Human Capital and Economic Growth in the Potterian Economy*

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Abstract

In this paper, we analyze the economic structure of the world of wizards as depicted in the Harry Potter books, which we term Potterian economy, and offer an economist’s perspective on it. We look at the economic structure of the life of Harry Potter and his co-actors as an economic model that governs the social organization of their economic activities. Our goal is to study and understand the internal consistency of the Potterian economic model and explore the relationships between its assumptions and the situation in the real world, as reflected in the Potterian model. To accomplish this, we focus on a textbook version of Solow’s economic growth model, which economists often use for studying the process of nations’ income determination and which serves as a standard benchmark for comparative economic growth studies. The analysis of the Potterian economy reveals that the Potterian model fits quite well to the predictions of the economic growth model. We discuss potential implications of this finding, and explore the link between Potterian economic structure and performance in a broader context by discussing the link between economic institutions and economic outcomes.
1. Introduction

It is often argued that for a literary work to succeed, it needs to conform to the expectations and beliefs of its readers (Febvre, 1973). In particular, the text needs to succeed in convincing the readers that it is internally consistent. That is, the readers need to understand the rules and the logic that guide the development of the text’s plot. Indeed, there is a literature on the rules and patterns that books of various genres usually obey. For example, Gurevitch (2005) offers a discussion of some of the rules and features that characterize the books that belong to the fantasy genre.

Internal logic and consistency are also one of the necessary ingredients of any model used by scientists of any field. The main difference between a model and a literary work is in their goals and in the way their success is judged. Whereas a scientific model is judged according to its ability to give consistent results and predictions that are in line with observations, a literary text is judged according to its ability to appeal to readers. In order to ensure that the readers can understand and relate to the plot, however, they need to be able to identify with the rules that guide the actions of the book’s heroes, rules that are usually set in accordance with the accepted norms for that genre of literature. Since people are most familiar with what they know from the real-life experiences, one may argue that the model that guides the world described in best-sellers, is likely a reflection of the common attitudes and perceptions of people on their environment and society. In other words, the model that sets the rules according to which the plot of a book develops is also a reflection of the people’s model of how the real world functions.

The Harry Potter books, that are probably the biggest best-sellers of their time, could achieve such popular success only because they offer the readers this type of internally consistent model that appeals to the readers’ intuition and expectations, and is in line with the way they view and perceive the world. Consider Goblet of Fire, for example. The events in the book are arranged in an extremely ordered fashion so that every event that occurs at an early stage is found to have consequences at a later stage. For instance, if an elf is found in a suspicious situation, it cannot be a coincidence as it might seem at first. Rather, it has some sinister, logical significance. In a similar fashion, Rita Skeeter is mentioned in the early stages of the book as a reporter; it turns out that she has a role to play later in the plot. The same internal logic applies when some mayhem is reported to take place in the proximity of Professor Moody’s house; the protagonists find the true explanation for this seemingly innocuous event before the book ends. These examples demonstrate how the Harry Potter books—despite belonging to the fantasy
genre seem to obey some strict laws of logic, perhaps even stricter than reality where it seems to us that many things happen by pure coincidence and chance.

In the paper we consider the economic side of the model that guides the Harry Potter books and examine whether it may indeed be seen as a structural model of an economy with internal rules and consistencies. As economists, we are often interested in finding out whether the assumptions on which our models are based on, and the insights and predictions our models offer, appeal to laymen as well as to professionals. Indeed, it is sometimes argued that since the economy consists of many individual decision-makers, it is the laymen’s rather than the economists' actions and logic that makes the world go around.

If best sellers are indeed books that reflect the readers' model of reality, then the popularity of Harry Potter books suggests that the attitudes, the norms and the perspectives the books offer on economic organization of life, seem to appeal to an almost universal audience. The books have been translated to at least 63 different languages including, for example, Afrikaans, Arabic, Georgian, Hebrew, Latin, Persian, Vietnamese, and Zulu. Over 300 million copies of the books were sold so far, and they are read by men and women, and by adults and children alike.

We, therefore, look at the economic aspects of the life of Harry Potter and his co-actors in search of what Knight (1965) termed the “social organization of economic activities,” in order to understand the economic structure of the Potterian model economy and its assumptions. We compare the Potterian economic model, which we assume is conceived as consistent by the readers, with Solow's (1956) growth model, which is perhaps the most popular model in economics for studying income determination and economic growth.

In what follows, we refer to the world of wizards as the Potterian World, and to their economy as the Potterian Economy. We study the books in search of both similarities as well as differences between the real and imaginary worlds. We find that in many cases, the real and the imaginary worlds are quite similar, which underscores the reality’s prominence in the readers' eyes. We take the differences between the real and imaginary worlds to reflect what readers would have liked to see, and in which ways their norms and sets of beliefs bias their perception of reality. We show that by focusing on the differences while controlling for the similarities, we are able to make some inferences on the way readers might perceive the economic institutions of the real world.

The paper is organized as follows. In section 2, we briefly describe the structure
of the Solow’s growth model, on which we base our analysis. In section 3, we discuss the role of Potterian education system in accumulation of human capital in the Potterian economy. This section is perhaps the most critical section of the paper in light of the fact that the entire Potterian World circles around the events taking place at the Hogwarts School of Magic, and the fact that human capital plays a key role in modern economic growth theory. In section 4, we discuss the lack of population growth in the Potterian economy and its consequences for the Potterian economic growth. In section 5, we address the lack of physical capital accumulation in the Potterian economy and its consequences for the Potterian economic growth. In section 6, we summarize and interpret the structure of the Potterian Economy by interpreting it as an economic model and by focusing on the assumptions of the model’s political, economic, and social organization. We conclude in section 7, where we summarize our findings, offer some caveats, and suggest some ideas for future research.

2. The Solow Growth Model

Ever since Adam Smith published his book *The Wealth of Nations* in 1776, one of the most important goals of the science of economics has been to discern and identify the factors affecting and determining the economic growth of countries and the welfare of their citizens. The topic of economic fluctuations and their effects on employment, growth, consumption and income has become even more important for economists since the Great Depression in the 1930s, a period during which the average US unemployment rate peaked at 25%.

In this essay, we use the Solow growth model as a framework for studying the Harry Potter books in order to identify the factors affecting the growth of the Potterian economy. In particular, we focus on three factors that play key role in the Solow growth model: education (human capital), population, and physical capital. Our analysis is based on the assumption that the economic structure of the Potterian world can be viewed as a version of an economic model as perceived by the books’ readers and which shape their views of the real world. As discussed below, the analysis leads to the conclusion that the readers’ perspective may sometimes differ from the perspective commonly adopted by economists. These inconsistencies, we believe, offer interesting insights on the relationship between the predictions of economic models and actual economic developments as reflected in the Potterian economic model and the Potterian world view.

The Solow’s (1956, 1957) growth model is the standard textbook tool for
studying economic growth.\textsuperscript{1} It focuses on three main factors of production: population growth, investments in physical capital, and technological progress that improves the skills and the productivity of the work force. Like all models, the Solow model ignores some important aspects of reality that affect welfare and growth, such as inequality in income distribution, productivity differences between workers, and social and political institutions and environments.\textsuperscript{2} However, its simplicity and elegance make it extremely useful as a benchmark model for analyzing and predicting macroeconomic outcomes in terms of economies’ long term growth and performance.

The Solow model postulates that the total output produced in an economy depends on the amount of its factors of production and on the level of its technical and technological know-how. The factors of production include the labor, the capital (i.e., the number of machines and other types of equipment) that each worker has at his disposal, and the human capital (i.e., the stock of knowledge, experience, and ability of the workers). The education and various other training systems determine the stock of human capital, which along with the economy’s technical and technological knowledge determine the efficiency and the effectiveness of the workers.

The Solow model assumes that the economy’s output increases if there are increases in the stock of (physical) capital per worker or in the stock of human capital per worker. The model further assumes that the returns on capital investments decline as their stock per worker increases (also termed \textit{decreasing marginal product}). This assumption is equivalent to assuming that giving one tractor to a farm where the workers use shovels and sickles makes the farm much more productive, but giving it a second tractor would not enable it to increase the production by as much.

These assumptions lead to three major predictions. First, countries with higher birth rate should enjoy greater growth rate as long as they can invest appropriately in capital. On the other hand, if countries fail to invest in capital in proportion to the increase in the population, then workers' income will decrease rather than increase over time. Second, differences in human capital are a major source of differences between nations. For example, according to the model, a large proportion of the difference between developed and developing countries can be explained by differences in the stock

\textsuperscript{1} Robert Solow was awarded in 1987 the Nobel Prize in Economics for his contribution to the study of economic growth.

\textsuperscript{2} For example, there is an ongoing research on the relationship between democracy and growth. Although there seems to be a clear positive link between the two, the nature of the relation is not clear. Barro (1999), for example, argues that democracies are most likely to form and last in places that enjoy growth, whereas others argue that it is the democratic institutions that bring about economic growth (Acemoglu and Robinson, 2000).
of human capital (education), rather than by differences in physical capital. Third, the model predicts that there should be capital flow from rich to poor countries because *decreasing marginal product of capital* implies that the return on capital investment is greater in countries with lower stock of capital.4

In the following sections, we address these issues as they are mirrored in the Potterian economy. We discuss the effects of education, population trends, and capital accumulation on the Potterian economy using the Solow growth model as a guiding framework. While analyzing the Potterian model economy, we also discuss its implications for real world economies.

3. **Education and Human Capital in the Potterian Economy**

"Educating the workforce is necessary for economic and social development" (UNESCO, 2003, p. 12).

According to the Solow model, investment in human capital adds to the workers’ knowledge and enhances their productivity, which contributes to economic growth. It is, therefore, not surprising that governments as well as individuals around the world spend large proportion of their income on education. The US government, for example, spent over 17% of its 2002/3 budget on education.5

However, the efficiency of public and private investments in human capital is often criticized (Becker, 1961). Following our assumption that the books appeal to readers because they reflect an environment they can identify, and the fact that many of the shortcomings of the modern education system also exist in the Potterian world, we argue that an economic analysis of the Potterian world might offer some insights on readers' beliefs about the current state of affairs and about possible trends in education.

Harry Potter is a student at Hogwarts School of Witchcraft and Wizardry, a boarding school for underage wizards, and most of the events described in the Harry Potter books take place at this school. This implies that the Potterian education system receives a special emphasis in the books. We are thus able to analyze the Potterian education system in detail and assess its likely implications for the Potterian economy.

From the first day Harry Potter arrives to the school, and throughout the books, it is very clear that at Hogwarts the emphasis is given to practical subject matters. Less than a handful of the subjects studied at Hogwarts are aimed at improving the students' general

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3 See, for example, Easterlin (1981).
4 However, the empirical evidence does not support these predictions. There is, therefore, growing interest in understanding the behavior of international capital flows. For example, recent studies focus on the willingness of investors to invest in foreign countries and on their readiness to trust foreign governments and institutions (Lewis, 1999).
or theoretical knowledge. Instead, almost all the subjects studied there have practical orientation. For example, a partial list of subjects studied at Hogwarts for their practical usefulness rather than theoretical importance includes potions, advanced potion making, hermology, charms, care of magical creatures, astrology, defense against the dark arts, occlumency, flying, apparition, transfiguration, enchantments, and divinations.

Further, the classes themselves seem to be almost entirely dedicated to practice. For example, at Harry Potter’s favorite defense against the dark arts classes, the students are taught to perform various spells and counter jinxes. The class tests consist of putting those skills into action. Similarly, during enchantment classes, the student practice casting various useful spells, while at the transfiguration classes the students study how to change the shapes of various objects and animals.6

However, in none of these classes are the students required to study why magic works. Moreover, little or no time is devoted to the study of the "Theory of Magic." Indeed, the wizards seem to adopt a black box approach towards magic. That is, it seems that in the eyes of wizards it is important to know how to use magic, but it is unnecessary to study how or why the magic works.

It is not surprising, therefore, that Hogwarts’ students are good in replicating other’s work, in finding facts and in following instructions precisely. However, when it comes to inventing, innovating or open-mind thinking, Hogwarts’ students are not as successful. The paragon of Hogwarts’ students, Hermione, can serve as an example. Hermione does extremely well at the school because she has a remarkable ability to learn facts and use her knowledge at the right moment. When it comes to originality and innovation, however, she does very poorly. For instance, consider the situation in the Order of the Phoenix when she tries to establish a secret and secure communication channel between her friends. Despite her contempt for the evil ways of Voldemort's supporters, the only solution she can come up with is to mimic their communication protocol, even though it has some obvious weaknesses. Her friends, instead of trying to improve her solution, simply accept her authority and praise her for her inventiveness and skill, although she is honest enough to identify the source that inspired her.

Although the books mostly focus on Hogwarts, those same shortcomings also seem to apply to other schools in the Potterian world. When students from the three best schools for wizards meet for a competition, the readers learn that none of the school champions could have completed their tasks without outside assistance, because they all

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6 For a description of these and other classes, see The Prisoner of Azkaban, pp. 113–145.
lack the ability to think originally. Barty Crouch emphasizes this point when he boasts that it was difficult to assist the champions because he "had to contend with your [Harry Potter’s] stupidity" (Order of the Phoenix, p. 587).

The lack of emphasis on a broad knowledge in the Potterian education system continues when students graduate from the Hogwarts School. There is no mention anywhere in the books about the existence of a higher-education system. In other words, wizards do not go to colleges or universities after graduating. Instead, they choose a profession immediately after graduation, and dedicate their careers to it. Indeed, there is even a fairly sophisticated system of job-matching where students are encouraged to take classes that will be particularly useful for their future careers, as described in the Order of the Phoenix. None of the students, however, not even Hermione who is the best student at Hogwarts, is given an advice to study further. This further underscores the heavy emphasis that the Potterian education system puts on studying with the narrow goal of obtaining practical knowledge that helps the graduates in finding jobs but not in advancing knowledge further.

In the real world, universities and other research facilities have advantage over other types of learning institutions in that they provide a broader spectrum of knowledge and create what economists sometimes refer to as "non rivaled" knowledge, which can serve the entire society in making innovations. When society gives no weight to this type of knowledge and prefers that people specialize in one field and dedicate all their energy to serving their workplace and keep their knowledge as a private property, then universities have no competitive advantage over on-job training programs, and there is no reason, therefore, for people or governments to finance a university education.

Thus, as the students from Hogwarts mature and leave for the job-market, their inability to create and to innovate goes with them. Even the best of Hogwarts students seem to prefer jobs at the public sector or at established institutions. None of the good students try to open a place of their own or try to sell a new product or service.

The only ones who do try and innovate are those who grow outside the system. People like Professor Dumbeldore, Lord Voldemort, Professor Snape and the Weasley twins, all of them people who disregard the official schooling curriculum. They are the only ones that try and decipher what lies behind the written orders in textbooks, and come

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7 The knowledge in the Potterian economy is indeed private. For example, when the wand maker Ollivander disappears in the Half Blood Prince, people simply do not know who will make wands for them in the future, because Mr. Ollivander was the only man in the UK who had the knowledge and the skill to make the best quality wands, and he trained nobody to replace him.
up with new solutions, such as the *Levicorpus* spell invented by Professor Snape as a school boy and discussed in the *Half Blood Prince*.

The lack of originality and creative thinking in the Potterian economy is also the source of the success of the Weasley twins as inventors and shop-owners. Since they are the only ones who ignored official schooling and preferred the try-and-err method, they are also the only tradesmen who are able to innovate in order to meet the public’s needs. The fact that they dare to think and innovate enables them to outperform their veteran competitors and push them out of the market. However their success only serves to highlight the sad state of affairs in general: the twins manage so well because there is a public that wants to see innovations and is willing to pay for them. Yet no shop has opened at the wizards’ main shopping street for many years until the Weasley twins opened theirs; the last shop to open before the twins was Borgin and Burke’s, and that was at a time when Lord Voldemort graduated from Hogwarts, many years before Harry Potter was born.

Thus, the Hogwart’s education system with its emphasis on practice rather than theory seems to yield poor results. More importantly, it appears to contradict the goals of scientific education. The Potterian education system, therefore, seems to belong to a different era, an era when people tended to rely on authorities rather then to look and search for new knowledge by their own initiatives. Indeed, the advantage of the scientific method over other methods for obtaining knowledge is often seen in the emphasis it gives to systematic, empiric search for answers to various types of "why" and "how" questions (Dewey, 1933, Cohen and Nagel, 1934). Economists, for example, have argued that it was the change in the way people thought about obtaining knowledge that led to the industrial revolution and to the modern world (Braudel 1979, Mokyr 1992).

Thus, the wizard’s schooling system seems to depart from the objectives of the modern education system as a source of growth and innovations. It is, therefore, intriguing that Harry Potter readers find the Potterian education model as appealing and as one they can relate to. We suspect that a possible answer to this puzzle lies in the distance between the achievements of modern science and the uses of the machinery invented by this science. For example, most education systems view the skill of using computers as compulsory, but they do not require students to study how computers function. The same attitude is often found at the workplace as well, where the emphasis is on workers' ability to use rather than understand the machinery they work with. This leads students with future career opportunities in mind to choose more narrow
technological subjects at the expense of theoretical subjects. This might be a reflection of the recent trends in the western world of moving towards studying more practical and more market-oriented subject matters such as engineering, business, medicine, law, computer sciences, etc.\textsuperscript{8}

If the Potterian model is indeed appealing to readers because it reflects a situation they are familiar with, then if we try to assess the future of our education system by means of a simple extrapolation, then the Potterian view predicts that the current trends might lead to a decline in human creativity. According to this world view, we might see a trend towards maintaining and perhaps improving the existing knowledge and technologies rather than searching for new inventions and innovations. It seems that the readers of Harry Potter identify with Robert Solow who once commented that "You can see the computer age everywhere but in the productivity statistics."\textsuperscript{9} Thus, the Potterian model seems to imply that emphasizing technology and preparing students for the modern market-oriented careers, may not be enough for promoting a sustainable and long-lasting economic growth.\textsuperscript{10}

Further underscoring the emphasis that the Hogwart's School gives to the study of practical subject matters is the almost complete absence of classes in various fields of humanities and general knowledge from its curriculum.\textsuperscript{11} The wizards' teaching material includes only two subjects that seem to be purely theoretical, arithmancy and history, and of these two only history is obligatory. It appears, therefore, that students in the Potterian world do not study arts, philosophy, or other purely theoretical subjects. The fact that wizards do not learn sciences explains why arithmancy—Hogwart's equivalent of mathematics—is redundant for most students; when one does not study sciences, then it is also unnecessary to study the language of the sciences, mathematics. This magnifies the effect of the narrow teaching curriculum, and may further explain why Hogwart's

\textsuperscript{8} The number of physics Higher-Education graduates in the UK has declined from 11,800 in 1998 to 10,300 in 2002, while the total number of students rose from 437,600 to 486,400. At the same time the number of students who graduated in computer-sciences rose from 13,800 to 19,600 (HESA SFR 61, \url{www.hesa.ac.uk/sfrs/sfr61/}). A similar phenomenon exists in most of the developing countries, leading some countries (including the US) to adopt a policy of encouraging the immigration of qualified scientists. See, for example, \url{http://sciencecareers.sciencemag.org/career_development/previous_issues/articles/1470/premium_imports}.

\textsuperscript{9} Source: \url{http://en.wikipedia.org/wiki/Robert_Solow}.

\textsuperscript{10} Eicher (1996) considers two types of knowledge: private and public and the way they interact in producing economic growth.

\textsuperscript{11} Consistent with these findings is the fact that the wizards in the Potterian world do not have a rich or diverse cultural life. For example, the students at Hogwart's do not study fine arts or literature. Even Hermoine, the brightest of all, is never described as reading a book for her amusement. Similarly, the wizards do not go out to theaters, and their main forms of entertainment are watching low quality TV programs (\textit{The Half-Blood Prince}) and listening to popular band music (\textit{The Goblet of Fire}).
students lack the ability to think for themselves. The Potterian model, therefore, implies that the focus on practical subject matters might slow down the economic progress, which Harry Potter readers may not perceive too favorably.

Another important question related to the issue of investments in human capital is the lack of classes in spoken foreign languages. The Solow model predicts that since investment is most profitable in places where the stock of capital is small, investors and entrepreneurs would choose to invest more in developing countries. This process should lead, over time, to a more equal distribution of capital and wealth across nations. The data, however, does not support this prediction. The Potterian model may offer some clues for this "home country bias." In the Potterian economy, wizards should have little concern for distances when they do business. The books give ample examples of the easiness of travel and communication in the wizards’ society. Wizards can fly from one place to another on personal broomsticks, or they can use the Floo-network, portkeys and transportation spells to move instantaneously from place to place. This absence of significant transportation cost should facilitate trade between wizards even from the most remote places. Consider for example the price of eggs: if wizards can travel at zero or low cost between any two points, and if the price of eggs is much lower in one place than another, then every wizard would shop at the place with the lower price.

The situation depicted in the book, however, does not indicate such an open market. Potterian wizards interact with foreign wizards only rarely. For example, Harry Potter and his friends do not meet foreign wizards until they go to the Quidditch World Cup Tournament in the Goblet of Fire, when they are almost 15 years old. This initial interaction with foreigners is also marked with a series of misunderstandings. As an example, Mr. Bagman who is in charge of the cooperation with official delegations from abroad does not feel embarrassed to boast that he cannot communicate with his guests.

In addition to the lack of foreign languages skills, Hogwarts' students are also unfamiliar with other nations’ cultures and traditions. For example, when foreign students arrive to Hogwarts in the Goblet of Fire, a feast is held in their honor. At the feast French dishes are served, but many Hogwarts' students pass on them because they are unfamiliar

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12 In the words of Albert Einstein: "Imagination is more important than knowledge."

13 Empirical studies show that traders often shy away from doing business in foreign countries. McCallum (1995), for example, reports that Canadian firms from one region are 20 times more likely to export their products to other districts in Canada than to US states of a similar size, even after controlling for transportation costs. Similar patterns of trade have been documented for other developed countries as well (Nitsch, 2000).
with the strange flavors, names, and appearances of the foreign food. A similar kind of
disrespect and lack of cultural knowledge is displayed by the visiting foreign students.
For example, the French Fleur Delacour is keen to show the superiority of her nation's
way of doing things, but her remarks that "we 'ad a different way of doing things. I think
eet was better,” (Half Blood Prince, p. 101) often irritate her English hosts.

Thus, in the Potterian economy, negative sentiments towards foreigners are found
both among the average men, like the Weasleys, and among public officials such as Mr.
Bagman, which might be a barrier to international cooperation and trade according to the
Potterian view. The Potterian model can thus offer an explanation for why trade might be
limited between countries even in the absence of official government-dictated trade
barriers. According to the Potterian model, young people from different countries are
unable to communicate with each other, and they only meet sporadically. When they do
meet, it is in situations that encourage animosity rather than cooperation. For example,
when fans meet during the Quidditch World Cup and the Triwizard tournament, the fans'
support is determined by their nationalities. Situations where groups have different
objectives are known to increase tensions between groups (Sherif, 1966). Therefore, the
Potterian model is perhaps suggesting that an important barrier to international flow of
goods, services, and ideas is the lack of people's will and ability to communicate and
understand foreigners. As a result, trade might be limited because of misunderstandings,
prejudices and insufficient communications. This view of the Potterian model is
consistent with recent findings by Nitsch (2000) and Guiso, Sapienza, and Zingales
(2005), who report that trade patterns are often determined not only by objective
characteristics, but also by cultural aspects such as religion, history of conflicts, genetic
similarities, and languages.

The implication of the Potterian view is that lowering the costs of transportation
and removing trade barriers such as tariffs might not be enough to promote international
trade and investments. The Potterian model suggests that insufficient broad education as
well as stereotypical beliefs may form barriers to international commerce and trade. As
long as the prejudices remain, removing trade barriers such as tariffs may not be enough,
as demonstrated by the Canada-US example, where despite the fact that people from
these two nations have never been in a real conflict and despite the fact the two countries
speak in the same language, they nevertheless trade with each other much less than the
standard economic model would predict. The Potterian model, offers a possible
explanation to this puzzle: it suggests that the modern practices and trends in human
capital investments might be hindering international flow of goods, services, and ideas across countries, even when the countries are in a geographical proximity with each other.


Since the baby-boom that followed the World War II, the population growth rate in most of the developed world has been on the decline. In some developed countries, the natural growth rate, that is, the difference between the number of births and deaths is already negative. In 2005, for example, the population growth rate in Italy was only 0.07 percent, despite a positive immigration rate of over 2.2 new immigrants for every 1,000 Italian citizens. This leads to a decrease in the local labor force and to an increase in the demand for foreign labor, in addition to an increase in the demand for health services and retirement expenditures. At the same time, other countries have such a high population growth rate, that they cannot produce enough to meet the population’s needs and wants. As a consequence, people in those countries suffer from starvation and fight wars over natural resources. One example is the crisis in Sub-Saharan Africa.

In the Solow model, it turns out that as long as capital grows at the same rate as the population, national income will grow at the same rate as the labor force. When capital accumulates faster than the population growth rate, then the per-capita stock of capital increases and the national income grows at a faster rate than the population. In countries where the population grows faster than the rate at which capital accumulates, output and income per worker decrease. This was the situation in the 1990s in Sub-Saharan Africa, for example.

In the Potterian economy, population trends are similar to the situation in developed countries during the 1990s. The birth rate in the Potterian economy seems to be extremely low. Recall that for the population to remain steady, every married couple must have at least two children. Wizards in the Potterian world do not appear to cross that threshold: almost none of Harry Potter’s friends and classmates have siblings. The only exceptions are the Weasleys and the Patil sisters. However, the six Weasley children are such an uncommon phenomenon that other children sometimes ridicule them, and

14 Source: www.indexmundi.com/g/r.aspx?c=it&v=24 and http://news.bbc.co.uk/1/hi/world/europe/2053581.stm

15 On the increase in the demand for social security, see, for example: "How to survive the pensions crisis," The Evening Standard, 19 June 2002 at: www.findarticles.com/p/articles/mi_qn4153/is_200206/ai_n12011071

16 See, for example, www.usaid.gov/locations/sub-saharan_africa/niger/

17 Since not all people marry, the actual number is about 2.2 children per couple.
Padma and Parvati Patil are twins, so they do not break the rule of one pregnancy per woman, at most. Since almost all of the wizard children in the UK study at Hogwarts, this implies a birth rate of no more than 1-1.5 children per woman, which is as low, or even lower, than in countries with a negative natural population growth rate. In Italy for example where the birth rate is about 1.2 children per woman, it is only about 80% of the death rate, leading to a negative natural growth rate. The situation does not seem to be very different in the wizards' community where the low birth rate leads to the disappearance of some of the old wizard families, such as the Blacks and the Gaunts.

The Solow model predicts that if the population and human capital grow at a low rate, then the economy will reach a standstill. However, since the wizards are used to a high quality of life, they need to constantly maintain their work force in order to maintain production. In particular, the wizards seem to dislike performing certain jobs such as factory works, manual services and banking services. To satisfy their needs, the wizards rely on two sources. First, they enslave various humanoid creatures and force them to do some of the most unpleasant works. Such enslaved races include the house elves that fill the role of house serfs, doing all the unpleasant housework for well-off families and institutions in the Potterian World. Another example is the goblins. According to Harry Potter’s history books, the goblins fought several wars against the wizards but they were defeated and were forced to give up much of their freedom. In return, the wizards allow them to make their living by operating their financial institutions. It seems that the wizards regard those who handle money as avid and as usurers, so they prefer to leave this job to outsiders.

A second source of workers is the immigrants. The wizards seem to monitor the non-wizard population in search of those who are born in non-wizard families but have the talent necessary for becoming wizards. If they identify such “gifted” children, they offer them the opportunity to study at Hogwarts and become wizards. The non-wizards who receive this offer usually agree, because the wizards' community is very rich and advanced, and it controls means of production that allow even the poorest wizards to live in a relative comfort. For example, the Weasleys, although poor, live in a large house in the countryside, are connected to a quick transport and communication system (the Floo network), receive the newspaper everyday by mail, have the wizard equivalent of TV, and possess many other utensils that non-wizards can only dream about, such as knives.

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18 There is no indication of any wizard-child that lives in the UK and studies in any other school, although according to the Goblet of Fire, Malfoy's parents did consider such option at one point.
that chop on their own, and stoves that ignite on command. Most importantly, they always have enough to feed both themselves and any number of guests who pay them a visit. Thus, given the wizards' high standards of living, it is not surprising that the Creevey brothers, for example, give up prestigious Eaton in order to study at Hogwarts.

However, the dependency on migrant workers raises many difficulties within the wizards' community. The old wizard families find it enraging that the newcomers compete with them in the job-market, and mock the immigrants for their cultural backwardness. There is also strong racial discrimination against the wizards that come from non-wizard families, as reflected by the derogatory term "mud-bloods" used by wizards when referring to newcomers. Many wizards from old families, such as Mr. Malfoy and his colleagues, actively act to limit the number and power of the immigrants. For example, Mr. Malfoy does not hide his motives for objecting Professor Dumbeldore’s appointment as the headmaster of Hogwarts. He declares in a newspaper interview that in his opinion Prof. Dumbeldore is wrong for not discriminating enough against other races and children from non-wizard families (Order of the Phoenix).

It seems that the motive of many of the wizards that sympathize with Mr. Malfoy's opinion is to limit the ability of "mud bloods" to advance up the social ladder, in order to prevent the newcomers from competing with the authentic wizards for prestigious jobs. Indeed, the hatred of the upper tiers of the wizard society towards the newcomers is so great that the "Death Eaters," a well-funded and well-organized group that supports Lord Voldemort and even serves as his private army goes to war against the wizards' establishment over the issue of limiting the power of "mud-bloods." This group enjoys so much success that those who oppose it consider themselves a minority and feel that they have to hide their activities, which is a testimonial of the large public support that anti-immigrant feelings and views have in the Potterian society.

Even before the outbreak of the violence, however, it seems that the efforts to prevent immigration have been successful enough to prevent the population growth. The number of immigrants seems to be large enough to prevent a decline in the size of the work-force as indicated by the fact that the Hogwarts School opens every year with about the same number of students. Hogwarts, however, does not grow, and there is no indication that there is a need to increase the number of schools in the wizards' community beyond what already exists.

However, the population balance in the wizards' community is very delicate. The social gaps between the authentic wizards and the newcomers, and the unwillingness of
the "pure-blood" wizard families to hand over power to the immigrant wizards, increase tensions in the wizards' community and eventually lead to violence against the "mud-bloods" and to the outbreak of a civil war that wrecks the Potterian economy in the *Half Blood Prince*.

The Potterian views of population trends seem to be consistent with the Solow model. In particular, the Potterian view accepts the notion that population growth is tightly linked with economic growth. As the population in the Potterian economy stagnates, so does the economy. Moreover, the Solow model would have predicted that the wizards would take advantage of their wealth and invest outside their economy, and thus improve the quality of life of their own communities, as well as of the outside community. The books, however, suggest that human capital barriers prevent them from taking advantage of this opportunity. Therefore, instead of investments flowing from the Potterian economy to the non-wizard world, it is the people who migrate from the non-wizard community to the Potterian economy. However, the wizards' community finds the assimilation process of the newcomers difficult and complicated.

Thus, the Potterian model closely reflects the reality, where differences in capital and wealth between the developed and developing world lead to flow of immigrants from poor to rich societies. In many countries, massive immigration waves, although necessary for maintaining sustained growth of the population and the economy, raise racial discrimination, social unrest and harassment of the foreigners by local populations. As predicted by some economic models, significant quantities of the economy’s productive resources are wasted in such situations, as efforts are put to destructive rather than constructive use. In the Potterian model, this leads to a war. In real settings, this usually ends with racial conflicts and social unrest and to a struggle over jobs between locals and immigrants (Mui, 1995, Epstein and Nitzan, 2005). The recent violent riots in France and the success of right wing parties who call for stricter immigration laws in Europe, offer an example for these types of problems (Cesari, 2005, Ivarsflaten, 2006).

5. **Capital Accumulation and Economic Growth in the Potterian Economy**

Accumulation of human capital and population growth, both play an important role in determining the growth path of the economy. However, many economists believe that in the long run, it is the stock of capital rather than the amount of labor that makes economic growth possible (Romer, 1987; Bernanke, 1987; Levy, 1994). Because the term “capital” stands for all types of machines, tools, equipment, and the like, it would be hard
to imagine how a worker’s output could grow without improvements in, and additions to
the stock of capital that are at his disposal. Frequently in history, improvements in human
capital occurred hand in hand with additions to the stock of capital. Often, therefore, it is
hard to distinguish one type of improvement from another.\(^{19}\)

However, even the most able and knowledgeable worker will not be more
effective than his predecessor if he does not have the right tools.\(^{20}\) Because capital is so
important for economic growth, the Solow model predicts that in the long run, the
economy’s output should grow at the same rate as the stock of capital, and that the
growth rate of capital should equal the growth rate of the population (so that the per
capita stock of capital remains steady) plus the growth rate of the human capital (so
workers can take advantage of improved technologies). We know, however, that neither,
not the population nor the human capital grows in the Potterian economy. We, therefore,
want to examine whether the Potterian economy is consistent with these predictions. As
well, we want to examine whether there are changes in the stock of capital in the
Potterian economy.

Very broadly, one can divide all products into two types: consumption goods and
investment goods. Consumption goods are goods produced for end-consumers. Examples
include food, clothing, entertainment, transportation services, medical services, etc.
Investment goods are used as intermediary inputs in the production of other goods.
Examples include production-lines, warehouses, machines, and raw materials. These
investment goods, therefore, are used as the capital input in production processes. Thus,
investment is the process by which capital is accumulated in the economy.

In the Potterian economy, however, all productive efforts concentrate on
producing consumption goods. There are shops that offer clothes, foods, jokes,
newspapers and many other consumer goods and services that wizards value for their
daily use. However, the wizards, as predicted by the Solow model, put far less emphasis
on adding to their stock of capital. For example, nowhere in the books is there a
description of a new factory that opens up, or until the Weasley twins open their shop,
even about a new line of products. Even the Weasley twins who rock the boat when they
enter the market by opening their new shop (the first shop to open in Diagon Alley, the

\(^{19}\) See, for example, the debate on the role of each type of input in fostering the British industrial revolution
(Williamson, 1984, Richardson, 1989)

\(^{20}\) In Mark Twain's story "A Connecticut Yankee in King Arthur's Court," the hero, a successful entrepreneur from 19th
century US, finds himself in the court of the legendary King Arthur. Instead of marveling, he is frustrated by the fact
that he cannot bring his knowledge to use because the technology needed to use his knowledge has not been invented
yet. He, therefore, arranges a "new deal" and rearranges the economic structure of Camelot. Eventually, he becomes the
"boss" in Camelot which becomes an almost carbon copy of the 19th century industrial Connecticut.
wizard's main shopping street in London, for as long as most people can remember), do not use any novel production techniques or methods. Instead, they use old methods to produce new types of goods. For example, one of their most important innovations is a production of defensive clothing. However, they did not invent the magic involved or the technique which combines the magic with the clothing. Instead, their success comes from their ability to identify the needs of the consumers in the marketplace. In addition, growth is achieved only when people's income increases which allows them to buy more and better products overall. The entry of the Weasley twins does not seem to satisfy this requirement: people buy more at the Weasley's shop because it offers things they cannot find anywhere else, but they buy less elsewhere. Consequently, some older shops such as Zoknko's jokes' shop go out of business. Consistent with this, the amount of the gold coins that are exchanged in the Wizard's economy does not seem to change.

In addition to the lack of advancements in production technologies, there are also no improvements or additions to the infrastructure. For example, there are no investments in new schools. There are also no investments in new buildings or housing units. When a new stadium is built for the Quidditch World Cup tournament, it is destroyed after the competition is over. Similarly, the wizards do not try to improve their communication systems. The Floo network, for example, has served the wizards for many years, perhaps even for hundreds of years, for traveling from one place to another, but there are no noticeable attempts to improve or upgrade it. For example, it could have saved Molly Weasley her washing troubles if the Floo network could have been upgraded in a way that would avoid the use of chimneys.

Thus, the conclusion is that the Potterian model economy indeed develops along the lines predicted by the Solow model. The stagnant Potterian economy demonstrates that in a world with little or no population growth, and with little or no advancements in the human capital, there will be limited or no investment in the stock of capital, and therefore such a world would experience no economic growth. It seems that the Potterian model, a model that is seen as consistent by readers, agrees with the economic model on what promotes economic growth in the long run. This is another indication of the ability of the Solow model to succinctly capture the most relevant features of economic growth in a simple model.

Before concluding the paper, we next turn our attention to the discussion of some other aspects of the Potterian economy. In particular, we ask: What are the forces that operate within the Potterian economy that make it behave in the way it behaves? Is there
a causal link between the institutions in the Potterian economy and its’ zero growth rate? We address these issues only briefly. A more thorough discussion could be found in Levy and Snir (2005).

6. Potterian Economy as an Economic Model

In previous sections, we demonstrated that the imaginary Potterian economy behaves in a way that is consistent with the predictions of the Solow growth model with similar features. In this section, we focus on some particular aspects of the Potterian economy in order to identify some of the institutional factors that we believe contribute to the slow growth rate of the Potterian economy. One of the weaknesses of macroeconomic models such as the Solow growth model is that they yield predictions on the macroeconomic behavior but they often fail to explain the underlying mechanisms that determine the economy’s path. Here we focus on the behavior of institutions in the Potterian economy in order to shed some light on readers’ attitudes and perceptions of the interrelationships between financial, social, political and economic outcomes.

Governments have a lot of power. In well functioning societies, this power is given voluntarily by the people and in return governments are supposed to use it to enhance public welfare by promoting various socio-economic goals such as full employment and price stability, and by establishing various institutions crucial for the economy’s functioning such as law and order, court system, police and security apparatus, etc.21 On many occasions, however, ruling government officials abuse the power entitled to them in order to obtain personal benefits instead of improving the state of their people. For example, corrupt public officials motivated by personal gains often spend public money on inefficient projects rather than on investments in profitable and beneficial projects.

Overwhelming majority of the economists agree that large governments lead to inefficiencies and corruption, and therefore reduce economic growth (Aidt, 2003, and Hillman, 2003, Ch.9). The Potterian model is in line with this interpretation. The government of the Potterian economy is run by the Minister of Magic whose role is equivalent to that of a Prime minister in a democratic country. The Minister of Magic, however, is not elected in free elections. Instead, he is appointed by some unspecified process on which the ruling elite seem to have a strong influence. For example, it seems that Mr. Fudge was elected because he does not have the backbone to oppose the rich and

21 This is often termed “social contract” following Rousseau (1997), who used it as a title for his book on social structures.
The Minister of Magic is in charge of a very large public sector which controls a substantial portion of the Potterian economy. For example, the government is responsible for law-enforcement, international relations, sports, trade regulations, transportation, education, communication, controlling the behavior of non-human races (including the behavior of the goblin bankers), nature preservation and almost any other aspect of the everyday life. Consequently, almost all the wizards that are mentioned in the book are employed by the Ministry of Magic. Indeed, the number of people who work at the government office building is so large, that the first time Harry visited there his "mouth had fallen open," because of the sheer size of the building (The Order of the Phoenix, p. 117).

The government, therefore, can easily influence the life of almost everybody in the Potterian economy. Recall, for example, the fear that the Weasley family members express when the Minister of Magic comes to visit them on one chilly Christmas day in the Half Blood Prince. The fear from a conflict with government officials is a barrier to free thought and to private entrepreneurship in the Potterian economy, because people must avoid conflicts with the government in order to maintain their livelihood. In previous sections, we discussed the role of the Potterian education system in producing students who are unable to think freely and openly. In a broader context, it seems that this deficiency of the Potterian education system is related to the risk that adult wizards face if such a free thinking will put them in conflict with the Ministry. This fear may not be overstated: in order to force its view on the population, the government does not hesitate to interfere in the teaching curriculum and even appoint a High Inquisitor in the Order of the Phoenix to monitor the teaching curriculum and to ensure that none of the students express any opinion that differ from the official one.

Another way in which the Potterian government interferes in the marketplace is by setting regulations that make it almost impossible to develop or offer new products. Percy Weasley’s attempts to standardize something as trifle as the thickness of cauldron’s bottoms in the Goblet of Fire is an example of such an inefficient government intervention that limits the options and choices the Potterian consumers have. If only few types of cauldrons are authorized, then consumers may not have the option of choosing the one that fits best their needs, tastes, and incomes. In that case, they will be forced to buy only the models that have received official licenses and authorization. As a consequence of all the rules and regulations, the only way entrepreneurs can sell new
products is by breaking the rules and selling without obtaining permits. Indeed, this is the method the Weasley twins use, but it seems that at least a partial reason for their success in avoiding governmental intervention is the war. If the Ministry of Magic was not as occupied with the war when the twins started their shop, then the twins' mother’s prediction that "...they will end in front of the Improper Use of Magic Office," would probably materialize (The Goblet of Fire, p. 56). Alternatively, the would-be entrepreneurs can try to obtain permits by appealing directly to the government officials in charge. This then opens a door for corrupt bureaucrats to obtain personal benefits in return for the permits. When a senior government official, Mr. Crouch, tries to intervene in favor of a certain importer during the Quidditch World Cup in the Goblet of Fire, he does not hide the fact that he has personal interest in the goods that this entrepreneur plans to import.

Moreover, people like Mr. Malfoy and his friends do not hesitate to use their money to influence politicians. Ministry officials are aware of the fact that Mr. Malfoy is well connected, and that he is entitled to "favors" because he is "giving generously" (The Order of the Phoenix, p. 142). This is similar to the situation in many real world economies where government bureaucracies are sometimes set up for the sole purpose of extracting bribes from entrepreneurs (Ades and Di Tella, 1999). In the Potterian economy as well as in real world economics, such policies have a strong negative effect on economic growth, because they increase the cost of investments (Wei, 2000).

The Potterian economic model, therefore, suggests that large governments are inefficient and form barriers to economic growth. Moreover, in the Potterian model, the government is controlled by incumbent elite of the wizards’ society, who encourage status quo and discourage change because they may lose some of their power and influence if entrepreneurs succeed in climbing up the social ladder. Rich and wealthy wizards put a lot of effort into buying and controlling senior officials in order to "delay laws [they]... don't want passed" (The Order of the Phoenix, p. 142).

The Potterian model also offers a perspective on the difficulties of reforming large governments in order to make them more efficient. Because it is so large, the Potterian public sector is able to offer job security to everybody, even to the most inefficient workers, such as Bertha Jorkins who disappeared for a month without anybody getting worried because she "got lost plenty of times" (The Goblet of Fire, p. 58). It is, therefore, against the interest of the low and middle class wizards to oppose the government, because, it provides job security as well as a reliable social, health and entertainment
services. On the other side, however, the large government and its influence over almost every aspect of life mean that the risks from opposing to it might be too high for any individual wizard. Even Professor Dumbledore, the most powerful character in the Harry Potter books, has to leave his office and flee when his opinions bring him into conflict with the Minister of Magic in *The Order of the Phoenix*.

Finally, rich wizards find the large government a useful tool because it gives them the means to control the wizards' society by controlling few senior positions. It is, therefore, to be expected that the government would not adopt growth-promoting plans because such programs are either intended to increase the growth rate of the population or to increase investment by encouraging creative entrepreneurs with good ideas and little money to implement their programs. Both types of programs would be in conflict with the vested interests of the ruling elite. As mentioned above, the upper tiers of the Potterian society are interested in limiting the number of immigrants (and thus in controlling rather then encouraging population growth). They are also not in favor of encouraging free entrepreneurship because the current situation where they have monopoly over a substantial segment of the national income of the Potterian economy is convenient to them. Thus, the Potterian model predicts that the government policies that discourage private entrepreneurship and individual thinking and limit immigration, will persist indefinitely, even if it means that the wizard economy will be stagnating forever.

A different type of institution that is necessary for an efficient development of the economy is the existence of a mechanism that will facilitate flow of funds from investors to entrepreneurs. In order to implement investment projects, entrepreneurs need money to buy equipment, hire workers, etc. However, it is often the case that entrepreneurs with good investment plans do not have the means to carry out their plans because of a lack of personal funds. In such cases, the entrepreneurs need to look for investors who would agree to put some money in their project in exchange for profit sharing in the future, when the project starts to yield profits.

In modern economies, the role of matching between entrepreneurs who look for loans and people who are willing to lend them money is filled by banks and stock-exchanges. When people buy stocks and bonds, they transfer their money to entrepreneurs who run the firms that issue those stocks and bonds, and who use the money to invest in the firm. In return, the stock and bond buyers receive dividend and interest payments, respectively. Commercial banks and other credit institutions play a similar role, although in a different guise. The banks take money from savers and put it in
their saving accounts. The banks then lend this money to entrepreneurs who pay back interest to the bank. The bank pays a portion of these interest receipts to the savers, and the leftover is kept as a profit.

These types of credit and loan institutions do not exist in the Potterian economy. There is no stock exchange, and therefore Potterian investors cannot raise funds directly from the public. The monopoly bank, Gringots, does not offer loans and it does not pay interest. It is used by wizards as means for safekeeping their money, but wizards do not deposit money in saving accounts. The bank makes its profits from funding gold-hunting expeditions, i.e. by recovering money that was already used in the economy. Thus, the Potterian banking system does not offer investment funding opportunities, and thus it does not encourage production of new goods and services that would bring about economic growth.

People who are in need of extra gold, therefore, have two main options. They can turn to usurers who are willing to give loans in exchange for very high interest, and who use very cruel means to make sure the loans are paid back. The dire fate of people like Mr. Bagman who resort to taking such loans means that entrepreneurs who would like to implement a solid investment program would probably not consider this option seriously. The other option is to find some deep pocket that is willing to grant a loan. However, because most of the money in the Potterian economy is held by the upper classes, and because the upper class wizards are not interested in the success of entrepreneurs from the lower tiers, it is very unlikely that an entrepreneur without means would be able to implement his plans, no matter how good and promising his project is. The Weasley twins, who even consider betting in *The Goblet of Fire* as means of obtaining the necessary funds to open their shop, were lucky to have a friend like Harry Potter who won a large sum of money for which he did not have a use. Otherwise they would be unable to start their project, as they comment in the *Half Blood Prince*. The fact that the Weasley twins are the only ones who opened a shop in Diagon Alley after many years suggests that it is unlikely that many wizards have a similar luck.

In sum, the Potterian model highlights the role of the socio-political and financial institutions in determining economic growth. According to the Potterian model, the main reasons for the slow growth rate that is predicted by the Solow model are mainly institutional. The government in the Potterian world is large and inefficient and the public bureaucracy is so complicated that it interferes with the ability of entrepreneurs to offer new products. The large government is inefficient also because it gives public officials
the incentive as well as the opportunity for rent-seeking by obtaining personal benefits in exchange for their services, which is against public interests. Another important market institution that is missing in the Potterian economy is an efficient financial market. Large and inefficient government along and the lack of financial markets, are the key factors that bring about stagnation of the Potterian economy. Thus, according to the Harry Potter books, the predictions of the Solow model come about through market and economic institutions. Therefore, if we take the Potterian model as a model of reality as perceived by the readers, then we can conclude that the predictions of the Solow model come about through the development of market institutions. In accordance with the existing economic models, such as Mokyr (1992), societies that do not experience economic growth tend to develop elites whose vested interests may be harmed by changes and who, therefore, act to minimize reforms and development. Indeed, this is the case in the Potterian economy.

7. Conclusions and Caveats

In this paper, we examine the Harry Potter books as an economic model. In particular, we consider the texts as reflecting the attitudes of its readers, in order to study whether popular public perspectives and views on economic issues tend to agree with those of professional economists. In our analysis, we focus on the characteristics of the Potterian society in terms of its education policy, population growth and physical capital accumulation, and explore whether a society with features and characteristics such as those depicted in the books, is indeed behaving in ways predicted by the Solow growth model, a model that is most widely used by economists as a benchmark for studying economic growth.

We find that the Potterian economy experiences very little human capital accumulation. The teaching curriculum at Hogwarts seems to have remained unchanged for hundreds of years. Indeed, the history teacher is hundreds of years old ghost that teaches the same material in the same way for as long as the history books themselves can remember. Moreover, we find that the teaching curriculum at Hogwarts does not encourage free thought or originality. The Solow model predicts that societies which offer no improvements in their learning and knowledge-acquisition technologies will eventually freeze and stagnate. The Potterian model seems to agree with this prediction, as can be seen from its technological stagnation and the lack of new inventions and improved and advanced methods of production.

The books characterize the Potterian economy as one which has a very low birth
rate. Most wizard families do not have more than one child, and as a result some wizard families completely disappear over time. In the Solow model, low birth rate is another factor that may hinder production growth because in a society where the work force does not grow, and where demand does not increase there is no need in economic growth. The Potterian model agrees with these predictions as well: it seems that wizards are happy to use the same products and infrastructure for very long periods of time without change. For example, the Floo network has served the wizards for communication and transport for many generations.

After considering education and population, we study the rate of accumulation of physical capital in the Potterian economy. As predicted by the Solow model for a society with no population growth and no improvements in the human capital, we find that the Potterian economy is stagnant in this respect as well.

Finally, we look into the black box of the Potterian economy and analyze the mechanisms described in the books that link the basic structure of the Potterian economy to its stagnation. We find that the economic stagnation is primarily the result of the inefficiency of the Potterian public sector and of the lack of financial markets. The large government prevents growth because its complex bureaucratic structure interferes in the market process and prohibits free entrepreneurships. In addition, the large government is also easily manipulated and influenced by the wishes and desires of the upper class members of the wizards' economy, who oppose changes because changes are against their personal interests. The lack of efficient financial institutions also plays an important role, because in their absence, aspiring entrepreneurs find it hard to raise the necessary funds to finance their investments.

Taking the Potterian model as a model that is seen as consistent by the readers, it may teach us something about the way the readers might perceive the environment in which they live. The Potterian society is seen as very advanced but it does not grow, whereas modern society is one that grows rapidly. We argued that the Potterian view on the stagnation of human capital may be the outcome of peoples' perception of the modern education system as focusing too much on technical abilities and leaving too little role for free thought and for studies of general subjects and liberal arts. The stagnation of the Potterian population, therefore, may be seen as a reflection of the situation in many of the world's leading countries.

Low growth rate of economies seems to be a common feature in 20th century writings on advanced societies. For example, the advanced society of spacemen in
Asimov's books collapses as a result of their zero growth rate.\textsuperscript{22} To the extent that this was meant to be a prediction of actual developments in the real world, so far it has not materialized. Its dominance and persistence in popular literature, however, is a point that deserves further research.

Another feature of the book that deserves a greater attention is the role of the government in the slow growth rate of the Potterian economy. According to the Potterian model, the large government offers job-security, health, education and other public services to all. It also offers a stabile economy, so there are no unexpected macroeconomic shocks. Until the official declaration of the war in the \textit{Half Blood Prince}, the Potterian economy has remained very stable, as there were no noticeable changes in the quantity, quality or prices of the goods offered. This situation seems to be convenient to most middle class wizards. Even Mr. Weasley, who is very critical of many of the things that happen in the ministry, is proud to be a civil servant and sees his career (and the careers of his children) in the public service. In this respect, the books seem to reflect a favorable attitude of the readers on the role of large governments in the economy. At the same time, the books are also very critical of the way that the government interferes in the market and thus limits the opportunities people have for making individual advances in life. For example, Mr. Weasley does not have the right connections, which means that he would not advance up the ladder if there was no war. Those who can advance in life are those who have the connections but not necessarily the abilities, as indicated by the way that Professor Slughorn forms his club in the \textit{Half Blood Prince}.

The books therefore imply that the price the Potterian economy pays for the stable employment, income and production, is low social mobility, no economic growth and inefficient bureaucracy that interferes with everyday life. Moreover, the stagnation of the economy eventually leads to the outbreak of a war, which will likely change the structure of the economy. The way that the Solow growth model fits the Harry Potter books and the conclusions and questions that arise from the consistencies and inconsistencies between the Solow model, the Potterian model, and the reality, thus yield interesting insights on the way the readers of the Harry Potter books seem to perceive the world and possible future trends.

Finally, some caveats are in order. First, like any other interpretative study of literary texts (e.g., Rockoff, 1990), our interpretation of Harry Potter’s economic world may be open to a criticism, as other valid interpretations are possible. For example, it

\textsuperscript{22} See, for example, Asimov (1993).
may be argued that our analysis of the Harry Potter books reveals more about the ideological predispositions of the books' readers than about their perceptions and attitudes. One shortcoming of the methodology we use is that it does not allow us to clearly distinguish between assumptions and ideals. For example, if we consider the description of the Harry Potter's economic world as an economic model, then the lack of economic growth of the Potterian economy might merely serve the author as a simplifying assumption rather than a description of an ideal world or a point of view. A possible counterargument in favor of our interpretation is that when one uses assumptions that are too far from reality then they often need to elaborate on them and defend them. The fact that the Harry Potter's readers accept an economy with these characteristics, suggests that they might not be too far from the readers' perceptions and beliefs.23

Second, it may be argued that the Harry Potter texts reflect the point of view of the books’ author only. A possible counter argument to this criticism is the fact that the books seem to enjoy remarkably universal appeal independent of age, gender or place. As such, the content of the book, the environment it presents, the institutions it employs, and the situations it describes, must have a far wider appeal and thus can be thought of as reflecting the popular opinion of large masses.

Future studies could focus on other aspects of the Potterian economics and on comparing it with texts from other times and/or other parts of the world. For example, a careful reading of Tolkien’s *Lord of the Rings* or Asimov’s *Foundation* series can yield interesting insights on the changes the modern society has undergone during the post-World War II period.

Another interesting aspect of the books that deserves further research is what they do not contain. For example, in the entire series, there is no single mention of taxes being collected by either the government or a local authority, and that despite the fact that the government is the largest employer in the Potterian economy and it finances many activities that require public finance. The fact that wizards do not complain about the burden of taxes is a puzzle. Further research on these and other issues can yield interesting insights about how readers view these social and economic institutions of the modern world.

23 In this sense, one might think of J.K. Rowling as what economists call a "representative agent," who represents the preferences of the average decision maker that has no formal training in economics. A recent study by Rubinstein (2005) finds that students majoring in economics tend to make decisions that are more selfish in comparison to students majoring in other fields. According to J.R. Rowling's official biography (www.jkrowling.com/en/index.cfm), her major was French, and thus she has never taken Economics 101 or more advanced Price Theory class. Having not taken any economics courses, therefore, makes J.K. Rowling a good representative of the way an average individual might think and act.
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