CAN MARKET FAILURE EXPLAIN THE EXISTENCE OF PUBLICLY FUNDED BROADCASTING SERVICE IN THE DIGITAL ERA?*,**

DİJİTAL ÇAĞDA PİYASA BAŞARISIZLIĞI KAMU TARAFINDAN FİNANSE EDİLEN TELEVİZYON YAYINCILIĞINI AÇIKLAYABİLİR Mİ?

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Abstract:

Over the last few decades, technological developments have had a considerable impact on the broadcasting market. The methods of transmission have altered where broadcasting signals have been subject to dramatic enhancements. In terms of classification, broadcasting shifted from a pure public good to a club good and in the digital era, encryption enables governments to deal with negative externalities in the broadcasting market. In fact, broadcasting spectrums are not as scarce as previously experienced, thus, due to technological developments, the market failure framework cannot be considered as a legitimate rationale for publicly funded broadcasting services in the digital era.

Keywords: Publicly Funded Broadcasting Service, Market Failure, Public Good, Externalities.

Öz:

Son yıllarda meydana gelen teknolojik gelişmeler televizyon yayıncılığı piyasası üzerinde önemli etkilere sahip olmuştur. Bu çarpıcı gelişmenin etkisi altında olan yayın sinyali iletim metodları değişime uğramıştır. Sınıflandırma olarak, televizyon yayıncılığı tam kamusal maldan klüp mala dönüşmekte ve digital çağda sifreleme sistemi hükümetlere negatif dışsallıkların üstesinden gelmesine olanak sağlamaktadır. Yayıncılık spektrumları eskisi kadar kıt değildir. Bu yüzden, dijital çağda meydana gelen teknolojik gelişmelerden ötürü, piyasa başarısızlığı yaklaşımı kamusal televizyon yayıncılığının açıklanmasında meşru bir gerekçe olarak ileri sürülmemelidir.

Anahtar Kelimeler: Kamusal Televizyon Yayıncılığı, Piyasa Başarısızlığı, Kamusal Mal, Dışsallık.

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INTRODUCTION

Toward the end of the last century and the beginning of this century, technological developments have had a considerable impact on the broadcasting market. A couple of decades ago, the terrestrial analogue system was the sole transmission method of broadcasting signals from a producer to a receiver. However, technological developments have made it possible to transmit broadcasting signals in a number of different ways via cable, satellite, and internet. In addition, technological developments have enabled the broadcasting spectrum to become far more efficient. With digital technology "up to twelve times as many channels can be broadcast in the space that a single analogue channel occupies" (Papathanassopoulos, 2002: 34). Moreover, due to technological developments, the great majority of the developed world have switched off terrestrial analogue signals since 2012 (Hargreaves-Heap, 2005). Hence, transmission of broadcasting signals has relied solely on digital technology. Furthermore, in relation to broadcasting signals, technological developments provide a means of encryption for television programmes and channels (Armstrong & Weeds 2007; Lindstädt, 2010).

The greatest impact of our technological developments on the broadcasting market is that it has guided to a serious question of resource, which is 'do we need publicly funded broadcasting services in the digital era' in light of political agendas that different governments inevitably embody. Davies Gavyn, an ex-chief executive of the BBC, contends that different economic reasons give a clear justification for the existence of the BBC (Davies, 2005: 130). He argued that the terrestrial analogue system was the most preferable although, as is well established, since 2012, analogue signals have been switched off which renders that view currently indefensible. In reference to the economic reasons, it is argued that the technological developments cannot be neglected by policy-makers, as technological developments have cured certain market failures and therefore, economic reasons cannot explain the existence of the public broadcasting services in the digital era (Armstrong, 2005; Armstrong & Weedes, 2007).

Acknowledging the technological developments in the broadcasting market, from the terrestrial era to the digital era, this paper seeks an answer to the following questions, 'to what extent can economic reasons give adequate justification for publicly funded broadcasting services in the digital era?' More specifically, 'does market failure theory give a clear explanation for publicly funded broadcasting services, in the digital era'? Paper claims that market failure framework might be considered as a rationale for publicly funded broadcasting service in the analogue area. However, in the digital era, the necessity of publicly funded broadcasting service remains slightly ambiguous, if not entirely questionable as a result of technological developments have taken place. From an economic point of view, the paper argues that in the digital era, economic reasons do not provide justification for publicly funded broadcasting services.

To answer the questions stated above, a deduction system is used. If the market fails in order to allocate the goods or services efficiently then government intervention is justified.

In the paper, the market failure framework constitutes the main area of review, as a major reason for calling on government intervention into any given market. The broadcasting industry constitutes the case study; looking at two characteristics of the broadcasting market, namely, public goods and externalities, it will be acknowledged whether or not there actually is a market failure in the broadcasting market. Thus, if the market is seen as failing, it is concluded that there is a need for publicly funded broadcasting service, and of course, alternatively, no need in the opposite circumstance.

The next section gives an overview of the market failure framework and its economic applications. Section two focuses on the characteristics of broadcasting signals which argues whether the characteristics of broadcasting signals are the reasoning for and relevant to publicly funded broadcasting services. Section three discusses the externalities in broadcasting services, how technological developments eliminate market failure associated with externalities. The last section concludes the paper.

1. MARKET FAILURE FRAMEWORK: CONCEPT AND ECONOMIC APPLICATIONS

The market failure framework is an economic approach or idea which reasons the necessity of government intervention into any given market; one of the main aims of such an intervention is to promote the Pareto efficiency[1]. Considering the existence of certain cases where market mechanisms have been prospected to fail in the efficient allocation of goods or services, it has been argued that in order to promote the efficiency of the market, government intervention is justifiably required. There are mainly four substantial cases which epitomise the above dilemma faced by a market, these concern public goods, externalities, asymmetric information and imperfect markets. The presence of such conditions hinders the potential of delivering goods and services (Barr, 2001) and entail, as a result, a need for government intervention into the market. The paper takes only public goods and externalities into consideration due to the technologic development in the broadcasting market made an impact on these.

1.1. Public Goods

From an economic perspective, it is argued that goods and services can be divided into two categories, namely, public goods and private goods (Hamlin, 1993; Stiglitz, 2000; Barr, 2001). The characteristics of public goods and private goods are dissimilar, private goods are rivalrous in consumption and excludable, while public goods are non-rivalrous in consumption and non-excludable.

In order to understand what is meant by non-rival consumption, the concept of rival consumption must be outlined. Rival consumption is a characteristic of the private goods and it means that if goods or services are used by an individual, it is impossible for other

[1] "Resource allocations that have the property that no one can be made better off without someone being made worse off are said to be Pareto Efficient, or Pareto optimal" (Stiglitz, 2000: 57).

individuals to use the same goods or services and enjoy the benefits (Stiglitz, 2000). In other words, consumption of the goods or services by an individual restricts other individuals to consume the same goods or services (Hamlin, 1993). For instance, any kinds of fruit or vegetable; such as an apple, might be considered as good examples for being rivalrous in consumption. Imagine that there is only one apple on the table and ten people are sitting around the table: if one of the individuals consumes the apple, the other nine individuals will not have a chance to consume the apple, because it has already been eaten.

Non-rival consumption, on the other hand, is the opposite of rival consumption, meaning the consumption of goods or services by an individual does not restrict other individuals from consuming the same good or services and enjoying the benefit. Regarding public goods, the oft-reported examples include the national defense and streetlights (Stiglitz, 2000; Davies, 2005). Both of them are non-rivalrous in consumption, so an individual's personal benefit from streetlights does not inhibit others from sharing that same advantage. In other words, goods or services which have non-rival consumption characteristics can be used by limitless people, *ceteris paribus*.

The second characteristic of public goods is non-excludability, where the "consumption by one individual makes it impossible to exclude any other individual from having the opportunity to consume the same benefits" (Davies, 2005: 135). In other words, it is almost impossible to exclude any individual from benefiting a service, loosely put, a condition which is defined by the universality of public goods.

As mentioned above, pure public goods are non-rivalrous in consumption and non-excludable. Therefore, the economic implications of the public goods are as follows: if the marginal cost of public goods is equal to zero (Stiglitz, 2000) and there is an increase or decrease in the number of consumers, this fluctuation has no effect on the cost of the production for that particular service. Turning back to the example of street lights, it is obvious that an extra user would not change or impact the total cost of its production.

In the perfectly competitive market, the price of a product is equal to the marginal cost of the product. However, faced with the non-rivalrous paradigm, the marginal cost of public goods is zero or likely to be very close to zero, so considering this condition, an entrepreneur has no incentive to produce public goods because it is impossible to achieve any profit when the sale and marginal price are equal.

In addition, because of non-excludability, once the public goods or service are produced, it becomes free to everyone. In this situation, the pricing mechanism does not work well because it is unlikely that people will pay for it, unless they are forced to do so, with the negative implication of a general refusal or reluctance on behalf of the consumer.

Regarding public goods, it remains that the core reason for calling on government intervention into a market is to increase the efficiency. As it can be seen from the previous examples, within free market economies, entrepreneurs have no incentive to produce public goods. If they were to produce public goods, the charge of the public goods would have to

surpass the greater marginal costs of it to make such a process worthwhile. However, when public goods are produced, they are freely available to everyone hence it is unlikely that a producer of public goods can charge the users. Considering this circumstance, entrepreneurs are unlikely to be involved with the production of public goods. Therefore, in order to produce public goods, welfare economists have strongly argued that in the absence of entrepreneurial investment, there is a need for government intervention into the market.

1.2. Externalities

As well as public goods, externalities also lead to market failure, such externalities occur "when a transaction between two parties has an impact on a third party who is not involved" and "the two transacting parties" do not "take this impact into account" (Ofcom, 2011: 1). The third party might be affected negatively or positively, but regardless of either case, the price mechanism does not work well in order to compensate the affected party. Thus, equilibrium will not be in general *Pareto optimum* (Laffont, 2008). Externalities may present themselves in either negative or positive states, depending on their net social cost or benefit (Bjornstad & Brown, 2004). Therefore, it can be claimed that externalities can be divided into two categories, namely positive externalities and negative externalities.

Considering the negative externality, a transaction between two parties may have a negative impact on a third party, so considering the wider economic implications of negative externalities, it could be asserted that the decision maker (a firm or an individual) does not have to pay the full cost of the decision. Looking at the further research, the seminal paper of Ronald Coase, 1960, *The Problem of Social Cost,* effectively outlines the actions of business firms which harmfully affect other enterprises (Coase, 1960). In order to explain negative externalities, he presents a real-life analogy: In a situation where a confectioner and a doctor work at the same apartment, after a certain time, due to the vibration of the confectioner's machine, a noise is created which irritates the doctor. Thus, the doctor is affected negatively, rupturing his concentration while he is working due to the existent noise: in this situation, there is a transaction between the confectioner and the production process. However, the decision of the confectioner has a negative effect on the doctor; furthermore, the doctor is not a party to the transaction and the confectioner did not consider the wider implications of his decision.

The second part of the externalities is positive externalities, which economically implicate the social benefit of certain goods is greater than the market value and cost. For instance, imagine a situation where there are two neighbouring houses and each has their own gardens which are visible to one another. One house owner likes gardening and cultivates different coloured plants, creating a relatively beautiful garden. Keeping in mind that the house owner is solely responsible for the costs, the neighbour who has not invested anything, also acquires benefit from the beautiful garden, in two different ways. Firstly, the neighbour reaps the pleasure of the beautiful smells the garden omits and secondly, enjoys the aesthetics it provides to one's scenery. Considering this circumstance, the neighbour of

the beautiful garden is absent from and uninvolved with the transaction but still acquires benefit. Hence, the creation of a beautiful garden generates positive externalities, where the social benefit of generating a beautiful garden is greater than the cost of it.

Therefore, the reason why the market is likely to fail under this condition is because the third party may not be compensated if affected negatively and may not be charged if affected positively.

2. IS BROADCASTING SERVICES A PUBLIC GOOD?

As outlined in the introduction, over the last few decades, the manner in which broadcasting transmits from the producer to the receiver has dramatically changed. Approximately three decades ago, the terrestrial analogue system was the only way of transmitting broadcasting signals. However, at the beginning of the twenty-first century, broadcasting signals can be transmitted in a number of different ways, via terrestrial, cable, internet, satellite and others so the characteristics of the transmission system have changed. In this part, the characteristics of broadcasting in the analogue era and in the digital era are analysed and compared. Moreover, due to the change of broadcasting characteristics, the necessity of government intervention into the market in the digital era is assessed. The paper asserts that broadcasting has shifted from a public good to a club good. Therefore, one of the reasons for calling on government intervention into the broadcasting market seems no longer relevant in the digital era.

2.1. Analogue Era

From an economic point of view, it can be said that broadcasting service is a pure public good since it is non-rivalrous in consumption and non-excludable in the analogue era (Collins et al. 2001; Davies, 2005; Collins, 2006). Concerning non-rivalrous consumption, an individual's viewing of a television programme does not prevent other individuals from viewing the same programme and taking benefit from it. As it is discussed above, one of the economic implications of public goods is that an extra user does not affect the cost of its production. In this case, the cost of the provision of a television signal to an extra user is nothing; so the marginal cost of extra users is zero (Helm, 2005).

In addition, broadcasting is non-excludable under analogue streams as once the signal is sent to air, it is impossible to exclude people from having an opportunity to watch it. Therefore, any individual who has television and an aerial should have a free access to the broadcasting services. Thus, as Davies (2005) effectively argues, broadcasting in the analogue era can be considered a good textbook example for pure public goods.

2.2. Digital Era

In the digital era, the characteristics of broadcasting signals have significantly changed. In relation to the classification of goods, broadcasting has shifted from public goods to club goods or semi-private goods.

It is worth stressing that broadcasting still remains non-rivalrous in consumption, as in the digital era, regardless of the variety of transmissions, be it via terrestrial, cable, internet or satellite, an individual viewing a television programme does not restrict other individuals from watching the same programme (Davies, 2005).

However, one critical impact the digital era has had on broadcasting services is that broadcasting signals have become excludable (Collins et al. 2001; Davies, 2005; von Hagen & Seabright, 2007; Lindstädt, 2010). Concerning new transmission methods, broadcasting signals can be encrypted, controlling what people can or cannot view. More plainly, users have appropriate devices (television, aerial) and if they do not subscribe to the service, they cannot watch associated television channels and programmes.

Considering such circumstances, the classification of broadcasting has become controversial. While certain scholars argue that broadcasting still remains public goods, others argue that it has become private. At first, it is argued that broadcasting lost its public good characteristics and it is stated that "a public good is converted into a private good" (Collins et al. 2001: 7). In this case what should be understood by the private good is that it is a good which can be found in the market, where the price mechanism is the main function of determining the allocation of the resources.

Helm (2005) also argues that broadcasting lost its public good characteristics in the digital era, however, in terms of classification, he argues that rather than a private good, broadcasting service is a club good. He states that club goods have two characteristics, they are non-rivalry in consumption and excludable. Therefore, in the digital era, broadcasting might be considered as one of the best examples for club goods[2].

2.3. Rational for Publicly Funded Broadcasting Services

As an economist and former chief executive of the BBC, Gavyn Davies (2005) argues the necessity of the publicly funded broadcasting service from economic points of view. He claims that even the characteristics of broadcasting have changed, the economic reasons still give adequate justification for publicly funded broadcasting. He asserts that even though the ways of transmission, the broadcast signalling, have changed, the great majority of the users still rely on an analogue system. He stated that "to the extent that analogue broadcasting still exists (and by far the majority of television sets in the UK are able to receive only analogue signals) then television remains an archetypal public good" (Davies, 2005: 135).

The second significant reason for publicly funded broadcasting is that an unregulated broadcasting market might be inefficient in delivering broadcasting services. To put it bluntly, it may lead to under-consumption or under-supply of broadcasting services. Stiglitz (2000) argues that, if a good is non-rivalrous in consumption and excludable, as it is the

[2] It is worth noting that, Mitchell & Carson (1989) divide the goods in three categories, namely, private goods, pure public goods, and quasi-private goods. In their classification of the goods, television frequencies are considered as a quasi-private good in which there is an individual property right, ability to exclude potential consumers and not-freely traded in the competitive market.

case in broadcasting in the digital era, the market mechanism is inefficient in allocating the service effectively, because of two reasons: under-consumption and undersupply. He argues that in the case of non-rival goods, exclusion leads to under-consumption. Without exclusion, every individual has a chance to consume the public good. In other words, once a broadcasting signal is sent to the air, individuals can view what is broadcasted. However, with the exclusion of people who are restricted from viewing certain channels or programmes, thus, a manor of under-consumption.

It should be said that if a good is non-rivalrous in consumption and non-excludable, as is the case in the analogue era, the market is likely to fail in terms of allocation because entrepreneurs lack the incentive to invest or produce the good. When non-excludable goods are produced, no-one would invest because once produced, it is freely available (Davies, 2005). Hence, if a producer cannot return the cost of broadcasting, he is unlikely to produce it. Moreover, the marginal cost of the broadcasting remains zero or very close to zero and this condition also discourages entrepreneurs from producing broadcasting services.

Due to the lack of entrepreneurial incentives for producing broadcasting, production will not occur to a satisfactory standard. Hence, the market mechanism leads to the undersupply of broadcasting as well. All in all, in relation to broadcasting services in the digital era, certain scholars argue that the market mechanism is inefficient (it results with the problem of under-consumption or undersupply) and it is unlikely that the market mechanism can reach Pareto Optimum without government intervention. Thus, it is argued that the features of broadcasting services might give sufficient justification for a publicly funded broadcasting service.

2.4. Criticism of Government Intervention into the Broadcasting Services

Although Davies (2005) argues that even though transmission has changed, the great majority of the viewers still rely on the terrestrial analogue system in the UK, he fails to provide empirical evidence for his claims. The research which was carried out by the National Service, in 2006, demonstrated that in the UK, 6.4 million people preferred to watch TV via the internet (Office for National Statistics, 2010). So, in the UK, just over twelve per cent of the adult population preferred to watch TV via the internet. The research which was carried out in 2010 also stated that "watching television or listening to the radio over the Internet has been growing in popularity in recent years, with 17.4 million adults doing this in 2010, compared with 6.4 million in 2006" (Office for National Statistics, 2010). Due to increasing internet users, it is by a sequence that the number of people who watch online television will also increase so a trend exists, where users appear to be moving from the terrestrial analogue system to digital broadcasting. Although such empirical evidence does not fully eliminate Davies' claim, it certainly weakens it.

However, previous research, ignorant of contemporary developments, predicted that digital technology was likely to dominate the broadcasting market by 2005. It was estimated that by 2005, approximately one in two houses would access broadcasting services via

digital technology (Papathanassopoulos, 2002). Furthermore, Hargreaves-Heap (2005: 114) claims that "most countries have plans to turn off the analogue signal within the next decade and so all households will become digital by that time".

The Statistics Portal (2016) demonstrates that broadcasting signals have been transmitted, from a producer to a receiver, by digital technology. Figure 1 illustrates how broadcasting signals have dramatically changed: approximately three decades ago, broadcasting signals were transmitted solely through the terrestrial analogue system. However, in relation to the transmission of broadcasting signals, countries have shifted their system from analogue to digital.

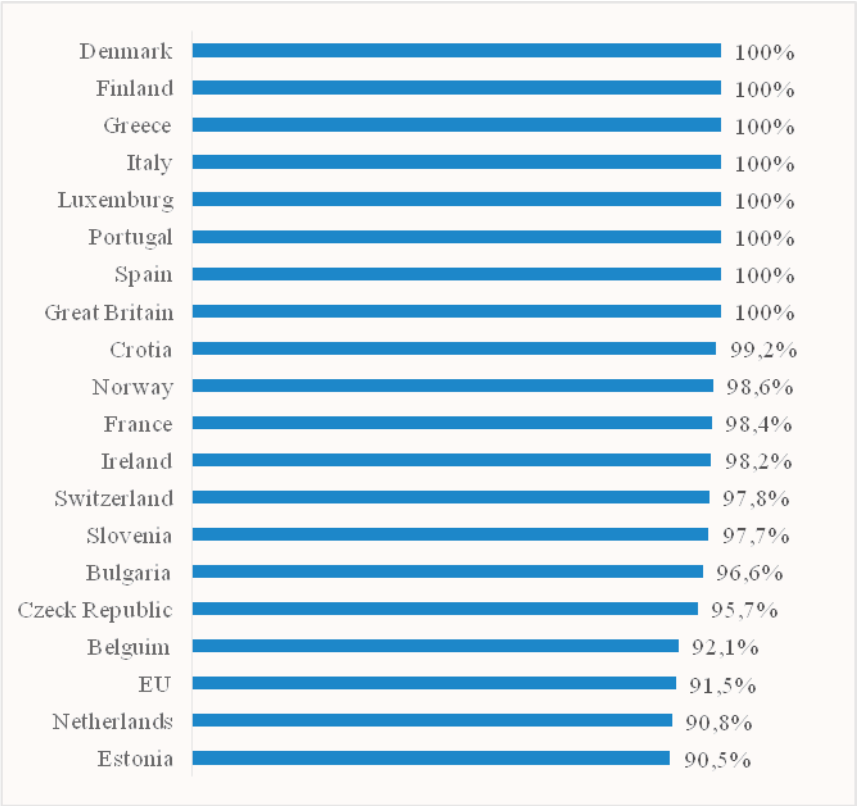


Figure 1: Share of Television Households with Digital Television Reception in European Countries in 2016

Source: The Statistics Portal. https://www.statista.com/statistics/427707/digital-tv-penetration-european-countries/

Looking at Table 1, one can see that by 2012, broadcasting signals will not be transmitted by a terrestrial analogue system in European countries (digitalnews, 2011). In other words, Figure 1 and Table 1 clearly show that the argument utilised by the literature of Davies (2005) is not relevant anymore. It is clear that broadcasting is not a pure public good in the digital era, rather, broadcasting is a club good or semi-private good. Hence, one

of the rationales for publicly funded broadcasting services seems to become irrelevant in the digital era.

Table 1: Western European TV households split by platform

	2010	2011	2012	2013	2014	2015	2016
Digital Cable subs	16%	18%	21%	23%	24%	25%	26%
Analogue cable subs	13%	10%	8%	6%	5%	3%	1%
Pay IPTV subs	7%	8%	9%	10%	11%	11%	1%
Pay DTH	17%	18%	19%	19%	19%	19%	20%
Digital free DTH	10%	10%	10%	10%	11%	11%	11%
Analogue DTH	2%	1%	0%	0%	0%	0%	0%
Analogue terrestrial	6%	4%	1%	0%	0%	0%	0%
Primary FTA DTT	27%	29%	30%	31%	31%	31%	31%
Primary pay DTT	5%	5%	6%	6%	6%	6%	6%

Source: Digital TV Research Ltd http://www.digitaltvnews.net/content/?p=19181

The second reason for calling on government intervention into broadcasting markets concerns the marginal costs. It is noticeable that even though the marginal cost of broadcasting for extra individuals is zero or close to zero, as Lipsey (2004) effectively argues that the licence fee of the publicly funded broadcasting service is not zero nor close to it. In fact, it might be too expensive for some users as is the case for around 4.5 million households in the UK (Davies, 2005). In addition, the survey which was carried out in 2008 demonstrated that approximately half of UK's citizens do not consider the licence fee of the BBC good value for money (Gibson, 2008). Moreover, a quarter of the citizens consider it to be too expensive. While the marginal cost of the broadcasting is zero, the fixed costs are considerably large (Lipsey, 2004). Supplying the broadcasting is not free and it seems it will never become free.

In addition, it is argued that non-rivalry in consumption should not be considered as a relevant reason for government intervention (Lipsey, 2004; Armstrong, 2005). Lipsey (2004) and Armstrong (2005) argue that in terms of non-rivalry, the majority of the creative industries, such as, writing a book, publishing newspapers or magazines, share the same characteristics with broadcasting. In both cases, the cost of an additional user may not be zero but very close to zero. However, there does not seem to be any significant form of government intervention toward printed media or the book market. Collins et al. (2001) argue that contrary to what is believed, there is government intervention in the book market, contending that a great majority of the developed countries subsidise the book and newspaper markets. They give the UK as an example and state that in the UK, "all books are zero-rated for VAT" (Collins et al. 2001: 5). However, it is important to note that, even though there appears to be government intervention in the newspaper and book market, the government is not the producer of the goods. In other words, governments are not involved in collecting a tax or licence fee in order to supply the newspaper or books. What governments actually do

is aim to increase the consumption of these goods, so they subsidise the producers. However, in the case of broadcasting, the government is the direct supplier of it[3].

Lipsey (2004) also argues that neither non-rivalrous consumption nor non-excludability is a relevant reason for government intervention into the market. What is more important is "the degree to which a public good contributes to the wider public interest" (Lipsey, 2004: 33-34). He considers the issue from a public point of view and claims that certain public goods such, as education and health are vital for society, however, broadcasting is not. Hence, the features of broadcasting do not give adequate justification for publicly funded broadcasting, especially in the digital era.

In addition, Armstrong & Weeds (2007) argue that not only in the digital world but also in the traditional analogue system, the allocation of the broadcasting service in the broadcasting market is inefficient due to the licence system. As previously mentioned, even though the marginal cost of broadcasting transmission is zero, citizens need to pay a licence fee for broadcasting if they desire to watch television or listen to the radio. It is argued that the publicly funded broadcasting system is inefficient, at first, those people who do not pay the licence fee do not have an access opportunity to broadcasting channels (Armstrong & Weeds, 2007). In other words, those who do not pay the licence fee are excluded from having an opportunity of enjoying broadcasting services.

The second reason why publicly financed broadcasting causes inefficiency is because in a dual system[4] it does not matter whether or not an individual views publicly financed broadcasting services, one still has to pay the licence fee if one would like to watch television (Cox, 2004; Elstein, 2005; Armstrong & Weeds, 2007). Given the example of the UK, even if one would only want to watch ITV, one has to pay a licence fee to the BBC, even if one does not watch the BBC. Under this circumstance, one chooses to pay the licence fee if one values ITV more than the licence fee of the BBC. In other words, one pays the licence for the BBC if one considers that their social benefit from ITV is greater than the cost of the Licence fee. However, one pays the money for the product which one does not use and this is a pitiful procedure that has a negative impact on the market.

The way technology has affected the characteristics of the broadcasting signal is irreversible. Analogue broadcasting is a good textbook example for a public good, it is non-rivalrous in consumption and non-excludable. However, in the digital era, developed countries have turned their analogue signals off and after 2012 television has been transmitted via cable, satellite and the internet. Regarding the broadcasting signal in the digital era, it still remains non-rivalrious in consumption but is excludable. Therefore, in the digital

[3] The important thing which should not be forgotten is that the existence of broadcasting services in Europe are independent from the governments and parliament (Scharf, 1994, cited in Collins et al. 2001). Therefore, governments or parliaments are not the broadcasting producer, however, the revenue of the publicly financed broadcasting service are gathered via compulsory licence fees or general taxation. Even though governments are not the producers, publicly funded broadcasting services are protected by the law.

[4] What is meant by the dual system is where there is a publicly financed broadcasting services and television channels which are funded through advertisement revenue

world, broadcasting is neither public nor private, but it is a club good (Helm, 2005) or quasi-private good (Mitchell & Carson, 1989: 57).

Changing the characteristics of broadcasting is also question the necessity of the publicly funded broadcasting services in the digital era. One of the main reasons for government intervention into the broadcasting service was associated with the non-excludable characteristics of the broadcasting. However, in the digital era broadcasting is excludable so one of the reasons alleged to generate market failure is not applicable to the digital era.

In addition, even though the cost of an additional user is still zero, or very close to zero, broadcasting is not the only service which has this characteristic. Therefore, this characteristic does not give adequate justification for government intervention into the broadcasting market. Moreover, even though the marginal cost of broadcasting is zero, the users have to pay a compulsory licence fee for it even if they do not watch publicly funded broadcasting services.

All in all, technology shifted the characteristics of the broadcasting signal from a public good to a club good. Hence, one of the economic reasons for publicly funded broadcasting service is no longer relevant, thus, there is no need for publicly funded broadcasting services in the developed world based on these perspectives.

3. EXTERNALITIES IN BROADCASTING

Externalities associated with broadcasting are a considerably important issue in economic and social circles. It is estimated that, in the modern world, people spend approximately three hours watching television a day (Armstrong & Weeds, 2007). In addition, Dijk et al. (2006: 251) assert that "most people will spend more time watching television over their lifetime than they spend in a classroom". Furthermore, Hargreaves-Heap (2005) also contends that taking a persons' whole life into consideration, it can be seen that, the time which he spends watching television is greater than the time which he devotes to paid work. Thus, what kinds of programmes are produced becomes an important issue as individuals are likely to be affected by what they view (Armstrong & Weeds, 2007).

It is generally accepted that television channels do not only produce those programmes which generate positive externalities but also those which create negative externalities (Hamilton, 1998; Graham, 1998; Hargreaves-Heap, 2005; Armstrong & Weeds, 2007). Education programmes and documentaries might be considered as a good example for those kinds of programmes which generate positive externalities. In addition, programmes involve violence might be considered a good example for those kinds of programmes which create negative externalities.

3.1. Positive Externalities in Broadcasting

Positive externalities associated with broadcasting might be divided into four categories: educational benefits, network externalities (the 'water cooler' effect), 'horizon stretching' programme, and social or 'citizenship' benefit.

In terms of educational benefits, it is possible to find educational programmes which may directly be related to school lessons. In addition, certain kinds of television programmes; such as documentaries, do not only enable individuals to broaden their knowledge but are also likely to stimulate their interest ranging from history and language to science and technology (Armstrong & Weeds, 2007). Moreover, even certain kinds of dramas; such as medical dramas, expand individuals' knowledge and awareness in subtle ways. For instance, through watching television dramas, people may learn how to deal with emergencies or social situations. Hence, viewing these kinds of television programmes may have a positive effect on others life.

In the broadcasting market, educational programmes can be found not only in the publicly funded broadcasting channels but also in the commercial broadcasting channels. One of the most significant differences of the digital era is that people now can find documentary channels, such as the Discovery Channel, Discovery Civilization, Discovery Science, which were not the case around twenty years ago. In addition, with regards to digital technology, people have an access to these channels even they do not live in a country where these channels are broadcast.

In terms of network externalities, it is meant that, because a certain type of television programmes is viewed by the large group of people, all people somehow have the same experience (Armstrong & Weeds, 2007). In terms of communication, such a kind of programme enables individuals to find a common subject to discuss; thus, it is likely to generate network externalities.

Hargreaves-Heap (2005) argues that, in the digital world, increased competition leads television channels to under-produce so-called 'horizon stretching' programmes. In other words, in the digital era, television channels are likely to decrease the number of positive externalities to a certain degree so from an economic point of view this implies that the social benefit of society which is gathered via broadcasting is likely to decrease.

The issue of social and 'citizenship' benefit of broadcasting is a heavily discussed topic in regards to the positive externalities of broadcasting. What is meant by social or 'citizenship' benefit is that of being a well-informed citizen (Armstrong & Weeds, 2007). It is logically argued that living in a well-informed society is considered important because, in such a society, political and other institutions work better than otherwise (Besley et al. 2002; Hargreaves-Heap, 2005). In this context, information means news and current affairs (Hargreaves-Heap, 2005; Armstrong & Weeds 2007; Lindstädt, 2010). However, there is no discussion on whether broadcasting channels play a significant role in delivering information to their citizens.

Regarding information production in the broadcasting market, Hargreaves-Heap (2005) contends that there is a need for publicly funded broadcasting services for two main reasons. At first, he argues that competition in broadcasting not only deteriorates the quality of the information viewers acquire but it also leads to under-provision of information. He claims

that the information production of an unregulated broadcasting market is considerably less than the regulated broadcasting market. In other words, he asserts that the amount of information delivered by publicly funded broadcasting channels is greater than the commercial television channels. However, even though commercial television channels produce less information than the publicly funded broadcasting channels; it might still be at the sufficient level.

Secondly, he claims that the trust of the people with publicly funded broadcasting channels concerning news and current affairs are significantly greater than commercial television channels (Hargreaves-Heap, 2005). Moreover, he argues that the reason why information productions of publicly funded television channels are quite important is that the majority of the individuals acquire information from the television channels (Hargreaves-Heap, 2005). He argues that, in the UK, approximately 65 % of the population prefer to acquire information from television channels. However, this result is not the same in other developed countries, for instance, the survey which was carried out in the United States demonstrates that "the Web is now a more important source of news for most Americans than either newspapers or free-to-air television" (Jonathan, 2008). The research also demonstrates regarding viewing television news, there is a declining trend.

Armstrong & Weeds (2007) also argue that there is a positive relationship between being a well-informed citizen and political participation. However, they claim that publicly funded broadcasting channels are not the only source of information and commercially funded broadcasting channels may deliver a sufficient level of information. The research of Prat & Stromberg (2005) supports the view of Armstrong & Weeds (2007), which was carried out in Sweden, a developed country, in order to see the effect of broadcasting news on the citizen. They found that people who watch commercial television news do not only increase their political knowledge but they also increase their political participation compared to those who do not watch commercial television news (Prat & Stromberg, 2005). Hence, it is clear that in order to produce information, there is no need for publicly funded broadcasting channels.

3.2. Negative Externalities in Broadcasting

The marginal social costs of certain types of television programmes such as excessively violent programmes are considerably greater than the marginal private cost of their production. Hargreaves-Heap (2005) argues that in the digital world, certain kinds of programmes, such as excessively violent and pornographic programmes are overproduced. He asserts that overproduction of these kinds of programmes increases the negative externalities in broadcasting. Thus, increasing the negative externalities of broadcasting has a social and economic cost on society. He argues that the prevalence of these kinds of programmes leads the society to see the violent behaviour as normal. Hargreaves-Heap (2005:125) states that "programmes that are excessively violent may help legitimize the use of violence in social relationships". In addition, he argues that increasing pornographic programmes may lead

individuals to see women only as a sex object. As it is mentioned above, the producer of these kinds of programmes does not bear the total cost of his decision. Thus, the marginal social cost of such a kind of programmes excesses the marginal private cost of it, leading to market failure.

Armstrong & Weeds (2007) approach the issue of negative externalities of broadcasting from a different angle. While they discuss the negative externalities, they do not discuss the negative externalities of the specific television programmes, but they discuss the negative externalities of watching television in general. They argue that although there is no clear link between "violence portrayed on television and violent behaviour" heavy television viewing, in general, is likely to have a negative effect on others (Armstrong & Weeds, 2007: 108). For instance, they argue that children are the most affected group from viewing television, stating that "Children's viewing habits, in particular, are a cause for concern: watching television has been found to lower a child's metabolic rate, reduce physical exercise, and invite over-eating" (Armstrong & Weeds, 2007: 108). In addition, Putnam (2000) who also researches the harmful effect of the television viewing found that there is a strong relationship between heavy viewing habits and anti-social behaviour. As it can be seen that it does not matter what kind of content is viewed, but addictive viewing itself has a negative effect on the third party. In other words, regarding a heavy television viewing habit, the marginal social cost of it seems to exceed the marginal private cost.

3.3. In the Presence of Externalities, Is There a Need for Government Intervention into the Broadcasting Market in the Digital Era?

One must not forget that television channels can produce those kinds of programmes which enhance social benefit and which increase social cost. Scholars generally accept that the social benefit of the publicly funded broadcasting channels is greater than commercial channels. In addition, publicly funded broadcasting channels are unlikely to produce those kinds of programmes which generate negative externalities. In other words, it is unlikely that publicly funded broadcasting channels produce excessively violent or pornographic programmes. However, if publicly funded broadcasting channels are heavily viewed, it is likely that it also stimulates negative externalities rather than solely positive ones.

It is argued that even if it is difficult to measure the extent of the externalities of broadcasting, it is generally accepted that there should be an intervention for the broadcasting market in order to "promote those programmes generating positive externalities and to diminish those with negative externalities" (Armstrong & Weeds, 2007: 109).

There are two substantial questions which arise from this discussion: at first, how the positive externalities of the broadcasting can be enhanced and secondly, how the negative externalities of the broadcasting can be eliminated? As is obvious, in order to increase the positive externalities of broadcasting programmes which produce social benefit, efforts should be pursued to achieve this goal. However, the desired effect can be achieved by either agent, being the publicly funded broadcasting channels or commercial channels.

It is argued that in order to increase the positive externalities, public broadcasting provision is in fact not the most effective way (Beyer & Beck 2009 cited in Lindstadt, 2010: 12). As Armstrong (2005) argues that in the digital era, individuals have a choice to skip the television programmes they do not like and it is likely that they will discover a programme they like. However, in the analogue era, because of the limited number of choice, individuals were restricted to watching the broadcasted programmes or switching off the television. Therefore, in the digital era, even publicly funded broadcasting services generate positive externalities, if it is not viewed at all, it cannot generate positive externalities.

It has been effectively argued that in order to increase the desired effects of those programmes which generate positive externalities "it is crucial that these programmes are actually watched, not just that they are broadcast" (Armstrong & Weeds, 2007: 109) In addition, it is worth noting that those programmes which generate positive externalities such as documentaries already exist in the digital era. The important point here is that, in the digital era, commercial channels are likely to produce those kinds of programmes which generate positive externalities. However, those programmes which generate positive externalities should also be encouraged by the government as well. It is argued that those programmes which generate positive externalities should be subsidised by the governments (Peacock, 2000; Beyer & Beck cited in Lindstadt, 2010). For instance, commercial television channels might be subsidised if they provide educational programmes, especially in prime time.

In terms of positive externalities, the information production of the broadcasting channels is discussed above. As stated, the main focus was on whether or not the information production of commercial television is worse than publicly funded broadcasting channels. The empirical research of Prat & Stromberg, (2005) demonstrates that commercial television news may inform the society better than publicly funded broadcasting channels. The political participation of those people who only prefer to view commercial television news is greater than others. Thus, commercial television channels current affairs programmes and news are more effective than publicly funded broadcasting channels. Thus, the transaction between an individual and commercial broadcasting channel have a positive impact on others, even if they are not part of the transaction.

As argued above, certain television programmes such as excessively violent programmes are likely to cause negative externalities in the broadcasting market. Hargreaves-Heap (2005) argues that in order to eliminate the negative externalities of the broadcasting market, there should be a restriction on the demand side and he adds that one way of eliminating negative externalities from the broadcasting market is using a tax on associated goods. It is also argued that fines and stating limits can be an effective way of eliminating negative externalities of broadcasting (Hoskins et al. 2004; Armstrong & Weeds, 2007). However, in the case of broadcasting, in a free-air system, because individuals are not excluded from using the service, it is not possible to put a tax on associated goods. However, in the digital era, broadcasting signals are excludable and it is possible to have pay-per-view programmes. Thus, violent programmes maybe broadcasted as a pay-per-view, and putting a tax on it can

be possible. On the other hand, Armstrong & Weeds (2007) are also in favour of banning certain kind of television programmes in order to eliminate negative externalities, they state that "where significant negative externalities arise, however, an outright ban would probably still be justified" (Armstrong & Weeds, 2007: 116).

In addition, Armstrong & Weeds (2007) approach the issue of negative externalities from a slightly different angle and they consider the harmful effect of viewing television on children. They argue that, in the digital world, the viewer has more control over what they watch. The encryption system enables individuals to avoid watching unwanted materials and thus "these technologies can assist parents in controlling what children view" (Armstrong & Weeds, 2007: 116). In other words, using encryption technology, parents can protect their children from watching harmful programmes so in the digital era, negative externalities of the broadcasting, which are likely to affect children, might be eliminated with an encrypted system.

Television channels are likely to generate not only positive but also negative externalities. In order to increase those programmes which create social benefits and eliminate those programmes which cause social cost, the intervention of a government into the broadcasting market has been legitimised. In the digital era, one of the most effective ways of increasing the positive externalities in the broadcasting market is to subsidise the commercial television channels in order to increase production. Regarding negative externalities, encryption enables authorities to put a tax on the associated television programmes. All in all, in the digital era, regarding externalities, it is accepted that there is a market failure but, publicly funded broadcasting television channels are not the most effective way of remedying it. In the presence of the externalities in the broadcasting market, the intervention should be via certain types of regulation rather than a direct provision of it. Hence, due to the externalities, there is no need for publicly funded broadcasting channels in the digital era.

CONCLUSION

The following research was conducted with great care, as the matter is quite sensitive and as the arguments can be convoluted, it was important that the materials and economic positions were made as clear as possible. It is obvious upon reading that great consideration was given to the views, the argumentation and justification of government intervention in response to market failure, so appropriate, practical and calculated solutions could be presented in return. To avoid the accusatorial nature of sceptics who support government intervention, it was imperative that the research remained concrete and considerate throughout so as to not be accused of simplification or idealism and with careful attention, could stand as a lucid but subtle counter-argument to government intervention.

Over the last few years, technological developments have played a crucial role in the broadcasting market. During the analogue era, the market failure framework gave adequate justification for publicly funded broadcasting services. However, in the digital era where

technological developments continue to take place, the necessity of publicly funded broadcasting services remains slightly ambiguous, if not entirely questionable. Confronting the issue of publicly funded broadcasting services from an economic point of view, it is asserted that economic reasons do not provide justification for publicly funded broadcasting services in the digital era.

The method of transmitting broadcasting signals, from a producer to a viewer has significantly changed and the characteristics of the broadcasting signals also shifted from purely public goods to club goods or semi-private goods. In other words, broadcasting signals were non-rivalrous in consumption and non-excludable in the analogue era and in the digital era, although broadcasting signals are still non-rivalrous in consumption, they are now excludable. In addition, since 2012, the great majority of developed countries have switched off terrestrial analogue signals, and in relation, entire broadcasting signals also became club goods since 2012. Under these conditions, it might be claimed that technological developments have remedied the market failure associated with the characteristics of broadcasting signals. Thus, one of the rationales for publicly funded broadcasting services is rendered irrelevant in the digital era. Therefore, from an economic point of view, it is concluded that the characteristics of broadcasting signals do not give adequate justification for publicly funded broadcasting services in the digital era.

In addition to these findings, in order to promote those programmes which generate positive externalities and diminish those programmes which are likely to create negative externalities, there is no need for a publicly funded broadcasting service. Regarding positive externalities, governments may subsidise commercial television channels to produce those programmes which generate positive externalities. Moreover, excludable characteristics of broadcasting signals enable television channels to encrypt television programmes. One way of dealing with the negative externalities is also to put a tax on associated goods, so in this case, those programmes which are likely to generate negative externalities should be encrypted and the government should put a tax on them. Hence, in the digital era, neither negative externalities nor positive externalities of broadcasting programmes should be considered reasons for publicly funded broadcasting.

The literature which challenges government intervention is rich in detail, strong in rhetoric and vociferous at times but this research wanted to retain an air of realistic and professional criticism so the implementation of calculated and operative alternatives was presented against publicly funded broadcasting services. Therefore, it drew on the strongest counter-arguments, which after consideration illustrate that the economic reasoning, or narrative, behind government intervention is malformed, and if one may dare say, slightly insincere. This leaves one to speculate that there exists an ulterior motive as, under scrutiny, the market failure framework appears no more than a false trajectory and fear imposed onto what is and could be a thriving and self-sustaining industry.

The paper focused on the impacts of technological developments on a broadcasting market and in conclusion, found that the market failure framework cannot give adequate justification for publicly funded broadcasting services in the digital era. However, one of the limitations of the paper is that it focuses solely on economic reasons and as a consequence, neglects the political and social reasons. This is significant as transformations have not only happened in regard to technology but society at large. Hence, the social and political factors for rationalising publicly funded broadcasting in the digital era must be acutely investigated to determine whether such funding should exist.

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