

1 Why study information economics?

“There is no doubt about it: we are living in the Information Age,” Hal Varian, an eminent economist, writes.¹ According to a study by Hal Varian and Peter Lyman,² the amount of new information stored on print, film, magnetic, and optical storage media in 2002 was about $5 * 10^{18}$ bytes, or 5 exabytes (at 1 byte = 8 bit). Five exabytes are equivalent to all words ever spoken by human beings, or to the information contained in 37,000 new libraries the size of the Library of Congress book collections. And the volume of additional information continues to grow by one-third every year.

Information is produced, stored, copied and traded. Information is an economic good and, as we will argue, a strange one. Which other good can be kept and passed on at the same time? Which other good often cannot be destroyed? Which other good cannot be discovered in a person even if the person is scanned with the most advanced technology? Consequently, the first reason for studying the economics of information is:

- **Information is an interesting economic good.**

For many people outside of the economics profession, economics is about money, or about getting rich. For most economists (not all of whom have become rich), economics is about understanding “what, how, and for whom” the economy produces—as the 1970 Nobel laureate in economics, Paul Samuelson (born 1915), put it. That is why economists have intensely studied the market, the very mechanism that brings about the what, how, and for whom. The task of the market is far from trivial: “the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form, but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess” as Friedrich A. Von Hayek (1945), another Nobel laureate, remarked 60 years ago. The true “economic problem”, therefore, is how to aggregate dispersed information. Our second reason for studying the economics of information then is:

- **Economics is about information.**

2 Why study information economics?

As we said before, information is a good, and the market brings all the tiny individual parts of this good together to express information in the price system. It is the scent of profit with which the market seduces us to collect and convey information. An illustration is the Waterloo legend concerning the origins of Nathan Rothschild's fortune (see Box 1.1).

Box 1.1 The Nathan Rothschild Waterloo legend

A famous (and fictitious) legend has it that Baron Nathan de Rothschild made a fortune on the London stock exchange, as he was the first to learn about Napoléon Bonaparte's defeat in the final battle of Waterloo (1815) against the united British and Prussian armies, under Wellington and Blücher respectively.³ Rothschild had established a courier system by which he learnt the outcome of the battle a full day earlier than the British war office. Upon hearing of Napoléon's defeat, Rothschild allegedly went to the London exchange, put on a sombre face and started to sell British stock and government debt. Other traders, assuming that Rothschild had bad news and trying to free-ride on it, also began to sell. Prices tumbled, and Rothschild's straw men could buy cheaply, leaving the cunning baron with a fortune.

Assume for a moment that the story is true. Imagine you are a trader and you see Rothschild sell. You know that Rothschild knows how the battle ended. Should you follow his lead and sell too? Is that not what Rothschild had expected to happen? After all, he knew that other traders knew about his information advantage. Thinking just one step further, a cunning trader might have bought. And if all traders had, Rothschild would have lost, rather than have made his fortune.

As the example shows, information has highly strategic aspects. It is not only important to know about facts, but also about what others know, and about what they know about what we know. Information strategy is a tricky business, as Lady Kunigund (see Box 1.2) shows.

Box 1.2 The Glove (Friedrich Schiller)

The ballad *Der Handschuh* (The Glove; quoted from an anonymous translation) was written in 1797 by the German dramatist Friedrich Schiller. In this ballad the king and his court are seated around an arena filled with lions, tigers and leopards. Lady Kunigund tosses her glove among the beasts and turns to Knight Delorges:

“Sir Knight, if the love that thou feel'st in thy breast
Is as warm as thou'rt wont at each moment to swear,
Pick up, I pray thee, the glove that lies there!”

Delorges casually descends among the animals, picks up the glove, and returns amid shouts of praise and wonder.

The praise of his courage each mouth employs;
Meanwhile, with a tender look of love,
The promise to him of coming joys,
Fair Kunigund welcomes him back to his place.
But he threw the glove point-blank in her face:
“Lady, no thanks from thee I’ll receive!”
And that selfsame hour he took his leave.

Lady Kunigund discovered another crucial aspect of information: You cannot *obtain* information from others without *giving* some information. By asking for proof of love, Lady Kunigund proved the absence of true love on her part. The act of observing alters the reality being observed; this can be seen as the equivalent of Heisenberg’s uncertainty principle in information economics.

Baron Rothschild and Lady Kunigund are just two examples of the very special and important role information plays in economic and strategic situations. They also highlight that information is an unruly kind of economic good and that its aggregation by individuals or by the market may not always run so smoothly. This brings us to the third reason for studying information economics:

- **Information is of strategic importance.**

Information is at the root of many real world phenomena and problems. In this book we will encounter a number of examples: Why doctors do not always tell the truth; why examiners hate mediocre papers; why entrepreneurs are constructive destroyers; why health insurance may not work; why genetic testing may destroy welfare; why workers subsidize professors; why prices are sticky; why winning an auction may be bad news; why companies should not have an incentive to lie; why banks are supervised and why they sometimes fall victims to runs; and why we sometimes prefer to turn a blind eye to the information at our disposal.

Over the last two decades, economists have devoted a great deal of time and effort to improving their understanding of the role of information, thus building on seminal contributions to the field from the early 1970s (see Chapter 2). Information economics is no longer in its infancy; it has now reached its adolescent phase. In conjunction with the above argument the fourth reason for studying information economics is therefore:

- **Information economics is a young field with practical relevance in many contexts.**

4 *Why study information economics?*

Information economics may even be somewhat *en vogue*. This should not come as a surprise. Already many years ago, the fashion industry, known for its infallible sense for cultural undercurrents, gave us two fragrances called *Knowing* (1988), and *Guess* (1990). Linking scent to information, the fashion leaders also expressed a deep understanding of the importance of information in human relations. This importance could be a covert fifth reason for studying information economics.



In a music shop, a young man is leisurely browsing through the racks of CDs. A woman, evidently in a hurry, brusquely pushes past him. “Sorry!” he says, “Maybe I could help you—if you don’t mind telling me what you’re looking for.” “Don’t You Know Who I Think I Was?”, she replies. “Pardon?” “Don’t You Know Who I Think I Was?” Looking rather perplexed, he answers, “No, I have to say I don’t!” “Sorry, I should explain. You asked me what I was looking for. So I told you the title of the album. Some songs from the 80s.”

Unfortunately they cannot find the album. “Fancy a coffee?” the woman asks. “Great idea”, the man replies, “I’m Bob, by the way.” “Pleased to meet you, Bob. I’m Alice.”