

## Using cinematic gangsters, samurais and robots to teach economics through film

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Daniel Diaz Vidal and Robert Beekman\*

John H. Sykes College of Business,  
University of Tampa,  
401 W. Kennedy Blvd.,  
Tampa, FL 33606-1490, USA  
Email: ddiazvidal@ut.edu  
Email: rbeekman@ut.edu  
\*Corresponding author

**Abstract:** The economics education literature has been showing significant signs of a push away from traditional lectures, ‘chalk and talk’, to more innovative and attractive pedagogies that are more effective and better suited for today’s generation. This paper is another contribution to this literature as it invites the economics instructor to use films to teach economics. The paper presents several movies and a documentary with a list of associated economic theories and concepts that can be related to specific clips. The paper serves as an invitation to the reader to use these examples, with a hope that she/he will create and disseminate her/his own examples going forward.

**Keywords:** economics education; educational films; teaching economics; innovative teaching; active learning; student engagement.

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**Biographical notes:** Daniel Diaz Vidal is an Economic Historian with an interest in social mobility, migrations, economic education, anthropometrics, higher education and labour economics. He received the Gyorgy Ranki Biennial Award for his co-authorship of *The Son Also Rises* by Gregory Clark with Neil Cummins and Yu Hao Ma. He was recently voted the Graduate Faculty of the Year for 2019 by the graduate students attending the Sykes College of Business at the University of Tampa. Recently he had papers published at the *Economic History Review*, *The International Review of Economics Education* and at *Higher Education Theory and Practice*. He has published six papers in economics education over the past 18 months.

Robert Beekman publications and research have primarily focused on experimental and environmental economics. He is currently the Chair of the Department of Economics and his research interests have included international trade, distributional effects of public policy and consumer response to risk information. Prior to his arrival at the university, he worked as an Economist for the U.S. Environmental Protection Agency. During this time, he prepared economic, regulatory and market analyses for many projects, including an assessment of the social costs and benefits of EPA programs. He has also worked as a private consultant and as an assistant vice president for NCNB National Bank of Florida.

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## **1 Introduction**

Becker and Watts (2001), Onger (2017) and, more recently, Asarta et al. (2021) show that the traditional lecture style, i.e., ‘chalk and talk’, continues to be the prevalent mode of delivery in the economics classroom, but that new teaching techniques are increasingly being used. Watts and Becker (2008) highlight the emergence of a number of these innovative and attractive teaching methods available to today’s economics instructor. Our paper provides a series of examples of an unconventional and innovative teaching technique that uses film to engage new generations of students, while creating a context that can explain and illustrate basic economics concepts and theories commonly taught in a principles of economics course. The films provide real life settings, with interesting and relatable stories, that can be linked to the abstract concepts discussed in the economics classroom. The deliberate and constructed nature of film, in which all of its elements come together to create a final product, is used to help students learn to think critically about economic ideas.

The use of films is meant to promote active learning, foster critical thinking and abstract reasoning, and ultimately to get students to think about those movies like an economist, and ultimately to use those skills to think about the world around them. Geerling (2012) mentions the role that films can play in teaching students to think like economists. Our article follows the work by Vidal et al. (2020a), where the idea of using the deliberate nature of film to help students think like economists is explored in detail. Vidal et al. (2020b) was based exclusively on a course titled ‘Economics Through Film’, which was created with the primary intention of teaching students how to think like economists, and was less concerned with any specific curriculum or set of topics. This paper, while based a similar methodology, is focused on material suitable for most introductory undergraduate or foundational graduate economics courses, while providing a more practical and deliverable set of resources to the reader.

Readers are encouraged to use the film clips discussed in this paper as active learning tools that can actively engage students with course material. The stories found within the films are used as brief case studies to facilitate discussion, and to help students tie the theories and concepts discussed in class to the socioeconomic events taking place in the clips. An instructor may choose to play brief clips in the classroom, or assign them to students and then use the different types of questions described in the methodology section of this paper. The methodology encourages an active learning environment, providing students an opportunity to think like economists, even if only in a rudimentary way. The use of film and TV show clips to support active learning and the learning of economics has recently been discussed by Al-Bahrani and Patel (2015), Hall et al. (2016)<sup>1</sup>, Andrews (2019), and Vidal et al. (2020c). This paper adds to the literature by providing examples and scenes that can be used to relate a broad number of economics topics to interesting and entertaining films. Instructors are invited to use these examples in their classrooms, but of course it is the instructors’ responsibility to ensure that the clips selected are an appropriate match for his/her classroom.

## 2 The literature

The pedagogical literature over the past two decades is increasingly supportive of teaching techniques that creatively depart from the traditional chalk and talk. Luther (2015) discusses using episodes from NPR's planet money to engage students in introductory macroeconomics; Hall (2012) and Moryl (2013) highlight the pedagogical value of podcasts in the economics classroom. More recently, Vidal (2020b) provides a curated list of podcasts that could be used in a typical introduction to macroeconomics class, while Coon and Vidal (2021) describe the use of podcasts to teach supply and demand. Vidal et al. (2021) discuss the podcast enfactor, which can be used to discuss a Schumpeterian perspective on economic growth. Other colleagues use TV shows to teach economics. Luccasen and Thomas (2010) and Chu (2014) use the Simpsons; Considine (2006) discusses the use of yes minister, Tierney et al. (2016) use the Big Bang Theory and Wooten (2021) uses Superstore. Vazquez and Chiang (2014) use the creatives arts, Al-Bahrani et al. (2017) and Hall and Lawson (2008) use assignments that leverage student interest in music to learning of economics concepts, and McClough and Heinfeldt (2012), Van Horn and Van Horn (2013), and Raehsler (2013) use music to teach economic concepts in the classroom. Vidal (2020a) uses video games to teach economic growth, while Bose (2020) uses Kollywood movies (South India) to explore economic growth. Watts (2003) and Bohanon and Vachris (2012) explore the combination of literature and economics as a pedagogical strategy for economics instructors, while Vachris and Bohanon (2016) published a special issue in the IJPEE exploring economics and the novel; Reardon (2015) uses the short story to illustrate economic concepts; Kish-Goodling (1998) discusses how Shakespeare's play *The Merchant of Venice*<sup>2</sup> can be used to discuss monetary economics; Ziliak (2009 and 2014) uses Haiku; while Bohanon (2012) explores the intersection between art, haiku, and economics.

Sheridan et al. (2014) describe a number of the aforementioned exciting new tools available to economics instructors that make economics more appealing and easier to learn. The value of these new teaching techniques is multidimensional. Recent cognitive psychology research, e.g., Chew and Cerbin (2021), highlights how an educator should seek to keep all, or as many as possible, students engaged with the material and that the ultimate goal should be to have them change the way they view the world by incorporating the lens of the concepts they have learned to recalibrate their existing perspective. The methodology of Vidal et al. (2020), is used in this paper to achieve a similar recalibration of student perspective. Qualitative evidence (see Appendix A reinforces the results of Vidal et al. (2020). Wooten (2020) provides additional support for the use of digital media in the economics classroom to keep students engaged and learning, while Conaway and Clark (2015) provide evidence supporting the use of comedic TV shows to teach economics and show how their approach increased students' attention, retention of the material, and a deeper understanding of the concepts.

The use of film and audiovisual media is also more effective and better suited for today's students, which is important as we aim to keep the number of economics majors as high as possible and to keep the new generations engaged in the economics classroom of the 21<sup>st</sup> century. Carrasco Gallego (2017) provide evidence in support of the use of short clips to teach millennials and to help them connect economic concepts to the real world. Burke et al. (2018) discuss the value of using film to teach game theory to generation Z students. The qualitative evidence presented in Appendix A was obtained from millennials in a graduate foundational economics for managers course in 2021, and

from generation Z undergraduates taking an introductory economics class. The same discussion-based active learning strategy described in the methodology was used in all these courses and the results are also very similar.

The literature on the use of film is both extensive and useful to the reader as it usually provides, like this paper, specific ways to implement the pedagogy in the classroom. Cleveland et al. (2016), Mateer and Vachris (2017), and Wooten and White (2018) concentrate on the use of one specific film while Leet and Houser (2003), Sexton (2006) and Mateer et al. (2016) describe the use of multiple films; and Andrews (2019) discusses how a microeconomics class can make its own film while exploring economic concepts.

Recently, Wooten and White (2021) discussed using of clips from *moneyball* in the undergraduate economics classroom. This paper proposes the use of film to teach and learn a wide variety of theories and concepts common to undergraduate economics education and to foundational economics courses for managers, including supply and demand, elasticity, consumer and producer surplus, different forms of government intervention, industrialisation, product differentiation, trade, economic growth, technology, autarchy, human capital, physical capital, and market structures. Moreover, the discussions that ensue when using the films will help students exercise their ability to apply the theories and concepts learned in class to the fictional world within the films, and then to the actual world we live in. That is, introducing film in the classroom is intended to present students with an opportunity to exercise their ability to think like economists as described in Vidal et al. (2020), and to make economics more relevant to their own lives as described in Girardi (2013).

### **3 Methodology**

Film can be used to complement traditional pedagogical approaches by promoting active learning. The deliberate nature of films, touching on socioeconomic phenomena, can be exploited to help students think critically and abstractly about the many elements that compose a film and about their relationship to our actual socioeconomic environment. Lighting, script, costumes, plot, and all elements that form a film are purposefully used to make the viewer think about certain concepts or to evoke a specific emotion. An effective instructor can use this deliberate nature of film to highlight how many variables also affect a specific socioeconomic phenomenon. Students can be guided to think critically about a film, and some fictionalised representation of a socioeconomic context that the film uses as part of its plot, or as its setting, or as a defining element of conflict amongst its characters. Films that relate to socioeconomic phenomena can illustrate the applicability of a variety of theories and models.

It is important to note that we purposefully try to choose films that are seemingly unrelated to economics. A good filmmaker will endeavor to hide some of the layers of meaning and social commentary embedded in the film. Understanding the deliberate nature of filmmaking and paying attention to the artificial elements introduced in every scene permits the student to exercise her/his ability to think critically and to establish a pattern of influence between the various socioeconomic variables being discussed in class and by the filmmaker. An instructor should use the film clips identified in this paper because, as in life, the connections to economics are not self-evident. For example, a long cue outside a restaurant may not immediately lead us to think of opportunity costs, inefficiencies, or the relationship between the elasticity of demand for a product and the

revenue it generates for a business. If a primary objective of our courses is to get students to be able to use their economics toolkit to analyse events in everyday life, and to potentially become creative economists, then an effective pedagogical approach is to select films that are not explicitly about economics, to illustrate key course concepts.

In the classrooms of the courses discussed in this paper, economic theories and concepts regarding crime, economic growth, market structures, etc. were initially explained to the students. Next, the class was shown a specific part of a film, pausing at relevant intervals to discuss the action. The ensuing discussion was prompted by higher order questions intended to help students think critically about the film, and about the underlying socioeconomic context the film addresses. Completion, analogy, and point of view questions were used repeatedly to successfully engage students in active learning.

Completion questions require students to analyse a given situation, such as a scene from a film, and determine an appropriate means to complete the given situation; that is, predicting how the characters and story will develop. Ambrose et al. (2010) defines learning as a process of change in one's perspectives, ideas, and ways of looking at the world. It seems logical, therefore, to require students to attempt to predict how the action will play out and then discuss the actual outcome. In this spirit, the class also has an open discussion before each session of the course to highlight the students' views on the specific topic, prior to deeper content discussions. Questions such as *How do firms in a particular market try to outdo the competition? Why do some people go to college and others don't? Why do some people commit crimes? Why are some countries/people rich and others poor?* allow students to recognise their ex-ante position regarding a particular matter prior to class discussions, and later to understand how their way of thinking has changed throughout the semester.

Analogy questions can help the student better understand the relationship between economic theory and the fictional world within a movie, and then extrapolate that connection to the real world. For example, students can watch a short clip from the movie *Wall-E* in which the trash gathering, compacting, and storing robot protagonist Wall-E meets Eva, a robot that searches for life on earth after a pollution ridden planet has succumbed to the excesses of consumerism. The scene can be used to discuss structural unemployment, physical capital, and productivity. Also, since the robots are given human characteristics, the scene can be used to discuss specialisation and trade. An analogy question could be constructed as: *How does this scene relate to the theories of economic growth and productivity growth discussed in class?*

Analysis of point of view questions require students to analyse and evaluate someone else's opinion about a subject matter. The dark night trilogy can be used to discuss theories of crime. Batman's parents in the film are said to have been charitable in the community and have tried to invest in crime prevention, but they are ultimately assassinated by common criminals. Batman, as a reaction to that, represents the ultimate form of law enforcement at any cost. The end result, crime reduction, justifies the means for this vigilante. An interesting question to elicit discussion on crime prevention policies is to ask whether Batman-like policing is the solution to crime in our society and if this is what the filmmaker is hinting at. Students are then asked to refer to specific scenes in order to evaluate the filmmaker's perspective. The instructor can follow up with questions designed so that students understand the value of thinking about issues like these as economic problems.

Higher-order questions<sup>3</sup> like these cannot be answered correctly by simply memorising course material or by reading the assigned readings. These questions impose

a superior cognitive demand on students who must apply, examine, synthesise, and assess information instead of merely remembering facts. With higher-order questions, the student must go beyond the literal as she/he is encouraged to think critically about the issues being addressed.

It is important to note that instructors should be aware of the idiosyncratic linguistic and cultural characteristics of their students and adapt the films used in class accordingly, or at least, augment the lectures with the appropriate explanations. Films about specific parts of the English speaking world that have a very particular vernacular and microculture could make a film opaque for the foreign student. Those same cultural idiosyncrasies could be used as an opportunity to have the students' local classmates explain jargon and the cultural context to fellow students who may be unfamiliar with such concepts. Choosing foreign films and reversing the roles can create added value and a broader sense of learning, which is important in the global economy<sup>4</sup>. Another issue to consider when using film in a classroom is the potential legal liability for the faculty member and their institution. One should refer to their educational institution's legal department or consult with a course designer (if the institution has one) to ensure that their use is legally appropriate in their classroom.

Table 1 associates some of the film clips that were used in the course *Economics Through Film*, and other film clips used in an MBA foundational economics for managers course, and in sections of introduction to macroeconomics. Table 1 is organised by concepts, so the reader may identify concepts of interest, then find the associated. The next section of the paper provides additional detail on the usage of three films and a TV show in Table 1 in the classroom as part of the learning plan. The three films to be highlighted are *Wall-E* (2008), *The Last Samurai* (2003), *Boyz n the Hood*<sup>5</sup> (1991), and *American Gangster* (2008) and the show is the first episode of *Altered Carbon* (2019).

#### 4 Wall-E (2008)

Ebert (2008) describes *Wall-E* (2008) as 'an enthralling animated film, a visual wonderment and a decent science-fiction story'. However, *Wall-E* is more than that. In the film, 'By N Large', produces our food, provides our employment, and even cleans up the planet after the company itself created the mess. Human civilisation created this capitalist behemoth and a robotic age in which humans cruise the universe in absolute leisure, to the point of not only forgetting what work was, but also forgetting how to read. The film lends itself to discussions prompted by higher order questions such as: *Could this actually happen? How does the situation in Wall-E relate to externalities and future generations, renewable energy, sustainability, and structural unemployment?*

The primary idea is not to sell students an apocalyptic view of the future, but to get them to think critically about the deliberate nature of the film, to give visual representation to the abstract ideas and theories discussed in class, and to engage them in active discussions and learning. The film begins with scenes of mountains of trash that blend in with the shape of old skyscrapers, and with wind turbines and nuclear plants built on top of the waste. The filmmakers seem to be hinting at the possibility that humanity had realised too late that cleaner alternatives represented a sustainable solution. Furthermore, humanity must have made decisions consistent with relatively high discount rates as the external costs to future generations of human waste in the present were negligible enough for humanity to eventually evacuate a planet ridden by pollution and

dust-bowl like sand storms. A number of environmental economics related topics could be discussed at this point. The film can be also used to describe the benefits and potential challenges of technological growth. Humanity no longer needs to work thanks to the highly advanced robots. Though an initially appealing thought, could such a shift toward mechanisation and automation create social strife in the short term due to structural unemployment and inequality? Questions regarding the Gini Coefficient and the income and wealth inequality literature could be incorporated to foster discussions. For example,

“Will those owning more capital in our society be more likely to enjoy the future? Why are some prominent businesspeople, some scholars, and even national leaders discussing universal minimum wages or charging the labour substituting robot owners social security for the “labour” of the robot?”

The use of Wall-E film clips will give some visually appealing reference to abstract theories, and to engage students in critical thinking and active learning so they can construct their own arguments and opinions. Achiardo et al. (2021) further discuss the pedagogical value of Wall-E and other Pixar movies, particularly at the K-12 level.

## 5 The last Samurai (2003)

For most films, the socioeconomic context is usually a part of the setting and plays a critical role in the conflict that makes the story attractive. In some cases, these parts of the story are clearly laid out within the first 30 to 40 minutes of the action. This is the case for *The Last Samurai*. Therefore, only the beginning of the film is presented in the classroom setting, and students are asked to finish watching the film at home. *The Last Samurai* takes the viewer to the time of the Meiji restoration in Japan. Japan is finally moving away from its medieval autarchic isolation and into the last few years of the first era of globalisation. The year is 1876 and the samurai sword cannot be worn in public anymore by imperial decree. The story ends in 1877 as Japan’s First National Industrial Exhibition is held. Ebert (2003) wrote,

“...But Japan has been seized with a fever to shake off its medieval ways and copy the West, and the West sees money to be made in the transition: Representatives from the Remington arms company are filling big contracts for weapons, and the U.S. Embassy is a clearinghouse for lucrative trade arrangements”.

The film’s first scenes show a US cavalry captain, played by Tom Cruise, promoting Remington repeating rifles. He uses his experiences during the Indian wars to differentiate the product and create demand. The film clips feature the characters walking into San Francisco, where a cable car happens to be passing by, and in which we can see a large number of steamboats docked on its piers. The Japanese government wants Cruise to train the newly formed Japanese army in the use of newly purchased American rifles in order to combat the traditionally armed rebel Samurai. The students are asked the questions: How does international trade relate to the story?

“How are human capital, technological progress, physical capital relevant to the story? What is the relationship between globalisation, industrialisation, economic growth, and culture? Does trade and economic growth benefit all in a society?”

The film is thoroughly entertaining at face value, but the discussions that follow the high order questions enable the students to realise that movies can have multiple layers of meaning and context. The economics toolkit can be used to understand both fictional and real-world situations.

## **6 Altered Carbon (2017)**

In *Altered Carbon*, a TV series, humanity has developed the ability to upload a person’s consciousness as digital data into a cortical stack, a device implanted in the spinal column that houses a human’s ‘true’ self or consciousness, which can then be downloaded into a variety of bodies, or sleeves. The Stack is the mind, the Sleeve is the body which can be genetically cloned or synthetically created. The Methuselah, or Meths, are the ultra-rich which can de-facto maintain their consciousness alive forever and even add, delete, or modify memories in their stack. Meanwhile, the underworld is hostile, dirty, and dark. The Meths live above the clouds, in an olympus-like metaphoric manner in a place called the Aerial. The poor get whatever sleeve is available when they are the victims of a crime because the government guarantees them a replacement body. A young girl, from a middle-income family, whose body was killed as collateral damage during the commission of a crime is downloaded into a 65-year-old body, while the rich have a collection of clones which they can enjoy for a variety of reasons and to pursue any type of pleasure. The nature of inequality changes with the power conferred by eternal life. Death, the great equaliser, has been defeated and the world it seems may end up belonging to the rich, who have distanced themselves from the rest of the species.

The economic repercussions of such a society are abundant. Clips from the series can be used to discuss social mobility and inequality in the context of a manuscript like Vidal (2020c). The show depicts a society in which humanity has liberated itself from its biological ties and it can be used to promote a discussion about the effects of these events on informal institutions, social norms and ultimately economic behaviour. The events in the series can also be compared to how contraceptives, modern bathrooms and decreased infant mortality have already separated women from their biological binds.

## **7 American Gangster (2008)**

*American Gangster* (2008) effectively enables students to think about crime outside of the traditional moral/ethical perspective. The film purposefully mixes business and economic terminology when describing the behaviour of criminal enterprises and the functioning of criminal markets. Ebert (2007) hits the nail on the head,

“Apart from the detail that he was a heroin dealer, Frank Lucas’ career would be an ideal case study for a business school. American Gangster tells his success story. Inheriting a crime empire from his famous boss, Bumpy Johnson, he cornered the New York drug trade with admirable capitalist strategies. He personally flew to Southeast Asia to buy his product directly from the suppliers, used an ingenious importing scheme to get it into the United States, and sold it at higher purity and lower cost than anyone else was able to. At the end, he was worth more than \$150 million...”

American Gangster is purposefully portraying the main character, Frank Lucas, as a businessman in a black market. There are, therefore, plenty of scenes that relate directly to economics. In one particular scene (from 132:15 to 134:45), Frank Lucas talks about branding and about infringement of an agreement, sounding more like a businessman than a drug dealer. His pure heroin is sold in a little blue bag labelled ‘blue magic’, and he is unhappy with one of his wholesale buyers because he is cutting the heroin and selling it under the same brand name. Lucas is portrayed as the CEO of a company that uses practices like those employed by legal companies. Since there are no lawyers or contracts, in illicit markets however, many of the business issues in the drug trade must be resolved with street muscle and violence. Violence ensues throughout the film. Using American Gangster film clips, an instructor may provide visual representation to concepts such as cost functions, market structures, black markets, the determinants of elasticity of demand, incentives, product differentiation, and more. Students are engaged by a story that is compelling, entertaining, and purposeful about its portrayal of the Frank Lucas character. Students can be prompted to think critically about the portrayal of the gangster and by the economics behind the story. The heroin epidemic of the 1970s was a serious issue and students are able to see, through film, how an economic perspective can be useful in fully understanding the problem. Not only do they get to think as economists do, but they enjoy doing so.

## **8 Conclusions**

The economics classroom has changed, and we live in a time in which an economics class session can be engaging, interactive and fun for both students and faculty. We enjoy a vast supply of technology and educational resources at our disposal to be tapped by an instructor’s creativity and passion. For example, the broad availability of online streaming platforms like Amazon, Netflix, and Hulu makes it easy for instructors to assign and discuss movies with their students while still respecting copyrights. The use of new technologies and creative pedagogies are both effective teaching strategies, and palatable approaches to education for today’s students. This paper presented a selection of attractive movies that will keep the students interested in economics and that will allow them to develop and exercise their ability to think like an economist. The pedagogical opportunities are vast, and the field of educational economics should continue to embrace new strategies as the world is changing outside of the economics classroom at an ever increasing pace.

**Table 1** Economic concepts, films and time within the show

<i>Concept</i>	<i>Film</i>	<i>Start</i>	<i>End</i>
Advertising	Altered Carbon Episode 1	37:00	39:30
Advertising	American Gangster	132:15	134:45
Advertising	Parasite	47:20	49:45
Ageism	Nomadland	14:00	16:40
Aggregate demand and supply	Cocaine Cowboys	34:15	38:30
Anguish costs	Cocaine Cowboys	105:00	117:00
Asymmetric information	Parasite	47:20	49:45
Autarchy	Aguirre, the Wrath of God	2:40	5:40
Autarchy	The Last Samurai	11:30	13:50
Banking	Cocaine Cowboys	41:00	44:20
Banking	Merchant of Venice	11:30	12:20
Barriers to entry	American Gangster	115:00	117:50
Black markets	American Gangster	56:40	57:00
Black markets	Cocaine Cowboys	34:15	38:30
Brand loyalty	American Gangster	37:40	40:00
Branding	American Gangster	132:15	134:45
Capital	Wall E	36:00	38:00
Capitalism	Scarface 1983	06:00	9:00
Capitalism	The Last Samurai	4:00	5:30
Capitalism (Unconstrained)	Altered Carbon Episode 1	16:35	17:35
Characteristics of a bond	Merchant of Venice	45:00	46:06
Christianism	Merchant of Venice	17:45	20:00
Collateral on a loan	Merchant of Venice	50:00	50:15
Colonialism	Aguirre, the Wrath of God	37:45	38:30

**Table 1** Economic concepts, films and time within the show (continued)

<i>Concept</i>	<i>Film</i>	<i>Start</i>	<i>End</i>
Communism	Scarface 1983	06:00	9:00
Company towns	Nomadland	1:00	1:10
Competition	American Gangster	59:15	60:10
Competition	Cocaine Cowboys	44:50	50:00
Competition	Scarface 1983	109:30	111:30
Consumer preferences	American Gangster	37:40	40:00
Contract enforcement	American Gangster	48:47	51:40
Contract enforcement	Cocaine Cowboys	15:00	18:00
Contract enforcement	Scarface 1983	28:00	30:00
Corruption	American Gangster	35:00	36:30
Corruption	The Godfather Part II	78:35	80:35
Corruption	Altered Carbon Episode 1	27:30	29:20
Cost competition	American Gangster	48:47	51:40
Cost functions	American Gangster	26:30	27:20
Costs of crime	Cocaine Cowboys	44:50	50:00
Credit	Merchant of Venice	11:30	12:20
Credit	Merchant of Venice	45:00	46:06
Crime markets	Cocaine Cowboys	15:00	18:00
Crime markets	Scarface 1983	0:30	3:00
Criminal enterprise	American Gangster	48:47	51:40
Criminal enterprise	Cocaine Cowboys	15:00	18:00
Criminal enterprise	The Godfather Part II	81:25	83:45
Criminal markets	American Gangster	16:00	17:00

**Table 1** Economic concepts, films and time within the show (continued)

<i>Concept</i>	<i>Film</i>	<i>Start</i>	<i>End</i>
Demand	American Gangster	132:15	134:45
Demand	American Gangster	132:15	134:45
Demand	The Last Samurai	4:00	5:30
Demand for addictive substances	American Gangster	37:40	40:00
Demand shift	Cocaine Cowboys	34:15	38:30
Determinants of economic growth	The Last Samurai	11:30	13:50
Determinants of economic growth	The Godfather Part II	78:35	80:35
Determinants of elasticity of demand	American Gangster	18:00	18:20
Determinants of supply	Cocaine Cowboys	30:45	32:50
Deterrents of crime	Boyz n the Hood	14:05	17:00
Development	Cocaine Cowboys	34:15	38:30
Disaster relief	Parasite I	35:00	141:00
Discount rates	American Gangster	45:45	47:00
Discount rates	Boyz n the Hood	124:30	129:30
Discount rates	Scarface 1983	53:15	56:30
Discount rates	Wall E	5:00	5:40
Easterling paradox	Parasite	1:22:20	123:20
Economic growth	The Last Samurai	6:50	9:00
Economic growth	Altered Carbon Episode I	19:53	22:20
Economic growth	Wall E	36:00	38:00
Economic Profit	American Gangster	59:15	60:10
Economic Profit	Cocaine Cowboys	44:50	50:00
Economic profit	Scarface 1983	109:30	111:30

**Table 1** Economic concepts, films and time within the show (continued)

<i>Concept</i>	<i>Film</i>	<i>Start</i>	<i>End</i>
Economics and human biology	Altered Carbon Episode 1	7:00	12:40
Economics of crime	Parasite	1:35:00	1:38:30
Economics of scale	American Gangster	03:00	4:00
Economics of scale	Cocaine Cowboys	30:45	32:50
Economics of scale	Scarface 1983	109:30	111:30
Education American	Gangster	23:00	24:30
Education	Boyz n the Hood	55:00	57:50
Education	Wall E	41:15	41:20
Efficiency	The Last Samurai	15:20	17:20
Elasticity of demand	American Gangster	37:40	40:00
Elasticity of demand	Cocaine Cowboys	8:20	10:30
Elasticity of demand for addictive substances	American Gangster	20:00	21:30
Endogenous growth theory	Aguirre, the Wrath of God	2:40	5:40
Entry and exit	American Gangster	59:15	60:10
Externalities	Cocaine Cowboys	44:50	50:00
Externalities	Scarface 1983	28:00	30:00
Externalities	Wall E	5:00	5:40
Factors	Cocaine Cowboys	34:15	38:30
Firm behaviour	American Gangster	26:30	27:20
Foreign Direct investment	The Godfather Part II	78:35	80:35
Foreign direct investment	The Godfather Part II	83:50	84:55

**Table 1** Economic concepts, films and time within the show (continued)

<i>Concept</i>	<i>Film</i>	<i>Start</i>	<i>End</i>
Gentrification	Boyz n the Hood	104:00	106:40
Geographic determinism	Aguirre, the Wrath of God	2:40	5:40
Geographic determinism (climate)	Aguirre, the Wrath of God	8:00	10:00
Globalization	The Last Samurai	11:30	13:50
Government stability	The Godfather Part II	104:35	107:15
Growth vs. development	Nomadland	37:00	41:00
Guns, germs and steel	Aguirre, the Wrath of God	2:40	5:40
Human bodies as commodities	Altered Carbon Episode 1	16:35	17:35
Human capital	American Gangster	48:47	51:40
Human capital	Boyz n the Hood	0:00	4:00
Human capital	The Last Samurai	15:20	17:20
Human capital	Parasite	1:00	3:30
Human capital	Nomadland	14:00	16:00
Human capital (human devolution)	Wall E	44:00	46:00
Human capital	Accumulation Scarface 1983	53:15	56:30
Human capital	Accumulation Parasite	9:00	11:40
Illegal markets	Scarface 1983	28:00	30:00
Imperfect competition	Parasite	9:00	11:40
Imperialism	The Last Samurai	6:50	9:00
Income taxes	American Gangster	124:00	128:00
Income taxes	Cocaine Cowboys	28:30	30:00
Industrialization	The Last Samurai	4:00	5:30

**Table 1** Economic concepts, films and time within the show (continued)

<i>Concept</i>	<i>Film</i>	<i>Start</i>	<i>End</i>
Inequality	American Gangster	48:47	51:40
Inequality	Boyz n the Hood	104:00	106:40
Inequality	The Godfather Part II	12:05	16:05
Inequality	Altered Carbon Episode 1	7:00	12:40
Inequality	Altered Carbon Episode 1	34:30	36:30
Inequality	Parasite	1:00	3:30
Inequality	Parasite	47:20	49:45
Inequality	Nomadland	18:00	22:00
Inequality	Aguirre, the Wrath of God	37:45	38:30
Inequality and natural disasters	Parasite	1:35:00	141:00
Inflation	Altered Carbon Episode 1	29:00	30:20
Informal institutions	Altered Carbon Episode 1	17:36	18:50
Informal institutions	Aguirre, the Wrath of God	2:40	5:40
Input costs	American Gangster	53:56	54:25
Input costs	Scarface 1983	109:30	111:30
Inputs to production	American Gangster	18:00	18:20
Institutions	The Godfather Part II	129:35	131:05
Institutions	Altered Carbon Episode 1	27:30	29:20
Institutions	Aguirre, the Wrath of God	17:00	19:00
Institutions	Aguirre, the Wrath of God	41:00	43:00
Insurance	Merchant of Venice	45:00	46:06
Interest	Merchant of Venice	50:00	50:15
Interest	Rates Merchant of Venice	45:00	46:06

**Table 1** Economic concepts, films and time within the show (continued)

<i>Concept</i>	<i>Film</i>	<i>Start</i>	<i>End</i>
International trade	American Gangster	03:00	4:00
Investments	Cocaine Cowboys	34:15	38:30
Islam and Usury	Merchant of Venice	17:45	20:00
Labor markets	The Last Samurai	6:50	9:00
Labor markets	Parasite	9:00	11:40
Lending	Merchant of Venice	0:00	3:03
Lending	Merchant of Venice	11:30	12:20
Long term unemployment	Nomadland	9:00	11:00
Market for crime	Scarface 1983	28:00	30:00
Market price	American Gangster	18:00	18:20
Market structures	American Gangster	115:00	117:50
Marketing	American Gangster	132:15	134:45
Marketing	Altered Carbon Episode 1	37:00	39:30
Measurement problems of GDP	Cocaine Cowboys	34:15	38:30
Migrations	Scarface 1983	0:30	3:00
Migrations (Pull)	The Godfather Part II	118:55	121:35
Migrations (Push)	The Godfather Part II	104:35	107:15
Modigliani lifecycle hypothesis	Nomadland	18:00	22:00
Money	Cocaine Cowboys	41:00	44:20
Money and banking	Merchant of Venice	17:45	20:00
Money laundering	American Gangster	124:00	128:00
Money laundering	Cocaine Cowboys	41:00	44:20

**Table 1** Economic concepts, films and time within the show (continued)

<i>Concept</i>	<i>Film</i>	<i>Start</i>	<i>End</i>
Monopolistic competition	Parasite	47:20	49:45
Monopoly	American Gangster	16:00	17:00
Monopoly	Wall E	41:15	41:20
Monopsony	Nomadland	1:00	1:10
Monopsony	Wall E	41:15	41:20
Nepotism	Parasite	9:00	11:40
Okun's law	Wall E	44:00	46:00
Opportunity cost	American Gangster	23:00	24:30
Opportunity cost	Boyz n the Hood	43:30	44:20
Opportunity cost	Cocaine Cowboys	30:45	32:50
Opportunity cost	Scarface 1983	53:15	56:30
Organized crime	American Gangster	16:00	17:00
Outsourcing	American Gangster	03:00	4:00
Physical capital	Cocaine Cowboys	34:15	38:30
Physical capital	The Last Samurai	15:20	17:20
Physical capital	Wall E	40:20	41:00
Population economics	Altered Carbon Episode	17:00	12:40
Poverty	Nomadland	14:00	16:40
Poverty line	Parasite	1:35:00	141:00
predatory pricing	American Gangster	115:00	117:50
Preferences	The Last Samurai	4:00	5:30
Problems calculating GDP	Cocaine Cowboys	41:00	44:20
Product differentiation	American Gangster	132:15	134:45

**Table 1** Economic concepts, films and time within the show (continued)

<i>Concept</i>	<i>Film</i>	<i>Start</i>	<i>End</i>
Product differentiation	The Last Samurai	4:00	5:30
Product diversification	Parasite	47:20	49:45
Productivity	The Last Samurai	15:20	17:20
Profit maximization	American Gangster	26:30	27:20
Profit maximization	American Gangster	48:47	51:40
Property rights	Cocaine Cowboys	44:50	50:00
Pull migrations	Scarface 1983	0:30	3:00
Push migrations	Scarface 1983	0:30	3:00
Rational choice	Scarface 1983	14:30	19:00
Rational choice	Theory Parasite	1:35:00	141:00
Rational choice	Theory of Crime Boyz n the Hood	21:35	23:30
Rational choice	Theory of Crime Cocaine Cowboys	105:00	117:00
Recession cocaine	Cowboys	34:15	38:30
Relative income	Parasite	1:22:20	123:20
Renaissance trade	Merchant of Venice	17:45	20:00
Renewable energy	Wall E	0:00	2:00
Risk	Merchant of Venice	11:30	12:20
Risk	Merchant of Venice	50:00	50:15
Risk compensation	American Gangster	35:00	36:30
Risk compensation	Boyz n the Hood	111:15	113:45
Risk compensation	Cocaine Cowboys	105:00	117:00
Rivalry in consumption	Parasite	1:00	3:30

**Table 1** Economic concepts, films and time within the show (continued)

<i>Concept</i>	<i>Film</i>	<i>Start</i>	<i>End</i>
Schumpeterian economics	Nomadland	1:00	1:10
Sea trade	Merchant of Venice	45:00	46:06
Shift demand factors	Cocaine Cowboys	8:20	10:30
Shifts factors of demand	American Gangster	20:00	21:30
Signaling	Parasite	9:00	11:40
Signaling	Parasite	13:20	13:40
Slavery	Altered Carbon Episode 1	15:00	16:00
Social mobility	Parasite	1:00	3:30
Social mobility	Parasite	40:00	40:40
Social mobility	Parasite	2:05:00	2:07:00
Social safety nets	Nomadland	18:00	22:00
Social stratification (vertical)	Aguirre, the Wrath of God	37:45	38:30
Socioeconomic stratification	Parasite	1:28:00	130:00
Socioeconomic stratification	Parasite	1:35:00	138:30
Socioeconomic stratification	Aguirre, the Wrath of God	2:40	5:40
Spanish colonialism	Aguirre, the Wrath of God	8:00	10:00
Stockholm syndrome (economic)	Parasite	1:20:20	121:00
Structural change	Nomadland	1:00	1:10
Structural unemployment	Wall E	44:00	46:00
Structural unemployment	Nomadland	1:00	1:10
Supply and demand	Cocaine Cowboys	8:20	10:30
Supply and demand shift factors	Cocaine Cowboys	41:00	44:20

**Table 1** Economic concepts, films and time within the show (continued)

<i>Concept</i>	<i>Film</i>	<i>Start</i>	<i>End</i>
Supply chain management	American Gangster	20:00	21:30
Supply shift factors	American Gangster	26:30	27:20
Sustainable growth	Wall E	0:00	2:00
Sustainable growth	Wall E	34:27	34:32
Tax fraud	Cocaine Cowboys	34:15	38:30
Technological growth	Wall E	5:00	5:40
Technological progress	Altered Carbon Episode 1	19:53	22:20
Technological progress	Altered Carbon Episode 1	32:00	34:00
Technology	The Last Samurai	5:55	6:05
Technology	Wall E	36:00	38:00
The American dream	Parasite	2:05:00	2:07:00
The continental axis hypothesis	Aguirre, the Wrath of God	2:40	5:40
The Costs of crime	Cocaine Cowboys	34:15	38:30
Theories of crime	American Gangster	15:20	16:00
Theories of crime	Boyz n the Hood	124:30	129:30
Theories of crime	Cocaine Cowboys	6:00	8:00
Theories of crime	Scarface 1983	53:15	56:30
Theories of crime	The Godfather Part II	56:25	59:05
Time value of money	Boyz n the Hood	104:00	106:40
Time value of money (education)	Trade The Last Samurai	6:50	9:00

**Table 1** Economic concepts, films and time within the show (continued)

<i>Concept</i>	<i>Film</i>	<i>Start</i>	<i>End</i>
Tradeoffs	Boyz n the Hood	43:30	44:20
Tradeoffs	Cocaine Cowboys	41:00	44:20
Training	American Gangster	45:45	47:00
Underemployment	Parasite	9:00	11:40
Universal healthcare	Nomadland	37:00	41:00
Usury	Merchant of Venice	0:00	3:03
Utility of money	American Gangster	40:00	40:20
Utility of money	Scarface 1983	14:30	19:00
Vertical integration	American Gangster	115:00	117:50
Wages (inefficient)	Parasite	9:00	11:40
Welfare state	Nomadland	37:00	41:00
Worker retraining	Nomadland	9:00	11:00

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## Movies used

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- Altered Carbon (2017) Distributed by Netflix Streaming Services. Produced by John G. Lenic.
- American Gangster (2008) Universal Pictures and Imagine Entertainment presentation in association with Relativity Media in association with Scott Free Productions; directed by Ridley Scott.
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- The Godfather Part II (1974) Produced and directed by Francis Ford Coppola. Distributed by Paramount Pictures.
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## Notes

- 1 Hall et al. (2016) discusses the use of episodes of the Simpsons in the high school setting, whereas this paper targets adults in higher education.
- 2 We discuss the use of the 2004 film version of the play, which is easier to implement and use in the classroom or as an assignment, in Table 1.
- 3 Are questions that students cannot answer by recollection or reading “verbatim” from a source.
- 4 For a good example of how this is done see Bose (2021).
- 5 *Boyz in the Hood* was briefly discussed in Vidal et al. (2020), but we now augment that discussion with specific topics and clips. set seven hundred years in the future, the planet has become a literal dump due to the excesses of capitalism highlighted during the first few minutes of the film. A single massive corporation.

## Appendix A

### *Description and some qualitative evidence*

The qualitative evidence presented here is based on the application of a similar methodology as in Vidal et al. (2020) but applied to several sections of an introductory undergraduate economics course (ranging from 20–40 students) and to several sections of a foundational economics for managers course (ranging from 20–30 students). Hence the pairing in Table 1 of concepts to specific clips, because in more traditional courses there is less time to watch an entire film. We still recommend that discussions use the set of questions discussed in the methodology section of this paper and that students are given the chance to apply their knowledge of economics to the case studies that the scenes represent. Getting them to think like economists, even if only in a rudimentary way, is an invaluable way to change the way they view and interpret the world. The average course grade, in a 4.0 grade point scale ranging was 2.6 for the undergraduate courses and 3.0 for the graduate course. The courses had five comprehensive examinations, a paper, a presentation, 12 online homework assignments, and a participation grade. We now provide student comments gathered from an open-ended question: what did you think of the in-class use of film and TV clips? We present responses for one section of introduction to macroeconomics and for two sections of foundational economics for managers. All the clips used in the two courses have been discussed in this paper using the methodology described above. The more open-ended question allows students to offer a more heterogeneous range of opinions, giving the qualitative data more diversity than would be possible with a closed-question. It also prevents the researcher from leading them into a certain type of response that might be the goal of the experiment. The 38 graduate students and 23 of the 24 undergraduates that responded to the question had something positive to say. A majority of the comments, across the board, stated that the

use of film clips helped them learn, that they made the lecture more fun, memorable and engaging. It was interesting to see how the undergraduates mentioned economics not being boring more often than the graduate students, which is probably because many undergrads taking introductory courses are non-majors, while MBA students have an interest in business and economics. The undergrads, generation Z, highlight how they appreciate the use of film and media because they are used to it. Half of the graduate and undergraduate students reported that the clips helped them realise how economics is connected and relevant to the real world. And 30% of each section mentioned that while the clips initially seemed to have nothing to do with class, it was educational to learn and discuss how they are related. Here are a few randomly selected comments:

“It is helpful to understand the topics Dr. D. uses it in a good amount, it makes his class way more interesting than it would be without it. Please keep doing it, thank you.”

-Graduate student

“It is helpful because as you learn it allows you to call back to a song or video you should, potentially sparking the thought process to lead down the correct path.”

-Graduate student

“Videos are very supplementary to content we are learning. They also help break-up lecture and connect with something we know from the world outside of the classroom. Some of the old videos and films are well explained and discussed to make them relevant though they might not seem.”

-Graduate student

“They are really beneficial and help understanding. They help give a visualisation and connect the real world to concepts. They are appreciated as I used to learn like that in High School.

-Undergraduate student.

“The movies are helpful; they are a nice change of pace that make class fun. They relate to things differently. If we talk about advertisements in class or some kind of history videos and music help you look at thing from a different perspective and lens. I wish more classes were like this.”

-Undergraduate student

“Use of media useful to engage us, and present theoretical material through examples that can be visualised and relate to day-to-day issues.”

-Undergraduate student

“The use of media in class is extremely helpful. Some people are more of a visual type of learner and benefit from material being presented in media. It also helps you remember a topic when you can relate it back to a song, picture, video, etc. It reminds me of high school pedagogical videos but more fun to watch and a deeper understanding”

-Undergraduate student