the franchisor to sell the products of a firm. This value can be diluted if a franchise is granted to a competitor. For instance, the value of a Days Inn franchise may be diluted if another Days Inn is allowed to open five miles down the highway.

Illustration 27.1: Valuing a New York City Cab Medallion: June 1994

Background

- In 1994, New York City had 11,787 cab medallions outstanding[1]. The owner of a cab medallion has the right to operate a yellow cab in the five boroughs of New York City – Manhattan, Brooklyn, the Bronx, Queens and Staten Island.

- New York City restricts non-medallion owners from picking up customers on the street, though they can still be summoned in other ways.

- All yellow cabs in the city are regulated by the Taxi and Limousine commission, which sets fares and reserves the right to fine owners who do not follow its numerous requirements.

Cash Flows on a Cab Medallion

- The typical New York City cab is a Chevrolet Caprice. The cost of acquiring one in 1994 was approximately $15,000 and it has an expected life of ten years. The cab can be depreciated over the life down to a salvage value of zero.

- A cab can be expected to be on the road 330 days of the years, with an expected down time (for maintenance) of 35 days, and make $250 a day prior to meeting operating expenses, maintenance expenses and covering the cost of time for the driver.

- The annual cost of fuel and operating expenses is expected to be 25% of revenues and the maintenance expenses are expected to amount to $1,500 a year.

- The cost of automobile insurance, covering the cost of collision, theft and bodily harm, is $2,000 per year.

- The annual fee to be paid to the Taxi and Limousine commission is $500. Other licensing costs are expected to amount to $500 a year.

- The total cost per day, inclusive of benefits, of the driver of the cab is expected to amount to $100. (This also includes the 35 days where the car is down for maintenance.)

Estimating Risk and Discount Rates

- The capacity of a cab to pull in the expected revenues is a function of several variables.

    - *The state of the city's economy*: The more buoyant the economy of the city, the greater are the potential revenues from owning and operating a cab in it. Since the state of New York City's economy is, in large part, driven by the state of the financial services sector, there is in all likelihood a positive correlation between cab revenues and financial service sector health.

    - *The scarcity of cabs*: The value of a cab medallion is derived directly from the fact that there are only a limited number of medallions out there. To the extent that the city can either issue more medallions or allows gypsy cabs (unlicensed taxis) to operate within the environs of the city, it can affect the expected revenues.

    - *The fare structure*: Since the fare structure is regulated, the expected revenues from owning a cab in the future will be dependent on the generosity of raises that the Taxi and Limousine Commission allows.

- There are a number of other potential sources of risk including collision and theft which have already been built into the cost structure. To the extent that these are estimates, they could also create swings in the cash flows.

Assuming that the expected revenues factors in the number of medallions outstanding and the expected changes in the fare structure already, the primary source of risk in owning a cab medallion is expected to be from shifts in the city's economy. If the health of the

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[1] The number of cab medallions had been frozen at this level since 1937. A proposal in 1995 planned to

city's economy is a function of the financial service sector, the risk of owning a cab medallion should be similar to the risk of investing in a financial service firm. The average beta of financial service firms headquartered in New York City is 1.25. At the end of 1994, with treasury bond rates at 8% and using a market risk premium of 5.5%, the cost of equity can be calculated.

$$\text{Cost of Equity} = 8\% + 1.25\ (5.5\%) = 14.88\%$$

This will be used as the cost of equity in valuing a cab medallion.

Financing Mix

Assume that the medallion will be financed half with equity and half with debt, and that the debt will carry an interest rate of 10% per annum. Allowing for a marginal tax rate (federal, state and city) of 40%, the cost of capital for valuing the medallion is:

$$\text{Cost of Capital} = 14.88\%\ (0.5) + 10\%\ (1\text{-}0.4)\ (0.5) = 10.44\%$$

Estimating Future Growth and Value

It is assumed that the expected operating income from owning a cab will keep up with expected inflation, which is assumed to be 3%, in the long term. The pre-debt cash flow from owning a cab medallion is provided in Table 27.1.

Table 27.1: Expected Cash flows from Operating a Cab

Item	Calculation	Amount
Revenues	(330 * 250)	$ 82,500
Expenses		
a. Driver	(365 * 100)	$ 36,500
b. Fuel & Operating	(25% of Revenues)	$ 20,625
c. Maintenance	($1500/year)	$ 1,500
d. Depreciation	($1500/year)	$ 1,500
e. Fees & License Costs	($1000/year)	$ 1,000
EBIT		$ 21,375

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raise this number by 400, and faced stiff opposition from existing medallion owners.

Taxes	(40% of EBIT)	$	8,550
EBIT (1-t)		$	12,825
+ Depreciation		$	1,500
- Capital Expenditure	(For replacement)	$	1,500
Free Cash Flow from Operations		$	12,825

The capital expenditure is assumed to be equal to depreciation. Essentially, we are assuming a sinking fund is set aside to meet the eventual expense of replacing the car at the end of the tenth year.[2]

Based upon the expected cash flows from operations of $12,825, the expected growth rate of 3% in the long term and the cost of capital of 10.44%, the value of owning a medallion is:

$$\text{Value of a New York City Cab Medallion} = \frac{\$12,825(1.03)}{0.1044 - 0.03}$$
$$= \$172,437$$

Other Factors

This valuation is based upon the presumption that a cab driver is hired to drive the cab. If the driver owns and operates the cab, this is still the appropriate way to approach the valuation, since the time of the driver has to be priced in. Failing to do so will inflate the expected after-tax cash flows and the value of the medallion unjustly. The other issue that is not resolved in this valuation is whether there are any economies of scale involved in owning more than one medallion, in terms of reduced insurance costs or down time. To the extent that there is, medallions will be more likely to be sold to prior owners of medallions rather than to new investors.

Franchise Value: Can the franchisee make a difference?

We do not want to leave the impression that the value of a franchise is entirely attributable to the franchisor and that the franchisee cannot affect the value. Clearly, franchisees can make a difference, which explains why the value of a McDonald's can

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[2] Setting aside $1,500 a year for ten years will yield more than $15,000 at the end of the tenth year, but a car will also cost more in ten years.

increase when it passes from one franchisee to another. There are several factors that explain these differences.

Efficiency: Some franchisees do a much better job in controlling costs and generating higher margins than others. To illustrate, a large proportion of low-cost hotels and inns in the United States is owned by a small immigrant group from India. Since the owner's entire family often works at the hotel, at low or no pay, their employee costs tend to be lower, allowing them to turn a larger profit than a passive owner would have.

Personal component: There remains a personal component in many franchises that can make a significant difference to value. For instance, while there are thousands of Ford and GM dealers around the country, a handful of them account for a significant portion of the sales.

Economies of scale: There are economies of scale associated with owning several franchises from the same firm. For instance, you often see franchisees who own more than one franchise of the same company. By pooling several franchises, you might be able to reduce your administrative costs and increase the profitability of each.

Valuing Businesses with a Personal Component

Many businesses derive a significant portion of their value from a 'key person', who is often the owner, and may be worth significantly less if run by someone else. In these cases, it is important that the consequences of losing this key person is built into the valuation. It is also important that the additional risk associated with the dependence upon an individual be factored into the analysis.

There are a number of examples we can offer for businesses with personal components. Consider the following.

- Expensive restaurants are identified closely with the chefs that run their kitchens. Thus, when a chef is incapacitated or moves to a competitor, the number of customers may drop off dramatically.
- Many service businesses, ranging from plumbing to dentistry to tax accounting, have a personal component. Hence, when the person providing the service moves on, a large portion of the value of the business could be lost. Thus, a dentist who pays a large amount for a thriving dental practice of

another dentist may see a drop in business after the purchase. This effect will be accentuated if the seller can start a competing business.

- A mutual fund company may derive its value from its most recognized fund managers. If they move to a competitor or start their own funds, they could take a large portion of the money they manage with them.

So, how should we value these businesses and the component of value that is attributable to the "key person"? The answer depends upon why you are doing the valuation in the first place. If the objective is to value the business for the existing owner, you may separate out the portion of value due to the owner's personal connections and skills, if there are no immediate consequences. If the objective is to value the business for a potential buyer, the simplest way to avoid overpaying is to do two valuations – one with the business as is, with the existing owner, and one, without the existing owner, making reasonable assumptions about the degree to which business will drop. The latter will be much lower than the former and will represent the price you would be willing to pay.

There are intermediate steps that can be taken to minimize the slippage in value. First, you could contract with the owner to remain with the firm after you buy it, which should reduce the drop off in customers. Second, you could apprentice or help the owner for a transition period before you buy the business. This will allow customers or patients to get used to you before the business passes hands and may reduce the number that leaves after the transaction. Third, you should ensure that the owner cannot start a competing business and extract business from you for the foreseeable future.

Illustration 27.2: Valuing a dental practice

Assume that you are a young dentist, specializing in pediatric dentistry, and that you are interested in buying a dental practice located in Chatham, New Jersey. The dentist who owns the practice has built it up over the last two decades and the practice generated $500,000 in revenues last year. The expenditures associated with running this practice last year include the following.

- Employee expenses (including dental hygienists and secretarial help) amounted to $150,000 last year and are expected to grow 3% a year for the next 10 years.

- The annual rent for the facilities last year was $50,000 and is expected to grow 3% a year for the next 10 years.
- Rentals of medical equipment cost $40,000 last year and this expense is expected to grow 3% for the next 10 years.
- The cost of medical insurance last year was $60,000 and is expected to grow 3% a year for the next 10 years.
- The tax rate on the income, including state and local taxes, is 40%.
- The cost of capital is 10%.

To value the practice, we will assume that revenues would have grown 3% a year for the next 10 years if the current dentist continued to run the practice, but that there will be a drop off of 20% in the first year's revenues if a new dentist comes into the practice. The growth rate of 3% will still occur in the following years but on the lower base revenues.

We will first value the practice with the current dentist. To make this estimate, we will begin by estimating the cash flows in the first year to the practice.

Cash flow in year 1

$$= \left(\text{Revenues}_1 - \text{Operating Expenses}_1\right)\left(1 - \text{tax rate}\right)$$
$$= \left(\left(500,000\right)\left(1.03\right) - \left(150,000 + 50,000 + 40,000 + 60,000\right)\left(1.03\right)\right)\left(1 - 0.40\right)$$
$$= \$123,600$$

Using the cost of capital as the discount rate and the growing annuity equation for a 10-year period, we can estimate the value of the practice.

$$\text{Value of practice} = CF_1 \ \frac{1 - \dfrac{(1 + g)^n}{(1 + r)^n}}{(r - g)} = 123,600 \ \frac{1 - \dfrac{(1.03)^{10}}{(1.10)^{10}}}{(0.10 - 0.03)} = \$850,831$$

We assume that the value of the practice fades after ten years and therefore attach no terminal value.

We will follow up by valuing the practice with a new dentist in place. The cash flow in year 1 will be lower because the revenues will be lower.

Cash flow in year 1

$$= \left(\text{Revenues}_1 - \text{Operating Expenses}_1\right)\left(1 - \text{tax rate}\right)$$

$$= \left(\left(500{,}000\right)\left(0.8\right)\left(1.03\right) - \left(150{,}000 + 50{,}000 + 40{,}000 + 60{,}000\right)\left(1.03\right)\right)\left(1 - 0.40\right)$$

$$= \$61{,}800$$

$$\text{Value of practice} = 61{,}800 \ \frac{1 - \dfrac{(1.03)^{10}}{(1.10)^{10}}}{(0.10 - 0.03)} = \$425{,}415$$

Notice that the value is halved and the difference can be viewed as the value of the key person.

As a potential buyer, the new dentist should offer the latter value for the practice. However, if he can arrange for a transition period where the current dentist stays with the practice after the transaction, he or she may be willing to pay a higher price.

Illustration 27.3: Valuing a five-star restaurant – Lutece in 1994

Lutece is a renowned restaurant located at 249 East 50th Street in Manhattan. In 1994, Lutece was sold by its owner/chef Andre Soltner to Ark Restaurants, a publicly traded restaurant chain, for an undisclosed amount. The New York Times, blanching as a result of the sale ran the headline, "Lutece, a Dining Landmark, Is Sold to a Chain Operator", which was then followed by an article detailing the surprise marriage of the classic French restaurant to Ark, a company largely known for operating theme concepts. Bryan Miller, the Times' former restaurant reviewer and writer of the piece, likened the addition of Lutece to Ark's portfolio to "hanging a Van Gogh in a community art exhibit."

Background

Lutece was founded in 1961 by Andre Soltner and quickly acquired a reputation for serving food of exceptional quality. It has received a five-star rating from Mobil for 24 consecutive years and is one of five New York City restaurants that gets a four-star rating (the highest) from the New York Times. In a sign of slippage, however, its ranking in the Zagat Survey of New York City restaurants dropped to eighth from being perennially at or near the top for much of the seventies and eighties.

Estimating Cash Flows

The following are some of the background facts on Lutece.

- The restaurant can seat 92 diners. It has one seating for lunch and two seatings for dinner. It fills in 70% of its seats at lunchtime and 80% of its seats at dinner.
- The restaurant stays open 340 days every year, and is closed for the remaining 25 days.
- The average price of a lunch is $30 and the average price of a dinner is $66. Approximately, one third of this is for liquor.
- There are 42 employees on the staff of the restaurant. The cost of food is approximately 30% of the price of the meal and the payroll amounts to $1.25 million a year.
- The annual rent for the space used by the Lutece is $600,000.

Table 27.2 is an estimation of the after-tax operating cash flows in 1994 for Lutece.

Table 27.2: Expected cash flows from Lutece - 1994

	Assumption	*Base Year*
Revenues		
Lunch	(70% occupancy; $30 per person)	$ 656,880
Dinner	(80% occupancy; $66 per person)	$ 3,303,168
Total		$ 3,960,048
Expenses		
Food	(30% of revenues)	$ 1,188,014
Staff	($1,250,000 for staff expenses)	$ 1,250,000
Rent		$ 600,000
Total		$ 3,038,014
EBIT		$ 922,034
Taxes	(Assumed tax rate of 40%)	$ 368,813
EBIT (1-t)		$ 553,220

These cash flows are expected to grow 6% a year for three years and 3% a year after that. The following table summarizes the expected cash flows over the next three years.

Table 27.3: Expected cash flows from Lutece – next 5 years

	Base Year	1	2	3

Revenues	3,960,048	4,197,651	4,449,510	4,716,481
Expenses	3,038,014	3,220,295	3,413,513	3,618,324
EBIT	922,034	977,356	1,035,997	1,098,157
Taxes	368,813	390,942	414,399	439,263
EBIT (1-t)	553,220	586,413	621,598	658,894

Estimating Discount Rates

The acquirer in this case, Ark Restaurants, has a relatively low beta (0.7), and gets only about 10% of its financing needs from debt. Assuming that the underlying risk in investing in Lutece is similar, the cost of equity can be estimated as follows.

$$\text{Cost of Equity} = 8\% + 0.7\,(5.5\%) = 11.85\%$$

(This assumes that the long term treasury bond rate is 8%.)

If Ark Restaurants can borrow money at 9% and faces a 40% tax rate, the cost of capital can be calculated.

$$\text{Cost of Capital} = 11.85\%\,(.90) + 9\%\,(1\text{-}0.4)\,(.10) = 11.20\%$$

Estimating Value

The value of Lutece can be estimated by discounting the cash flows at the weighted average cost of capital. Allowing for a growth rate of 6% over the next three years and 3% after that, the value of the restaurant can be estimated as follows.

$$\text{Value at the end of the high growth period} = \frac{\text{EBIT}_4\,(1-t)}{\text{WACC} - g_n}$$
$$= \frac{658,894\,(1.03)}{0.1120 - 0.03}$$
$$= \$8,271,309$$

$$\text{Value of Lutece} = \frac{586,413}{1.1120} + \frac{621,598}{1.1120^2} + \frac{658,894 + 8,271,309}{1.1120^3}$$
$$= 7,524,559$$

Valuing the 'Key Person'

There would be probably no argument that much of Lutece's value derives from Andre Soltner's presence as chef. It would be worth examining how much this value would change if he were to be replaced by somebody else. The simplest way to evaluate this effect is to:

- Estimate the effect on occupancy of replacing Mr. Soltner with another chef, and through this on cash flows. To the extent that occupancy and cash flows decline, the value of the restaurant will decline.

- Calculate the value of the restaurant based on the discounted cash flows.

In extreme cases, where the entire value of an enterprise depends upon one person, the value can drop to essentially zero if the key person were to leave or die. In less extreme cases, the value of the key person can be estimated to be the difference between the values of the enterprise with and without that person in place[3].

Valuing Trademarks, Copyrights and Licenses

Trademarks, copyrights and licenses all give the owner the exclusive right to produce a product or provide a service. Fundamentally, then, their value is derived from the cash flows that can be generated from the exclusive right. To the extent that there is a cost associated with production, the value comes from the excess returns that come from having the exclusive right.

As with other assets, you can value trademarks or copyrights in one of two ways. You can estimate the expected cash flows from owning the asset, attach a discount rate to these cash flows that reflects their uncertainty and take the present value, which will yield a discounted cash flow valuation of the asset. Alternatively, you can attempt a relative valuation, where you apply a multiple to the revenues or income that you believe that you can generate from the trademark or copyright. The multiple is usually estimated by looking at what similar products have sold for in the past.

In making these estimates, you are likely to run into estimation issues that are unique to these assets. First, you have to consider the fact that a copyright or trademark provides you exclusive rights for a finite period. Consequently, the cash flows you will estimate will be for only this period and there will generally be no terminal value. Second, you have to factor in the expected costs of violations of the copyright and trademark. These costs can include at least two items. The first is the legal and monitoring cost

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[3] Consider the value of David Letterman to CBS. One estimate in the New York Times claimed that 20% of the profits at CBS could be traced to the success of David Letterman's show. If this is true, CBS may be getting an incredible bargain, even at $5 million a year.

associated with enforcing exclusivity. The second is the fact that no matter how careful you are with the monitoring, you cannot ensure that there will be no violations, and the lost revenues (profits) that arise as a consequence will lower the value of the right.

Illustration 27.4: Valuing the Copyright on "Investment Valuation"

Assume that John Wiley has been approached by another publisher who is interested in buying the copyright to this book (Investment Valuation). To estimate the value of the copyright, we will make the following assumptions.[4]

- The book is expected to generate $150,000 in after-tax cash flows for the next three years and $100,000 a year for the next two years. These are the cash flows after author royalties, promotional expenses and production costs.

- About 40% of these cash flows are from large organizations that make bulk orders and are considered predictable and stable. The cost of capital applied to these cash flows is 7%.

- The remaining 60% of the cash flows are to the general public and this segment of the cash flows is considered much more volatile. The cost of capital applied to these cash flows is 10%.

The value of the copyright can be estimated using these cash flows and the cost of capital that has been supplied in Table 27.4:

Table 27.4: Value of Copyright

Year	Stable Cashflows	Present value @ 7%	Volatile Cashflows	Present value @ 10%
1	$60,000	$56,075	$90,000	$81,818
2	$60,000	$52,406	$90,000	$74,380
3	$60,000	$48,978	$90,000	$67,618
4	$40,000	$30,516	$60,000	$40,981
5	$40,000	$28,519	$60,000	$37,255
		$216,494		$302,053

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[4] I am intentionally making these assumptions as optimistic as I can. I hope you, as the reader, can make the actual cashflows resemble my estimates.

The value of the copyright, with these assumptions, is $518,547 (which is the sum of $216,494 and $302,053).

Non Cash Flow Producing Assets

Assets that do not produce cash flows cannot be valued using discounted cash flow models. They derive their value from a combination of factors – a scarcity of supply relative to demand, consumption utility and individual perceptions. While they can be valued relative to comparables, their values are also much more volatile since they are based entirely upon perceptions. There is a wide range of assets that fall under this category from limited edition Barbie dolls to rare coins and wine.

Special Issues in valuing non-cash flow producing assets

The biggest difference between these assets and cashflow generating assets is that there is no intrinsic value backing up the price. Consequently, the only way to value these assets is by using relative valuation – i.e., by looking at how similar assets are priced in the market.

The process of using comparables in valuing an asset is fairly straightforward, at least in the abstract. The first step in the process is to collect a group of comparable assets. The second is to estimate a measure of standardized value for this group. The third is to control for differences between assets in this group and the asset being valued to arrive at a measure of reasonable value for the asset. The problems in applying this approach are as follows.

- Finding comparable assets may be difficult to do for some non-cash-flow producing assets. While there are indices compiled on various unconventional assets, there are substantial differences between the assets within each index.

- The markets for many of these assets are neither liquid nor public. Many transactions are private and the reported prices are therefore unreliable.

- It is not clear how one controls for differences across assets which are comparable, when these differences are not quantitative but relate to perception.

- The prices of many of these assets are directly related to how scarce the supply of the asset is. For instance, the reason that the Honus Wagner T-206 baseball card is the most highly valued card on the market is that there are only 58 known cards in

existence and only one in mint condition.[5] The flip side of this is that any event that alters this balance will affect the price. Thus, a surprise find of another mint condition Honus Wagner card in someone's attic can cause the price to change dramatically.

Art and Collectibles

There are many investors who view investments in art and collectibles as part of their overall portfolio. In that context, it is worth asking the following questions.

• The first relates to the type of returns that these investments generate for investors over long periods. There are a number of studies that have looked at this question. In one of the more comprehensive analysis of art as an investment, Mei and Moses constructed an index based upon repeated sales of artwork between 1875 and 2000 and their results are summarized in Table 27.5.

Table 27.5: Returns from Art versus S&P 500

	Art		Stocks	
	Mean	Standard Deviation	Mean	Standard Deviation
1875-1999	5.60%	25.60%	11.10%	19.00%
1900-1999	4.70%	20.30%	12.20%	19.80%
1950-1999	5.30%	9.30%	14.60%	16.50%

As a stand alone investment, art has earned low returns historically. In the last 50 years, the returns on art have become less volatile but that may reflect the fact that there are more transactions in this period than in earlier ones. Does the low return make art a bad investment? Not necessarily. In Table 27.6, we examine the correlation between the returns on art, stocks and treasury bonds:

Table 27.6: Correlation between investments

	Art	S&P 500	T.Bonds
Art	1		

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[5] This is the card that sold for $640,000 in 1996 to Michael Gidwitz, an investor from Chicago. The card had been earlier owned by Wayne Gretzky, the hockey great, who bought it for $451,000 in 1991.

S&P 500	0.13	1	
T.Bonds	-0.01	0.05	1

The low correlation between the returns of art and stocks may give it a place in a well diversified portfolio of financial assets, but only at the margin.

• The second relates to how best to value investments in art and collectibles. In practice, they are almost always valued on a relative basis. Thus, a Picasso is usually valued by looking at what other Picassos have sold for recently.

Generally speaking, there are at least three problems that we run into in the context of valuation. The first is that this is not a very liquid market and there are relatively few transactions. Thus, the most recent sale of a Picasso might have been three years ago and a great deal might have changed in the art market since then. The second is that no two Picassos are alike and there are substantial differences (both in style and value) across different paintings. The third problem is that there is the very real possibility of forgery and fraud and much of it can be detected only by an expert eye. Consequently, the relative valuation of art and collectibles remains the province of expert appraisers, who try to overcome these problems (though not always successfully) and estimate a fair value. Like all analysts, however, they are susceptible to market moods and bubbles and busts are just as common in this market as they are in other ones.

So, what are the lessons for individual investors? The first is that while art and collectibles, as a class, may balance a portfolio, you have to spend substantially more time acquiring specialized knowledge to be successful with these investments than you would with financial investments. The second is that you should expect to have much higher transactions costs with investments in art and collectibles, especially at the high end of the market. The third is that you should collect baseball cards or Old Master paintings because you enjoy them and not just as investments. The psychic returns that you receive will then compensate for the sub-standard financial returns that you may well earn.

Other Assets

As any regular visitor to Ebay will attest, even the most unconventional assets have to be priced and often the prices are based upon comparable assets. Thus, you can

attach a value to a baseball card (for instance, a Mickey Mantle rookie card) by looking at the prices at which similar cards have sold. In fact, there are publications that list out prices for traded cards, categorized by the condition of the card.

One case where a model for comparables seems to have fairly remarkably well is in the area of valuing wine vintages. Professor Orley Ashenfelter at Princeton University has developed a regression model, which factors in temperature and rainfall in wine growing regions, to evaluate wine vintages (Bordeaux, California cabernet sauvignon, red Burgundy, Sauternes and Port wines) and come up with estimates of value per bottle, which is published in his newsletter titled "Liquid Assets". The analog from stock valuation would be to compare price earnings ratios across firms, controlling for risk and growth characteristics.

Assets with Option Characteristics

Some assets derive their value not from the cash flows that they generate or from highly valued comparables, but from the potential that they possess to be valuable in the future, contingent on an event occurring. The values of these assets will exceed their discounted cash flow or relative values, with the difference coming from the option component.

One example would be art produced by an unknown artist that could be valuable if the artist is discovered. Another example would be the copyrights and trademarks that we valued using traditional valuation approaches in an earlier section. You might be willing to pay a premium for some licenses or trademarks because of the option component. For instance, a publisher bidding for a book has to consider the possibility that the book could be a runaway success: think of Bloomsbury, the publisher who brought out the first Harry Potter book. A final example would be investing in an off-Broadway show or low-budget movie. While the expected cash flows from the investment may be lower than the cost – making it a poor investment on a discounted cash flow basis – there is a chance, albeit small, that the show could be successful enough to make it to Broadway and perhaps even into a movie. In each of these cases, you could value these assets as options and we will consider a few applications in the next three chapters.

Conclusion

This chapter provides an insight into the breadth of use that valuation models can be put to, ranging from valuing a New York City Cab Medallion to a five-star restaurant. The basic models remain unchanged, but the inputs may be more difficult to get and have more noise associated with them. That should however not be viewed as a barrier to their use.

Problems

1. Cool Café is a well-regarded restaurant in the Denver area, owned and operated by Joanne Arapacio, a star chef specializing in Southwestern cuisine. You are interested in buying the restaurant and have been provided the income statement for the firm for the most recent year (in '000s).

Revenues	$ 5,000
- Operating Expenses	$ 3,500
EBIT	$ 1,500
- Interest Expenses	$ 300
- Taxes	$ 480
Net Income	$ 720

The owner did not pay herself a salary last year, but you believe that you will have to pay $200,000 a year for a new chef. The restaurant is in stable growth and is expected to grow 5% a year for the next decade. You estimate the unlevered beta of publicly traded restaurants to be 0.80. The average debt to capital ratio for these firms is 30% and you believe that Cool Café will have to operate at close to this average. The riskfree rate is 6%, the market risk premium is 4% and the cost of debt is 7%.

   a. Estimate the value of Cool Café

   b. Now assume that you will see a drop off in revenues of 15% if Joanne Arapacio leaves the restaurant. Assuming that 70% of the current operating expenses are variable and that the remaining 30% is fixed, estimate the value Ms. Arapacio to the restaurant.

2. Sick and tired of the investment banking grind, you decide to quit and buy a franchise for a fast-growing bagel chain in your town. You have been able to get information on what another franchise for the same chain is generating in revenues in the neighboring town.

   a. The franchise has revenues of $1 million and earnings before interest and taxes of $150,000 last year but the owner did not assess a salary for himself. He does the accounting and oversees the bagel shop and you believe that hiring someone else to do what he does will cost you $50,000 annually.

b. The revenues and operating income are expected to grow 3% a year in perpetuity.

c. You expect to pay 35% of your income in taxes and use all of your investment savings to buy the shop. The unlevered beta for franchise food chains is 0.80.

d. The owner has a bank loan outstanding of $300,000 and the book value of equity in the business is $700,000. However, the average market debt to capital ratio of publicly traded restaurants is 20% and the average pre-tax cost of debt for restaurants is 8%.

e. The riskless rate is 5% and the market risk premium is 4%.

Estimate the value of the bagel shop to you.

3. You work for a publishing company and are considering bidding for the copyright to a "Cook Light, Cook Right", a cookbook of low-fat recipes. While the book was out-of-print last year, you believe that you can generate $120,000 in after-tax cash flows next year, $100,000 the year after and $80,000 in the following three years. If your cost of capital is 12%, estimate the value of the copyright.

4. You have been asked to value the practice of Dr. Vong, a pediatrician in your town and are provided with the following facts.

- The practice generated $800,000 in revenues last year and these revenues are expected to grow 4% a year for the next 10 years.

- Employee expenses (including nurses and secretarial help) amounted to $200,000 last year and are expected to grow 4% a year for the next 10 years.

- The annual rent for the facilities last year was $100,000 and is expected to grow 4% a year for the next 10 years.

- Rentals of medical equipment cost $75,000 last year and this expense is expected to grow 5% for the next 10 years.

- The cost of medical insurance last year was $75,000 and is expected to grow 7% a year for the next 10 years.

- The tax rate on the income, including state and local taxes, is 40%.

- The cost of capital is 11%.

Assuming that there will be no drop-off in revenues if a new pediatrician takes over the practice, estimate the value of the practice.

5. You are trying to decide how much you should bid on a Ken Griffey Jr. rookie baseball card in good condition on Ebay. You notice that there have been 8 transactions involving Ken Griffey Jr. cards in the last month on Ebay.

Transaction #	Condition of card	Price paid for card
1	Excellent	$ 800
2	Poor	$ 200
3	Good	$ 550
4	Good	$ 500
5	Excellent	$ 850
6	Good	$ 400
7	Poor	$ 350
8	Excellent	$ 650

a. Estimate how much you would be willing to pay for the card.

b. Now assume that the seller of the card has been rated poorly by other buyers because he has misrepresented other items he has sold to them. What effect would this information have on how much you would be willing to bid for the card?

6. Assume that you are a wealthy investor with your entire portfolio invested in stocks. Your financial advisor has suggested that you buy some fine art to balance the portfolio and based this suggestion on the low correlation between returns on stocks and returns on fine art (=0.10).

a. If the standard deviation of stock returns is 20% and the standard deviation in fine art returns is 15%, estimate what the standard deviation of your portfolio would be if you invested 10% of your portfolio in fine art.

b. If the expected return on stocks is 12.5% and the expected return on fine art is only 5%, would you add fine art to your portfolio? Explain why or why not. (The riskfree rate is 6%.)