

IL315 Game Essay

Abstract

I have designed a game based on learning outcomes for A-level standard Economics, particularly focusing on state capital investment and social welfare functions.

Happiness is the focus of my game, *Happinomics*, where the aim is to have the happiest settlement on Mars. The aim is to get the most Happiness Points (H.P.); H.P. don't just represent how happy the people are in your settlement, but also how sustainable, environmentally friendly, and equal your society is. Playing the role of resource management, you get to decide what gets built and what doesn't in your sprawling representation of the economy of your town. You also get to enact policies which affect everyone. Be wary of your fellow players, since there is no law on Mars just yet and other players can attack and destroy your assets; or maybe Mars will do it for them, with a range of crises to watch out for!

1. Introduction

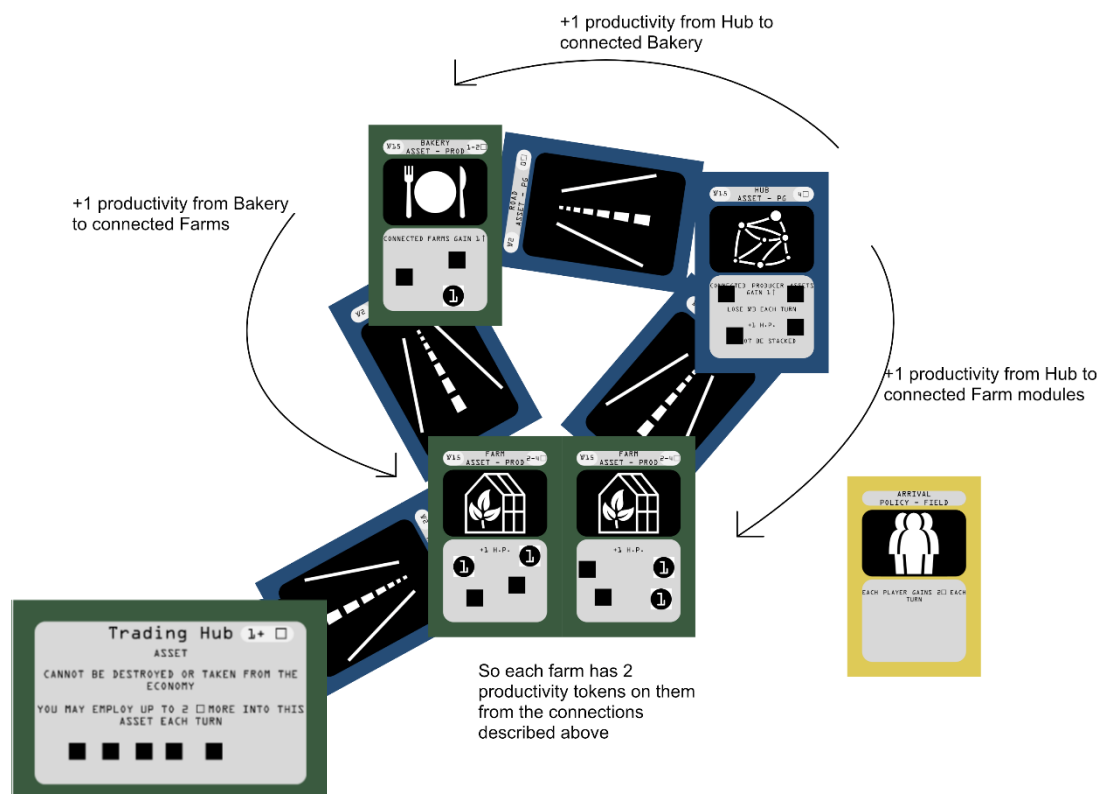
Most people think economics is about making money. If you look at what most economists talk about, it's all about growing the economy. But what most people miss is *why* economists are so focused on economic growth – it's simply about happiness (Pigou, 1920). Of course, economic growth does not directly translate to happiness, but if there are more resources in an economy, then more people have more resources, and people's material standards of living improve. Governments have a particular role in this; where the economy fails to improve standards of living or fails to provide a good that makes people happier, they should step in and make sure that people are happy (Gruber, 2022).

Happiness, then, is the focus of my game, *Happinomics*, where the aim is to have the happiest settlement on Mars. The aim is to get the most Happiness Points (H.P.); H.P. don't just represent how happy the people are in your settlement, but also how sustainable, environmentally friendly, and equal your society is. Playing the role of resource management, you get to decide what gets built and what doesn't in your sprawling representation of the economy of your town. You also get to enact policies which affect everyone. Be wary of your fellow players, since there is no law on Mars just yet and other players can attack and destroy your assets; or maybe Mars will do it for them, with a range of crises to watch out for!

2. A Brief Overview of How to Play

This is a worker-placement engine-builder card game, where you can create an “economy” that produces money (and sometimes people) at the start of every turn. This is constructed as a web of assets, interconnected through face-down cards (called “roads”). The connections are important, as certain assets boost the productivity of other assets if connected; this both contributes to your happiness and your money-making potential (see Figure 2.1 as an example). There is also some element of randomness at the start of each turn; rolling two dice to determine whether a Martian storm hits, and how many people your settlement receives.

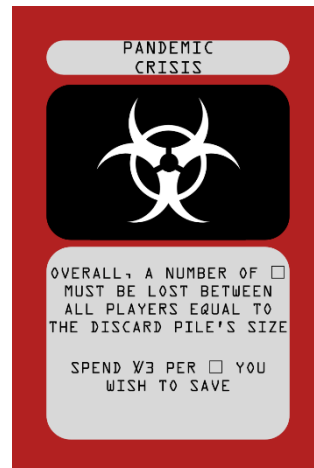
On your turn, you may expand your economy through placing down assets and roads for a price (displayed on the card). You may also discard cards in exchange for money, or



trade with other players to get what you need. Another system within the game are policies and attacks, which allow for more cross-player interaction and the furthering of learning objectives. Finally, if your economy has 10 or more happiness points (determined by which assets you have and how many productivity tokens you have), the other players finish the round back to you, and the game ends with the person who has the most happiness points winning. For instance, in Figure 2.1, the player has 3 Happiness Points – one from each Farm, and one from having 5 productivity tokens.

Figure 2.1 – Connections within an Economy explained

Lastly, there is a mechanism for crises. These are certain marked cards within the deck which have a negative impact based upon how many cards are in the discard pile (see figure 2.2).

*Figure 2.2 – Crisis Card Example*

3. Learning objectives

As a Politics, Philosophy, and Economics student, I wanted to focus more on the role of the state in the economy. This is still a very broad topic, so I focused even more deeply on capital investment, which allows for students to get a holistic view of a particular economy. In doing so, a range of learning objectives are derived from the game's structure:

Learning Objective	This is taught through...	What level in Bloom's Taxonomy (Krathwohl, 2002)?
The impact of diversification and specialism in an economy	How players choose to make their economy, either focusing heavily on a particular industry (say, mining, for instance) or having a range of different industries. This has different impacts on the game for each player, such as those who specialize are able to make money faster, but those who diversify are more capable of coping with crises.	Create, as players must design with this in mind and/or assemble this aspect themselves.
The impact of the state crowding out the private market.	How the private market (represented by the Trade Hub) grows and empties of people throughout the game, as extra investment in money-making	Analyse, as players investigate this impact through experimentation

	industries by the government forces people to move out of the Trade Hub and move into those industries.	
The use of public funds to increase social welfare functions.	The happiness points on certain assets, which in general do not make money.	Apply, as players must use this knowledge to weigh up alternative options
The benefits of public goods on an economy.	Certain assets having utility beyond their happiness points whilst not making money (as in infrastructure), for instance Tram Lines can create long-term economic growth whilst costing the player 2 people to run each turn.	Analyse, as players investigate this impact through experimentation
The importance of the government in being prepared for crises.	The crisis cards in the deck, and the role of the storm in the game costing the player money, with the possibility of losing the game outright if a player isn't careful.	Create, as players must design with this in mind and/or assemble this aspect themselves.
The use of loans for a government to fund its expenditures.	The use of discarding cards for cash; it limits the options, makes the money a player holds less valuable, and increases the damage of certain crises. However, these are essential for people to be able to afford assets and keep people employed without dying early.	Create, as players must design with this in mind and/or assemble this aspect themselves.
The differences in economy that may arise due to geographical, cultural, and population growth differences.	Differences in card draw, trade, population booms, and the Arrival policy card.	Analyse, as players investigate this impact through experimentation
The importance of productivity growth in long-term economic growth	Productivity tokens, which increase your overall output and also contribute to happiness points, since those individuals create surplus which is in theory also added to their wages.	Apply, as players must use this knowledge to weigh up alternative options
The impact of unemployment on the government.	The in-game cost of not being able to employ people in your economy, and the long-term impact of losing an	Apply, as players must use this knowledge to weigh up alternative options

	individual that generates money each turn.	
The impact of hysteresis.	The overall gameplay as people who have experienced a storm or are hard done by a crisis early on tend to lag behind the other players in terms of money growth.	Analyse, as players investigate this impact through experimentation
The impacts of politics on economic performance.	This is represented by the policy cards, their impact on the individual player's economies and across to other players.	Apply, as players must use this knowledge to weigh up alternative options
The impacts of trade on economic performance	The trading between players (of course), but also policies and their impact on others' economies.	Create, as players must design with this in mind and/or assemble this aspect themselves.
The potential ways a developing economy may increase its wellbeing and the benefits and costs of each.	The plethora of strategies players can adopt, investing either in infrastructure, money making industries, or pushing the private market (Trade Hub) to its maximum capacity.	Create, as players must design with this in mind and assemble this aspect themselves.
How Social Welfare Functions can be achieved outside of material standards of living	Certain assets, like the Med-bay, provide non-material services that improve standards of living. These increase happiness in this way, rather than increasing the wealth of each person in the economy (represented through productivity tokens).	Apply, as players must use this knowledge to weigh up alternative options

Table 3.1 – Learning Objectives

These learning objectives are cemented after being taught in lessons and should be discussed after gameplay. The structure of the game, having cooperative and competitive elements with inter-player impacts and communication further boosts the capacity the game has for teaching (Salen and Zimmerman, 2003; Sanchez, 2017, p.180). The game is also quite a creative endeavour and allows for significant experimentation while balancing the impact of luck in the real world. The experimentation allowed by Happinomics creates information gaps which can be exploited for curiosity's sake. This also allows for deeper learning among students through boosting engagement and fun; further still, pupils practicing what they've been taught has also been shown to improve learning outcomes (Oostendorp and Wouters, 2017, p.105; Kadashan, Rose, and Fincham, 2004, p.292).

4. Design Choices and Challenges

I've had the base idea of this game since I first started learning economics at GCSE level; however, I never started to develop this idea since starting this module. The network and worker placement approach of building your own board, I thought was an interesting and unique mechanism for simulating an economy. However, the design of cards and unique structure meant significant playtesting to ensure the delivery of a game that is balanced, fun, accessible, and not too time-consuming for use in the classroom. Here I have listed a set of issues and the solutions I came up with in table 4.1:

ISSUES	SOLUTION
Input randomness of card draws leading to “dead” cards in hand.	Added the ability to “sell” cards from your hand like a loan for ¥5. This actually opened up trade with other players, setting a benchmark price for cards in a player's hand for other player's to base their own prices off of. It also directly solved the issue and added more variety and creativity within the game and has become an integral part of gameplay. Further, it allows for players to more easily deal with crises without it feeling quite as harsh.
Randomness in the die roll	I experimented with the different types of dice and combining the dice into a single roll to tweak the randomness, and ended up with rolling a D8 for people and a D12 for money
Complexity and harsh impact of crisis cards	Experimented with different types of crisis card, and how to scale them for all points of the game. Landed on altering the impact with the size of the discard pile and changing the old war card (which was complex and required a timer) with attack policy cards for more dynamic and competitive gameplay.
Getting a more realistic view of the role of the state in terms of learning outcomes	Added the Trading Hub as a representation of the private market, which slowly grows over time (through being able to employ 2 more people each turn). The economic growth seen by the private industry in real life is more random, but to put focus on capital investment I decided this was a better way of considering the private market within the context of the game. This change also helped speed up the game.
Input luck of card draws	Tweaked the quantity of each type of card, eventually landing on a standardised amount of each (8 of each asset, 4 of each policy, with 12 of certain assets and attacks). This is because there are many different options of what to do with each card in your hand (e.g. turn assets into roads or discard them for cash), meaning the more expensive cards are still used and not sitting dead in a player's hand. It also means that each player is just as likely to draw each card and one player does not get a significant advantage through drawing a unique card in the deck.
Changed the names of assets to create a theme	This was an issue since having a narrative improves learning in games (Breien and Wasson, 2021; Clark and Tanner-Smith, 2016). The slow but steady building of a settlement on Mars

	provided the right backdrop for players to tell stories regarding how their towns developed and were shaped by outside forces.
The complexity of determining income each round	This was an issue in initial iterations of the game, since productivity was multiplicative with people working on an asset. This mental maths had a high cognitive load and so got in the way of the game's learning capacity, as well as limiting its accessibility. I attempted to shift away from large productivity bonuses and make them rarer, but in the end I decided on making productivity additive to population earnings being the best solution. This also allowed for an extra learning objective of showing happiness through improved material standards of living through the rule that every 5 productivity tokens lead to an increase in 1 Happiness Point.
Game balance, particularly the prevalence of farms	Farms were meant to be a stand-in for a subsidy to primary industries based in renewable resources, meaning that they also gave happiness points as a representative to the sustainability of such industries. However, this made them the best possible route of both earning money and getting closer to the end objective of the game. I initially attempted creating a crisis that would destroy these assets if drawn, but this felt bad to me. Instead, I landed on making them more expensive. There were many different cards I had to make similar tweaks to, but farms in particular stick out to me as a large issue throughout development.
Not enough variety of cards and gameplay	I wanted to make the game more creative and encourage many different styles of settlement. Therefore, I created policy cards which exist outside of the settlement and represent the political system in place. I also wanted to create more player-to-player interaction, so I made them universal and added the option to attack other players at a hefty cost.
Accessibility concerns	I wanted to make sure the game is as accessible as possible. I did this through making sure the fonts on the cards were easily legible; ensuring the colours used to represent different asset and policy types were mostly distinguishable for those with colour-blindness; and finally, avoiding putting black text against fully white backgrounds to help those with astigmatism. I also made the game more cognitively accessible through making productivity an additive factor in the "Tax" phase of your turn.

Table 4.1

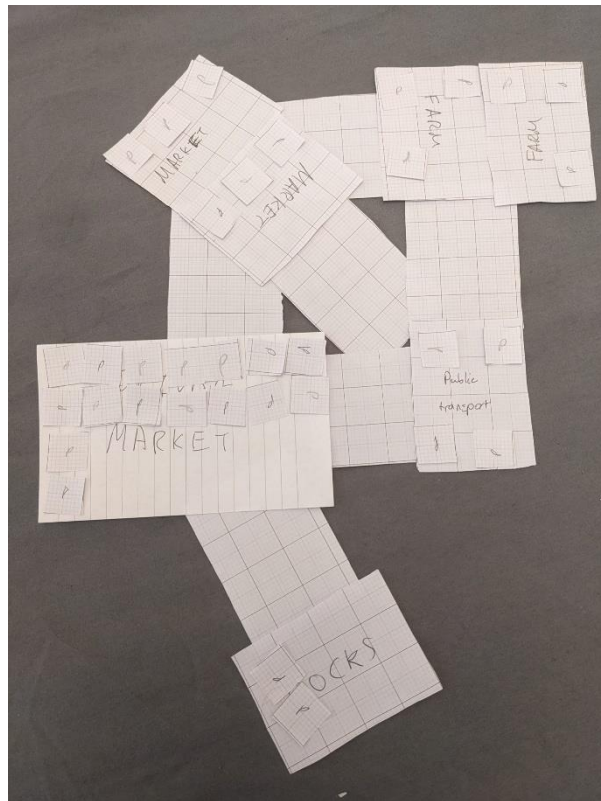
I did not secure an ethics approval for playtesting my game, so all these issues have come from me and my perceptions of the game while playtesting.

5. Possible Future Developments

For the future of Happinomics, I would love to add more variety of cards. These would primarily be in the form of more money-making assets to represent different types of economies. There could also be more types of policy card, and I think attacks still need to be tuned slightly. Finally, the design of the cards has been limited by my own artistic capabilities, particularly in regards to the back of most cards; the Road cards are a little too similar to other assets which can create a confusing mess at the worst of times.

6. Summary

In summary, I have developed a game which solidifies learning outcomes in Economics for students around an A-Level (16 to 18-year-old) capacity for economics. Through its simulation as an economy, particularly in terms of the impact of government capital investment, students have the opportunity to: experiment and apply; design and assemble; and apply their understanding of economics. In terms of design, I have attempted to craft a narrative theme, keep text plain and simple with accessibility in mind, and lean into the core unique mechanism of creating a web of cards which I have not found in many other games. I have found Happinomics to be an enjoyable experience, both in creating and playing, and I hope that you experience the joy I have in your testing of the game.





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