Interested in Econ
Macroeconomics and Microeconomics at CTY
by Sabrina Choi

When I was 12, I won second place in a school-wide stock market simulation competition. While I was a diligent math student and had occasionally competed in math competitions, I'd never been particularly interested in economics. The Stock Market Game changed that. It got me interested in how math was related to the world economy. In the summer before eighth grade, I decided to explore my new interest in economics through CTY’s Macroeconomics course at the Hong Kong University of Science and Technology.

On the first day of class, our teacher posed a seemingly simple question: “What is economics?” The entire class—around 16 of us—tackled the question with enthusiasm. “There are producers and consumers… it’s related to the market… there is a supply and a demand…” Although we came up with concepts related to economics, no one was able to define exactly what it was. Finally our teacher ended our misery by saying, “Economics is the study of how people make choices to attain their goals.”

I remember thinking, Isn't that a little broad? But over the next few weeks, our teacher helped us see her point. We began by examining the three underlying principles that, according to economic theory, people follow when faced with making a decision: People are rational; people respond to incentives; and optimal decisions are made at the margins, which are the limits beyond which something desirable becomes too expensive. We soon learned that, like grammar rules in English, these three basic principles underlie everything in economics.

Predicting Human Thought and Actions
While macroeconomics focuses on the behavior of an economy, building a macroeconomic model requires an in-depth study of individual behavior. To illustrate, our teacher introduced the “supply-and-demand curve” graph, the basic model of how a market behaves. We learned how the three basic principles of economics cause the graph to shift. The first basic principle, for example, that people are rational, refers to the fact that they base their decisions on their perception of the benefits and costs of their choices. Therefore, their positive or negative perception of a particular good can affect the demand for that good.

As the week progressed, we tackled a more complicated model: the international market. We learned how the model of a closed market—one that does not interact with other markets and is itself sustainable—changes when it begins to interact with other market economies. We saw how world prices and tariffs—excise taxes that governments place on imported goods in order to increase the value of their own domestic products—affect supply and demand.
By setting the derivative of an equation, we also learned how to derive revenue from a domestic market that imports most of its goods versus one that exports most goods.

Despite its seeming complexity, the model is based on the simple supply-and-demand curve graph. The interactions between international markets are an extension of the three basic economic principles that guide individuals’ interactions with one another as they each strive to gain maximum benefit.

We built on our knowledge by examining the workings of a more complex supply-and-demand curve: a financial system such as a bank. This graph represents the interactions between borrowers and lenders, whose actions, again, are guided by the three basic principles describing how individuals use logical reasoning to make decisions that maximize the benefit to them. We also examined the workings of an equity stock market as a form of a financial system. I found the models themselves fascinating. I was amazed that we could use mathematics to explain and predict human action.

From the Collective to the Individual
I returned to Shanghai wanting to learn more about economics, but, as the available self-study programs are Chinese, I found few opportunities for an English-speaking secondary school student to explore this field. Thus, I chose to attend a second economics course at CTY the following summer: Introduction to Microeconomics.

I arrived at CTY confident that my experience in the macroeconomics course would give me an advantage. Here I was surprised. While both macroeconomics and microeconomics deal with the concepts of supply and demand, and both focus on the impact of human decisions, macroeconomics centers on the behavior of an economy as a whole, while microeconomics focuses on the individual choices we make.

During the next few weeks, we learned about such concepts as production function, an equation that relates the cost of producing a good to the benefits gained from having produced it. Using derivative equations, we were able to apply the production function to determine labor costs, production costs, and profits. We also discussed the law of diminishing returns, which relates to the point at which profit gained becomes less than the amount of money or energy invested in producing a good. In the end, we were able to use equations to find the point of maximum profit—or, in layman’s terms, how to make the most money with the least amount of effort.

Perfect Scenarios
Moving on, we compared different types of economic competition, or ways in which individuals or firms jockey for a greater share of the market in which to sell their goods or services. These include the more commonly known monopolies and oligopolies, as well as perfect competition, which occurs when the market—the people—control the cost of a good or service. We were able to see how the supply-and-demand graph changed as we varied factors such as cost and profit in each situation. This relationship is vital to the study of economics, as it helps firms determine how to price their products at a level consumers are willing to pay while yielding maximum profit for themselves.

Using mathematics, we learned to predict how individual consumers will make their purchasing decisions. We considered such factors as perfect complement, which refers to a good that must be consumed with another good (such as printers and cartridges), and perfect substitute, in which one good can easily be substituted for another if need be (as is the case with butter and margarine), as well as prices of the goods and an individual’s budget, to ultimately predict consumer choice. Understanding these concepts allows a manufacturer to understand the decision-making process of consumers—and what they need to do to ensure that consumers will choose their product over others.

Studying economics at CTY helped me see not only how math relates to economics, but also how it relates to human behavior. The courses provided me with a good foundation in economics and an interest in building on it. I joined the investment club at school, as well as the debate team, which allowed me to attend economics- and finance-related events at Model United Nations conferences in Asia. Going forward, I’ll continue to pursue opportunities to explore economics.

Sabrina Choi is in 10th grade at Shanghai American School. In addition to being active on her school’s debate team, Sabrina competes in the World Scholars Cup and is a Service Club officer and founder of Friends of Xizhou, a research club seeking to use genetic science to trace the genealogy of a Bai village in Yunnan.