

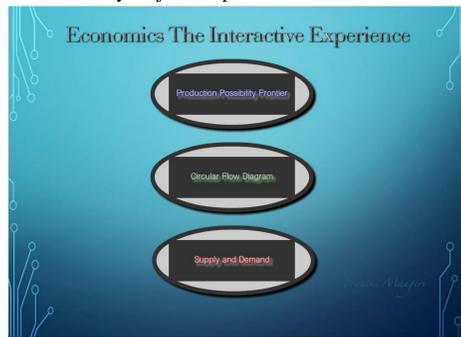
Economics The Interactive Experience

Francis Maugeri 2018

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Introduction

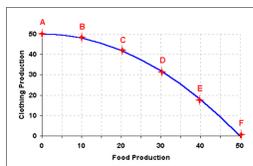
As an interdisciplinary computing and economics student, I wanted to make a project that incorporated both of these fields in a new and interesting way beyond financial analyzers or stock predictors. My goal was to create something using my computer science knowledge that would inspire and enable students with little to no experience in economics to some of the introductory major components of the field.



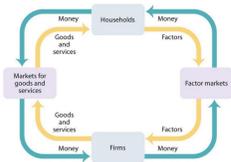
Objective

My objective would break down into the exhibiting of three introductory models of economics using Adobe Animate interactives.

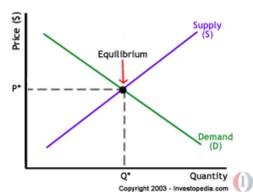
First, the production possibilities frontier, which displays the different bundles of two goods possible given a set budget and a price for each of the goods. This model is essential for learning the concepts of opportunity cost and scarce resources.



Second, the circular flow diagram, which shows a directed graph that exhibits the flow of goods, services, and cash from consumers to firms. It serves to explain the mutual integration of consumers and producers in the market for goods and factors.

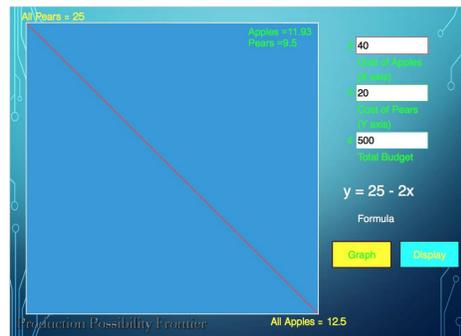


Third, supply and demand, uses a 2D graph of quantity and price to explain consumer and producer incentives in the market for a particular good. The consumers in the demand curve and producers in the supply curve. As the incentives change for both of these groups subsequent changes occur to the equilibrium price and quantity at which the good will be sold.

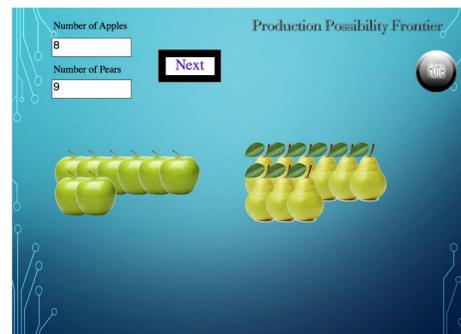


Methods

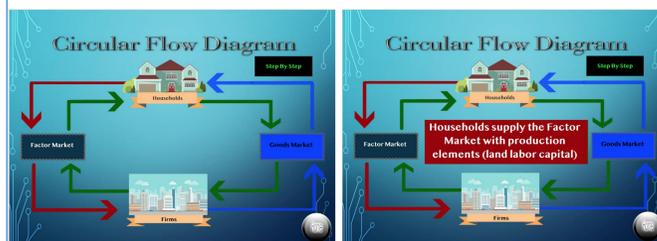
The production possibilities frontier interactive prompts the user to engage with a market for apples and pears. The user inputs a price for each of the two goods as well as a total budget (in cents). The program then draws the line representing combinations of the two goods as well as displaying the formula and purchasing extremes on each axis. The user can then trace along the line viewing possible bundles on, under and over the line.



Upon pressing the display button the user is brought to the subsequent section where clicking the next button will display different whole number bundles possible given the prices and budget chosen in the previous section. These bundles are displayed as physical representations of the two goods, apples and pears.



The next module on the circular flow diagram, presents the user with directed graph showing the flow of goods, services, and cash between households (consumers) and firms (producers). Upon clicking on any of the individual links on the directed graph the user is shown the reasoning behind that link. In addition, upon pressing the step-by-step function at the top the user is able to view the building process of the diagram incrementally.

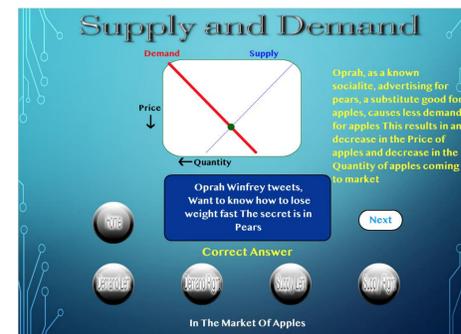


Methods

The final module on supply and demand focuses on the impact of shocks to the equilibrium price and quantity of a good. A shock is an event that changes the incentives of producers or consumers in a way that results in the shifting of the demand or supply curve. The user is presented with the 2D graph of supply and demand as well as a statement regarding the chosen market, apples.



The user can press one of four button representing the supply curve shifting right or left, or the demand curve shifting right or left. Which represent the subsequent changes to price and quantity.



For this example the correct answer was achieved by click the demand left button. This signifies a decrease in the quantity and price of the good. The user is shown a visualization of this shift as well as an explanation to the rationale behind the shift.

Implementation

For implementation of Economics the Interactive Experience, I had the pleasure of working with students from the local High School and Middle School in Irvington, New York. The program had originally been planned to be implemented at Trinity College, however, the professor I was working with here at the college left at the end of last semester. This caused me to shift the focus of my project to less intensive material with a more baseline approach for a less experienced and knowledgeable user base.



Design

Economics the Interactive Experience was created using the Adobe suite in particular Adobe Animate CC and the programming language ActionScript 3.0. Adobe Animate uses a timeline based platform written in C++. ActionScript 3.0 is one of the two languages, the other being JavaScript, supported by the program to add both object oriented and scripting features to the programs. Tweenlite as a part of GreenSock animation was also used to add additional animation features, however, the software was originally intended for HTML5 so it had to be altered to be implemented with ActionScript 3.0 in this project.



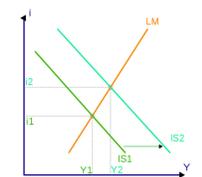
References

Barbara Kaskosz, Doug Ensley, "Flash Tools for Developers (AS3): Graphing curves in the plane - Using the Templates," *Convergence* (July 2007)

GreenSock "No Charge" license for the use under a no fee assumption for users and subsequent developers, as well as acknowledgment and reference provided.

Future Work

Future work for Economics the Interactive Experience would consist of the addition of future models aimed for a more knowledgeable user base that covers more in depth models of economics. These can include both the IS and LM curves of macroeconomics as well as the different variations of utility functions of microeconomics. These would be more targeted at the college economics student looking for a study tool to supplement their work in class.



Conclusions

With working on this project I learned a key lessons for software design involving research. When originally working on my project I relied on my past knowledge of the old ActionScript language (2.0) and the predecessor platform to Adobe Animate, Adobe Flash. While both of these worked to my favor, not doing the enough proper research on the new features and difference for both of these, I ended up spending an increased amount of time debugged features that had worked in the previous platforms but had been altered. On the other hand, this also blinded me from the new and improved features of the platform and language that I discovered on my own during the course of programming. In future projects more time will be spent on researching the capabilities of the software I am working with especially for a high level language such as ActionScript 3.0.