STRATEGIC APPROACHES TO THE LEGAL ENVIRONMENT OF BUSINESS

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A Game Theory Based Decision Making Guide for Managers

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A Game Theory Based Decision Making Guide for Managers

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TABLE OF CONTENTS

Introduction *xi*

1 Introduction to Microeconomics **1**
Cooperation 1
The Production Possibilities Frontier 2
Worked Example 2
Case Problems 4
Specialization 4
Isolated Decision Making 4
Costs 5
Benefits 5
Marginalism 6
Incentives 7
Introduction to Markets 7
Individual Demand 8
Case Problems 8
Market Demand, Supply, and Equilibrium 10
Market Efficiency and Failures 13
Market Failures 13
Transaction Costs 14
Externalities 15
Public Goods 16

Market Structures 17
Case Problems 19
Behavioral Economics 19
Handling Uncertainty 20
Expected Value 20
Case Problem 21
Expected Utility 21
Interrelated Decision Making 21
Game Theory Basics 22
Simultaneous Games 22
Case Problem 25
Sequential Games 25
Moral Philosophy 26

2 Civil Procedure 29
The Pleading Phase 30
Case Problems 32
Under the Microscope—What is the Effect of Detailed Notice Pleading? 33
The Discovery Phase 34
Case Problems 35
Under the Microscope—The Effects of Aggressive Summary Judgment 36
The Trial Stage 37
Case Problems 39
The Appeal Stage 40
Case Problems 41

3 Torts 43
Intentional Torts 43
Case Problems 45
Long Live Ronald Coase 46
Negligence 47
The Breach of a Duty of Care 47
Case Problems 49
Proximate and Actual Causation 50
Case Problems 51
Damages 53

Game on—Considering Negligence in Terms of the Prisoner's Dilemma 54
Strict Liability 56
Abnormally Dangerous Activities 56
Case Problems 56
Strict Products Liability 57
Case Problems 58
Misrepresentation 59
Case Problems 60
Defamation 61
Case Problems 64
Interference with Economic Relations 65
Case Problems 66
First Amendment Limitations on Tort Recovery 67

4 Common Law Contracts 69
Introduction 69
Game on!—Contract Performance as a Sequential Turn Game 70
The Agreement 71
Case Problems 72
Game on!—Contract Formation as a Coordination Game 73
Real Assent 77
Under the Microscope—Determining Duress by Threat 78
Case Problem 78
Case Problem 78
Case Problems 79
Under the Microscope—Operating Under Imperfect Information 81
Under the Microscope—How does Probability Affect Price? 83
Consideration 86
Under the Microscope 87
Getting Real—How do you Settle a Liquidated Debt for Less than its Full Value? 88
Some Contracts are Enforceable without Consideration 89
Validity 90
The Statute of Frauds 91
Case Problems 92
Under the Microscope 93
Case Problems 93

Unconscionability 95
Case Problems 95
Under the Microscope—the Non-compete Clause 96
Clear Terms 97
Case Problem 98
Case Problems 99
Performance 100
Excuses for Non-performance 100
Breach 102
Damages 103

5 The Sale of Goods 105
Introduction 105
Case Problems 106
Game on—The Sale of Goods Subgames 107
Warranties in Sale of Goods Contracts 108
Case Problems 109
Under the Microscope—Which Privity Theory is Correct? 111
Risk of Loss and Title 111
Case Problems 113
Under the Microscope—The Coase Theorem 115
Performance and Breach 115
Case Problems 117
Game on—The Holdup Problem 117
Remedies for Breach 118
Case Problems 119

6 Secured Transactions 121
Introduction 121
Under the Microscope 122
Collateral Classification 122
Getting Real—How to Sort Through Property Classification 124
Attachment 124
Case Problems 125
Perfection 127
Case Problems 127
The Purchase Money Security Interest 128
Case Problems 129

Priority 130
Case Problems 131
Under the Macroscope—The Quantity Theory of Money 132
Default and Enforcement 133
Case Problems 135

7 Agency 137
Agency Formation and Termination 137
Long Live Ronald Coase: The Nature of the Firm 139
Case Problems 140
Liability in Torts and Contracts 142
Case Problems 143
Duties between Principal and Agent 144
Under the Microscope: The Principal-agent Problem 145
Case Problems 146
Employment Law 147
Getting Real 149
Case Problems 151

8 Business Associations 153
Sole Proprietor 153
Tax Concerns for the Sole Proprietor 154
General Partnership 155
Case Problems 159
Tax Concerns for the General Partnership 160
Limited Partnership 161
Case Problems 165
Tax Concerns for the Limited Partnership 166
Limited Liability Company 167
Case Problems 171
Tax Concerns 172
The Corporation 173
Cases Problems 183
Tax Concerns for the Corporation 184

Appendix A: Answers to Case Problems 189
Chapter 1: Introduction to Microeconomics 189
Chapter 2: Civil Procedure 190

Chapter 3: Torts 192
Chapter 4: Common Law Contracts 198
Chapter 5: Sale of Goods 205
Chapter 6: Secured Transactions 207
Chapter 7: Agency 210
Chapter 8: Business Associations 213

INTRODUCTION

Business Law is typically a two-semester sequence at business schools throughout the United States. The first semester involves what is known as the Legal Environment of Business. This focuses on the relationships of marketplace actors among one another. The second semester involves what is known as the Regulatory Environment of Business. Here, attention turns to the relationship between the firm and the various levels of government that regulate the conduct of the firm. This textbook is directed toward the Legal Environment of Business.

For many managers, the legal environment is, at first, a curiosity. Managers are curious about how the legal environment affects them, but they quickly realize that fully understanding the law is time consuming and difficult. Instead of implementing legal strategy into agreements, negotiations focus on total cost (T) as some function of price per unit (p), quantity (q), and negotiating skill (n). That approach could be defined like this:

$$T = f(p,n,q) = \int n * q \frac{dp}{dq}$$

This approach is badly misplaced however. A manager who is focused on price and quantity will quickly find that taking large legal risks without accounting for changes in price in the face of a constant quantity can be

very dangerous. This manager discovers that there is a worst case scenario (X) and some probability that it will happen, which has nothing to do with price or quantity:

$$E[X] = \int_{-\infty}^{\infty} x * f(x)dx$$

where

$$f(x) = \frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}}$$

the probability density of the standard normal distribution. This book challenges that f(x), the function of something going wrong, is mere randomness. Rather, a legal strategy operates to 1) locate risks, 2) assign costs to risks, and 3) determine whether risks are worth taking.

The legal strategy of a firm or a future firm can be modeled, at least at generally, with Michael Porter's Five Force Model.[1] Porter analyzes industries as a whole and not firms, but the framework is still helpful. He considers the competitive nature of the industry, the availability of substitute products, the ability for new entrants to come into the industry, the power of suppliers, and the power of customers.

Porter's model is static and simply measures the competitive landscape of an industry at a specific point in time. Legal strategy leverages legal tools and techniques to become more competitive over time by managing 1) risks within the firm, including relationships between owners and employees; 2) risks between the firm and its suppliers; and 3) risks between the firm and its customers. This monograph models these risks through microeconomic theory.

Chapter 1 lays out a microeconomic framework that is used throughout the text. There are buyers and sellers in the marketplace. Most firms are buyers and sellers in different markets at the same time. Firms have limited resources and need to select the marketplaces that they enter carefully. The

[1]Michael H. Porter, How Competitive Forces Shape Strategy, Harv. Bus. Rev. (March–April 1979) available at: https://hbr.org/1979/03/how-competitive-forces-shape-strategy.

chapter concludes with deviations from neoclassical models provided by inefficient information.

When acting in the presence of inefficient information, actors behave differently in the marketplace and engage in games. These games involve players who, much like actors under neoclassical theory, want to ensure the best outcomes for themselves.

These games have a common goal—profit and a common enemy—transaction cost. Chapter 1 introduces the protagonist of the story—Ronald Coase—whose legal strategies set forth much of the remainder of the text by finding ways to reduce transaction cost, determine risk, and assign the risk between parties.

Risk has two components: likelihood and magnitude. Chapter 2 deals with magnitude of risk where the defendant prevails. In the United States, in the absence of a statute to the contrary, each side in a lawsuit pays its own expenses. It is rare that a manager would be satisfied with assurance of winning a legal dispute. Rather, the manager would want to know the cost it would incur to win the legal dispute.

In general, there are three tiers of cost. The lowest tier of cost is where the claim against the manager has no legal basis. These claims are cheaply dismissed. The second tier of cost is where the claim against the manager has an inadequate factual basis. These claims require much more work to defeat. Where a claim has a legal and has a factual basis, the manager faces the greatest amount of cost and should prepare for trial. Chapter 2 puts those risks into context using the Federal Rules of Civil Procedure.

Determining whether a claim has a legal or a factual basis is the subject of Chapters 3–8. Chapter 3 deals with claims that result from personal injuries or tort law. The law selected for this chapter comes from the Second Restatement of Torts except where it has been superseded by the Third Restatement of Torts. While not the law of any particular jurisdiction, the Restatements provide approaches to determining liability that are nonetheless generally applicable.

In this chapter, Ronald Coase sets a chain of events in motion that gets managers to rethink whether being able to recover for an injury is good for society in the first place. A proof using game theory explains that different kinds of injuries should have different kinds of remedies and some should have no remedy at all.

Chapter 3 can be viewed as covering liability in the absence of an agreement. Chapter 4 deals with liability in the presence of an agreement.

In particular, service agreements are treated in detail based on the law found in the Second Restatement of Contracts. Returning to Michael Porter's model, virtually all American businesses either buy or sell services. This chapter discusses identifying and mitigating risks when one party fails to perform in a service contract. Contract provisions are discussed to encourage parties to perform in order to limit risk involved in transactions with venders and customers.

Chapter 5 continues the discussion of Chapter 4, but deals with contracts for the sale of goods instead of contracts for services. The law here resides in Article 2 of the Uniform Commercial Code. The major difficulty in goods contracts is not so much that one party simply doesn't perform, but rather that the goods are of a different quality than negotiated. With regard to Porter's model, it is much easier to use restrictive provisions in sales contracts than services contracts. When resources can be pooled and controlled, it is difficult for other market participants to compete against the manager's firm.

Chapter 6 deals with the situation of protecting against default. This takes a more holistic look at risk as described in Article 9 of the Uniform Commercial Code. It is rare that a creditor would allow a debtor to undertake a project where the potential downside is losing everything. Collateral is a way to solve that problem and spread risk. Being able to turn inventory quickly is a large competitive advantage within an industry. Creditors want a system where their risk is very low before they are willing to help a debtor's business. Those transactions are considered in detail in Chapter 6.

Chapter 7 turns inward to the operation of the firm as a whole and asks a very common question in business, "Should I hire an employee or an independent contractor?" Fortunately, our protagonist, Ronald Coase, has a Nobel prize winning answer to that question. The rights and duties between principals and agents are known as Agency law, and the Third Restatement of Agency provides a legal basis for this chapter.

Chapter 8 culminates the book by showing how the principals of Agency law evolve when principals join together to form firms. Partnerships are discussed using the Uniform Partnership Act. Limited Partnerships are discussed using the Uniform Limited Partnership Act. Limited Liability Companies are discussed using the Uniform Limited Liability Company Act. Corporations are discussed using the Revised Model Business Corporation Act. The rights and duties between owners of all of these businesses are considered in detail.

While the rights and duties between business owners vary considerably, the most common reason that one business entity or another is selected has to do with tax treatment. In particular, owners need to make decisions as to whether election under Subchapter S is wise. Chapter 8 integrates legal environment principals of corporate rights and duties with the regulatory environment of taxation in order to provide a comprehensive landscape for business entity selection. Hopefully by the end of this book, the reader will have a better framework for recognizing and allocating risk in routine business transactions.

Throughout the book the following features provide a way to navigate the material presented

"Game on!" is a game theory application of common law principles.

"Getting real" provides a practical application of the adjacent material.

"Under the microscope" explains the microeconomic (or macroeconomic) underpinnings of a legal rule.

"Case Problems" are scenarios that are based on real cases that are answered in an appendix to the text.

CHAPTER ONE

INTRODUCTION TO MICROECONOMICS

The introduction explained that the task of the manager in the legal environment is to identify and qualify risk. This chapter focuses simply on a model for qualifying all kinds of risks. That model is based on economic theory.

Economics is choice in the presence of scarcity. A resource is scarce when there is less of it than can provide for all possible needs. Managers often deal with this problem because scarcity necessarily requires a decision of how to use resources. That decision is complicated because managers have desires to both help themselves and to help others, which would seem to create a paradox as to how scarce resources should be utilized. Adam Smith questioned that paradox by arguing that by following their own self-interests, economic agents frequently serve society as well.

Cooperation

Most managers realize that when they are able to cooperate with peers, subordinates and supervisors, the organization is most productive. This is true for the economy on the whole as well.

Cooperation is greatly responsible for the development of more affordable and desirable products and services; in a society where each individual can rely on others to provide the majority of products and services, one

can focus on perfecting their own wares. By doing so, they are able to sell more, as the desirability and affordability of their merchandise is greater than that of competitors', in the process benefitting both themselves in the form of higher prosperity and society as a whole with cheaper, better, or more abundant goods.

The Production Possibilities Frontier

The manager in the example below has two employees that need direction. Cara is working on one plot of land and Bob is working on another plot of land. The manager can direct Cara and Bob to produce apples, peaches or some combination of these. Cara and Bob have a limited ability to produce because their respective plots of land have limited size.

The manager can use the Production Possibilities Frontier (PPF) to analyze this situation. The PPF is a simple model describing the trade-offs that an entity (a person, a company, a nation) has to make when making production decisions. In its simplest form, the PPF is a two-dimensional figure with two axes each representing a product (like apples and peaches). Increasing the quantity of one resource necessarily limits the ability to produce the other resource (because land is limited). The slope of the production possibility frontier is called the marginal rate of transformation (MRT). In case of a linear PPF, the slope ("m") is constant. The "rise over run" equation can be used to determine the slope of a linear curve.

Worked Example

Consider a first producer, Cara, whose PPF is defined by Equation 1 and shown in Figure 1 and a second producer, Bob, whose PPF is defined by Equation 2 and shown in Figure 2. Both producers can make apples (A) and peaches (P):

$$PPF(Cara): 20 = 2P + A \qquad \text{(Eqn. 1)}$$

$$PPF(Bob): 20 = P + 2A \qquad \text{(Eqn. 2)}$$

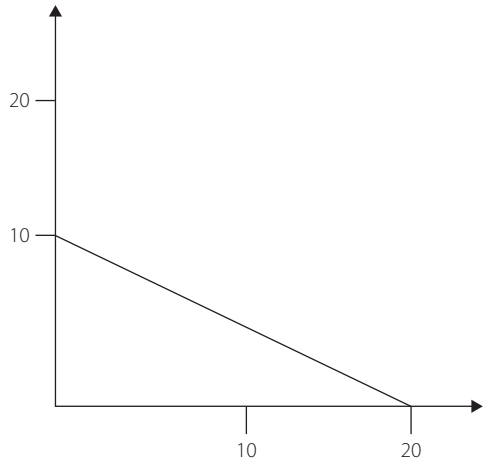

Figure 1 The PPF for Cara.

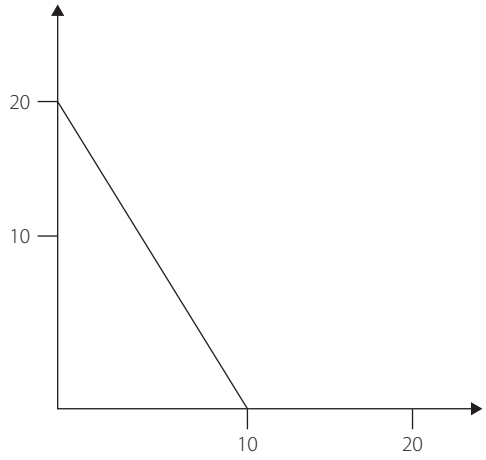

Figure 2 The PPF for Bob.

What is the slope (or the marginal rate of transformation) of Cara's PPF? The equation for slope is:

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{(0-10)}{(20-0)} = \frac{-10}{20} = -\frac{1}{2}$$

This means that for every two additional apples Cara produces, she will produce one fewer peach. Cara can only produce at or below her production possibility frontier. She could not produce ten apples and ten

peaches because that point is not on her product possibility frontier. See if you can take this example and use it to answer some questions about Bob.

Case Problems

How many apples can Bob produce?

How many peaches can Bob produce?

For each reduction in peach production, how many extra apples can Bob produce?

What is the slope of Bob's PPF?

Can Bob produce 10 peaches and 10 apples?

Specialization

The key is specialization. Alice is better at producing apples—for every apple she produces, she only has to give up half a peach—and Bob is better at producing peaches—for every peach he produces, he only has to give up half an apple. If Alice produces *only* apples and Bob produces *only* peaches, Alice will have 20 apples, and Bob will have 20 peaches. Exchanging 10 apples to 10 peaches nets each of them 10 apples and 10 peaches—something that was impossible for them on their own.

In some situations, managers have no choice about how to allocate resources. For instance, if Bob were to go on paternity leave, the manager would have to let him go and then return a few weeks later under a statute passed by Congress in the United States. In general, where there is a law that limits (or requires) the use of resources, that statute is part of the regulatory environment of business.

The law provides constraints to economic activities. It defines illegal activities, mandatory activities, and how certain activities are regulated at the state and federal levels. Of equal importance to the law is the confidence that mediation is available; economic partners have less need to trust each other than they would in the absence of mediation.

Isolated Decision Making

The general decision model in economics is called cost-benefit analysis. At its simplest, it works by comparing the benefit and cost of every action and

by taking the action where net benefit (profit) is at its greatest or by taking all of the actions where this gap is positive. The first approach is used where only one action can be taken. The second approach is applicable when the manager can take multiple actions. The manager can compare the cost and benefit of each repair and choose the one with the largest net profit between cost and benefits.

Costs

In economics, the cost of something is considered in view of the next best option and is called opportunity cost. As opposed to accountants or finance professionals, economists consider every outcome or loss a cost incurs due to choosing an action.

Both the costs and the benefits need to be evaluated to determine their magnitude. While monetary costs and monetary benefits come with a built-in measurement system, other kinds of costs and benefits have to be measured individually. In economics, the subjective value of a given good or service is the reservation price.[1]

A sunk cost is contrasted with an opportunity cost. A sunk cost is a resource that has either been allocated or lost regardless of a decision. In choosing one option, more than one thing might be forfeited. For instance, if three decisions are ranked first, second, and third, only one can be chosen. The opportunity cost of choosing first is losing second. Third would not have been chosen regardless of choosing first or second and is therefore the sunk cost. Forgoing other opportunities can only compare with the "second best" option as an opportunity cost, since all other options must be given up for the second best possibility anyway.

Benefits

Similar to costs, benefits are also viewed rather broadly in economics. Aside from the monetary benefits, every other conceivable benefit like happiness, friendship, health, or the potentially positive feeling of learning something new must be considered. Holistically, this is utility.[2]

---

[1]Reservation price—the maximum amount a person is willing to pay for a good or service.
[2]A collection of all the benefits obtained by a decision.

Utility can quantify the inherent non-linearity of the perceived value gained from increasing the amount of any given good a consumer consumes. The first unit of consumption creates a large utility improvement. The additional utility of a second unit of consumption is less. This tendency of lowering additional gain from increased consumption is called diminishing marginal utility.[3]

It is important to note that nearly all goods, including money itself, have diminishing marginal utility. In case of production (as it is generally assumed to be done by some kind of corporate entity), there is more attention paid to monetary gains than to utility.

Marginalism

Whether money or utility is used, marginalism attempts to explain the change in value of products by reference to their secondary unit. In marketing, firms use the marginal approach to determine sensitivity of quantity sold with respect to price. The technique can be used in many fields and includes the following steps. First, make a small change. Then, observe the result. If the change improves total profit, make a similar change in the same direction. If the change reduces total profit, make a change in the opposite direction. This process repeats until total profit (or total utility) is maximized.

Marginal cost is the change in total cost when the manager above changes the production amount and similarly, marginal benefit is the change in total benefit when the manager changes the amount produced. In case of consumption marginal cost and benefit are the result in the change in the total cost and benefit due to a change in the consumption of the individual. The technique works similarly in a corporate setting, replacing marginal utility with marginal profit, when the question is optimal output amount.

This kind of marginal analysis works best when there is a single point where total profit is maximized. However, there can be several points where there is a local maximum which is different than the global maximum. Consider the chart shown in Figure 3 below:

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[3]The term *marginal utility* refers to the incremental utility gain which diminishes as consumption is increased.

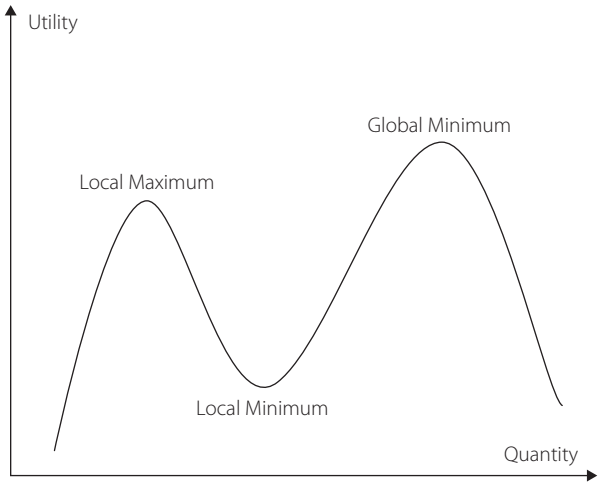

Figure 3 Minima and Maxima.

Using a marginal analysis, the manager may believe that the local maximum is the global maximum if the changes made are sufficiently small. However, a larger sample of wider points might reveal that a much larger quantity creates a global maximum.

Incentives

In economics, the acts of establishing rewards or punishments for certain behaviors is called incentivizing and disincentivizing, and the reward itself is called an incentive; the punishment, a disincentive. Students who learn useful skills incentivize a firm to hire them—while the firm, that establishes the practice of hiring trained professionals, incentivizes students as they consider their directions of study. The remainder of this book focuses on how firms can create incentives to get people to purchase services (Chapter 4), goods (Chapter 5), pay bills (Chapter 6), work toward the employer's best interests (Chapter 7), and form new firms (Chapter 8).

Introduction to Markets

In the market model, costs, benefits, and subjective valuation all play a part. In economics, a market is a place where buyers and sellers of a prod-

uct meet. This might be a physical location, an on-line location, or just an abstract concept.

The market model is centered around the concepts of supply and demand. Supply describes the behavior of the sellers, demand the behavior of buyers. Both of these terms are defined for individuals as well as for entire markets. Individual demand describes a single buyer, while market demand is the aggregate of all buyers of the particular good or service.

Individual Demand

Individual demand shows how much of a given product a buyer is willing and able to purchase, which is dependent on the price of the product at the time of consideration. Higher prices make the consumer both (1) able to buy less of the product and (2) have to give up more consumption of other products for each unit of the given good consumed (the opportunity cost increases).[4] This tendency of consumers to buy more of cheaper things is called the law of demand.[5]

Similarly, individual supply shows how much of a product a seller is willing and able to sell of a given product. The tendency for suppliers to increase the availability of their product is called law of supply.[6]

Case Problems

Alice's individual demand for hamburgers is shown below.

How many hamburgers will Alice buy if the price is $7?

There is a sale and the price of hamburgers goes down to $5. How many will Alice buy now?

Bob sells hamburgers as shown in the figure below:

---

[4]The first is called the income effect, and the second is the substitution effect of the price change. Both happen simultaneously when the price of a product changes, and in simple cases it is sufficient to just concentrate on the overall effect.

[5]Many economic laws are not like physical laws; they frequently represent what *tends to* happen, not what always happens. In case of certain goods where price signifies exclusivity, and exclusivity is important to consumers, a drop in price might discourage some consumers from buying the product. This is because in case of these goods, collectively called Veblen-goods, the consumer actually purchases two different benefits: not just the core service the product offers, but also a strong indicator of status. The lower price decreases the subjective benefit of the latter, potentially making the product less desirable, thus violating the law of demand.

[6]There are different reasons for this; the most obvious is that at higher revenue levels, the producer can afford to hire additional (potentially less efficient) resources to increase output.

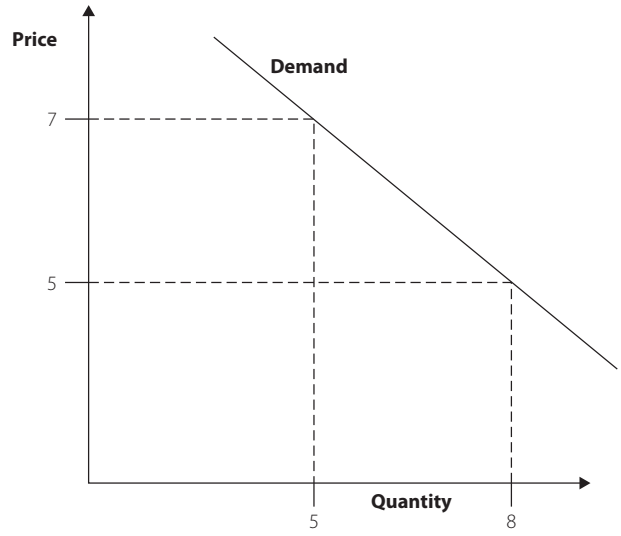

Figure 4 Alice's individual weekly supply of hamburgers.

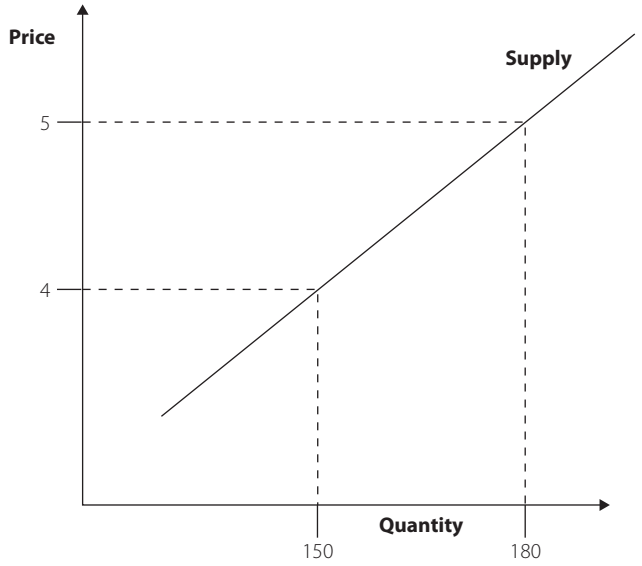

Figure 5 Bob's individual weekly supply of hamburgers.

How many hamburgers will Bob make if the price is $4 each?

There is a hamburger boom, and the price goes up to $5 each. How many hamburgers will Bob make now?