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ARCHIVES OF ECONOMIC HISTORY

HISTORY AS IT WAS HAPPENING: AN ARCHIVAL STUDY OF BRITISH NEWSPAPER REPORTAGE ON THE INDIAN RUPEE CRISIS, 1873-1893

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Abstract

Economic historians when looking back at past events tend to compress time which results in a possible over-exaggeration of the intensity of issues. This paper, by undertaking an exploration of digitized newspaper archives expands time, while at the same time, attempting to answer several questions that remain unexplored in economic history; in particular, how were "crisis" endured for such long periods of time? The specific issue that has been subjected to study is the depreciation of the Indian rupee between 1873 and 1893, which has been referred to a major "crisis" in both, contemporary and more recent historical literature. But was it really as severe as it has been made out to be? Perhaps not.

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1. Introduction

The digitization of newspaper archives has opened up a whole new area of historical exploration. While newspapers archives did exist in physical forms, it is digitization that makes it practical to use by allowing search across kilometres of data. Most historical research inevitably begins from a position where the researcher is already aware of the outcome. In other words, historians look back at a set of events, *ex-post* and therefore cannot escape from the inevitability of it becoming, to some degree, tautological. While we may not be able to fully overcome this essential feature of historical research, a study of issues from the archives allows us to see history as it was happening. Digitized newspapers archives further expand the range of archival research. Most traditional archives maintain "official" records, a preferred source of information for historians. This might not always be in tandem with the more popular perception

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of events and debates happening amongst the general public. To illustrate this argument consider the employment situation in India presently. While official records like the annual budget may record positive developments on account of high GDP growth, the debate at the grassroots may be quite the opposite; unemployment has been recently described as "jobs famine" in the popular press (India Today, May 2, 2016) that could adversely impact the re-election of the present government in the next general elections. Living in the present, we are able to experience the discourse on unemployment – as active contestation – rather than mere information.

This dialectic between the official and popular view is especially important in monetary history (and perhaps other fields like business and economic history), which is the domain of discussion in this paper. By consciously taking an *ex-ante* position, a study of newspaper archives could allow us to explore questions that are lost in studies based on secondary sources as well as official archives. When exactly was a problem (that we now know as a problem) popularly identified as such? Were the consequences also identified at the same time and did they turn out to be on the same lines as we know at a later date? What were the resolutions to the problems being discussed at that time? Was there a debate on these solutions? How did the one/s ultimately chosen pass through the debate? In historical discourse, we are accustomed to talking about a period of 20 years (or sometimes even centuries) as a small number. But do we realize this could mean an entire generation; like Japan suffering a depression since the early 1990s? How was the issue endured for such a long period of time? How did the resolution of the issue come to be proposed and accepted? Given that the world has not been able to overcome economic crisis even after history has repeated itself at regular intervals over two centuries (at least), analysis of newspaper archives could provide some useful insights into how people experienced with them in the past, particularly over extended periods of time.

This paper attempts to use archival newspaper reportage to explore some of the questions raised by focusing on the build-up to a critical event in Indian monetary history; the closing of the mints to the coinage of the (silver) rupee in 1893. With this policy step, the value of the rupee, which had for hundreds of years been inextricably linked to the price of silver, was terminated and instead fixed in terms of the sovereign and gold. The action itself was the result of the gradual but debilitating depreciation in the price of silver, which as we shall see, began in 1873. The solution to the problem, the gold-exchange standard as it came to be called, was proposed by A.M. Lindsay as early as 1876 (Kemmerer 1914, p.373), but was implemented only almost two decades later in 1893. By scanning through newspaper archives, we attempt to discover when

popular reports began discussing proposals to counter the decline of the rupee and furthermore, the arguments that evolved and debated on their pros and cons before actual adoption of the gold exchange standard. It should be reiterated that this study is not merely using newspapers as a source of information but attempts to cull out answers to some of the questions raised above. In other words, we will try to understand the evolution of popular perception of the issue rather than justifying an *a priori* hypothesis. While the term "history as it was happening" has been usually been used in autobiographical works, we were unable to find, to the best of our knowledge, a study of reportage in economic or financial history.

It is also important that we point out a limitation of our study; we restrict our database to a single newspaper archive. Although the range of newspapers covered by these archives are not complete (for instance, important newspapers like the Financial Times are not included), we have nonetheless restricted our search to these archives for reasons of viability. However, given the voluminous amount of material found, we are confident that it is sufficient for analysis and in raising pertinent issues in archival newspaper research.

2. The Indian rupee crisis – an ex-post view

Before embarking on our *ex-ante* analysis, we present an *ex-post* view of the Indian rupee crisis which began in 1873, and its policy (re)solution in 1893. Although silver was used extensively for coinage in India over centuries before British rule and even became the unit of account – the rupee[1] – it was only in 1835 that the colonial government put the territories under its rule on a monometallic silver standard. Meanwhile, for two hundred and fifty years since the early 1600s, until about the last quarter of the nineteenth century, the international gold:silver price ratio had been rather stable; fluctuating only slightly between 1:13.75 and 1:15.5. This parity was, however, disrupted in the 1870s. In 1870-71, when the gold price of silver was about 60d. per ounce, the Indian silver rupee was worth almost 2s.[2] By 1893, with gold price of silver tumbling to just 39d. per ounce, the rupee fell to 1s.3d. Equivalently, the sterling pound appreciated by about 50 per cent from Rs.10 to Rs.15 in just 20 years.[3] Figure 1 below shows the depreciation of the rupee over the period 1835 and 1913.

The reasons for the change in parity were essentially two; an abundance in production of silver accompanied by the abandonment of bimetallism across the Western world that resulted in a glut of silver. On the other hand, the demand for gold after the growing *de facto* transition to a "gold standard" across many European nations including Germany, Italy, Holland, France as

Figure 1. Pence (d.) per rupee
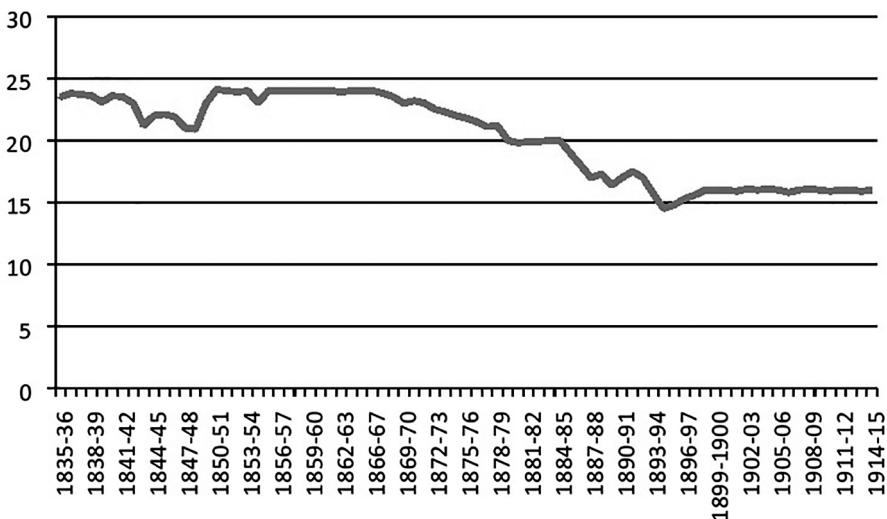
Source: B.R. Ambedkar, History of Indian Currency & Banking, Thacker & Co., Bombay, 1947.

well as the United States meant a crash in the gold price of silver. The rupee being based on a monometallic silver standard meant that the rupee lost its value in terms of gold currencies, in particular, the pound sterling. Efforts to reintroduce bimetallism failed and when the United States decided to move on to a pure gold standard in 1892, all hopes of revival in silver were aborted.

The impact of the depreciation of the rupee was both positive and negative or to put it differently, there were winners and losers in India as well as Britain. The increase in exports and attractiveness to foreign investment inflows were seen as beneficial to India, although service charges and repatriation of profits in terms of pounds were now under increasing risk. On the other hand, the impact on imports from an appreciated pound was considered as adversarial to British exporters as well as British residents in India who would procure fewer pounds for their rupee savings in India. There was also great concern that the "home charges" – expenditures incurred in England by the Secretary of State in India – that were fixed in terms of sterling pounds and had to be remitted every year to Britain put increasing pressure on the Indian exchequer.

Ultimately, after an ordeal that had lasted for 20 years, on June 26, 1893, the Indian mints were closed to the free coinage of silver. India went off the silver standard and never returned. Following this decision, the government was

directed to coin and issue rupees on demand in exchange for gold sovereigns or bullion at the rate of Rs.15 to the sovereign (= £1) or Re. 1 for 1s.4d. Gold sovereigns and half sovereigns would also be accepted by the Indian government in settlement of its dues and be issued for rupees at the same rate for international settlements. With the closing of the mints, the value of coin as coin was now of greater value than the silver it contained. The silver rupee was token coin and possessed all the attributes of inconvertible paper with one important feature; the value of the rupee would remain steady in relation to the sovereign and thereby to the value of gold (Re.1 = 1s.4d. = 0.48 grams of gold).

Why was it necessary to close the mints to the coinage of rupees? The rupee as coin having a greater value (in terms of gold) than rupee as silver, there would have been a rush for the minting of silver into rupees. This would cause an increased supply of rupees and increase in price level, followed by a fall in its (national and international) value. With the closing of the mints, rupees were for all practical purposes like inconvertible notes printed on silver. But there were limits to the fluctuation of the rupee. Once the rupee reached the upper limit of 1s.4d. the government agreed to sell rupees in unlimited quantities (to meet any excess demand for them) in exchange for a fixed amount of gold sovereigns, irrespective of the price of silver; the supply of curve of rupees (as shown in Figure 2) therefore becomes perfectly elastic at this rate. The demand curve for rupees also becomes perfectly elastic at this rate. This is because if the gold price of silver were to increase above 1s.4d. (to say, 1s.5d.), the demand for rupees would fall to zero as the coin as silver would be worth more than coin as rupee. Coming to the lower bound; the only lower bound of the rupee would be its intrinsic worth as silver because if the rupee were to fall below the gold price of silver, people would melt coin and exchange silver for gold rather than use it as currency or rupees.

Although the rupee was free to depreciate below the rate of 1s.4d., it must be understood that the British Indian government did not want this to happen; the objective of the gold-exchange standard was to ensure that the rupee did not depreciate, especially for exogenous reasons not linked to an adverse balance of payments situation. With the closing of the mints, the rupee scarcity would induce it to rise to 1s.4d. (and no more), enabling the government to buy gold at a fixed rate for remittance of home charges. The "fixed" exchange rate would also make international trade with as well as investment into and repatriation of profits from India more stable and predictable.

Several concerns were raised in official reports and academic studies (both contemporary and recent) about the working of the gold-exchange standard (Ellstaetter 1895, Ambedkar 1947, Ambirajan 1984). In particular, the

Figure 2. The gold exchange standard and shifts in D_{Rs} and S_{Rs}
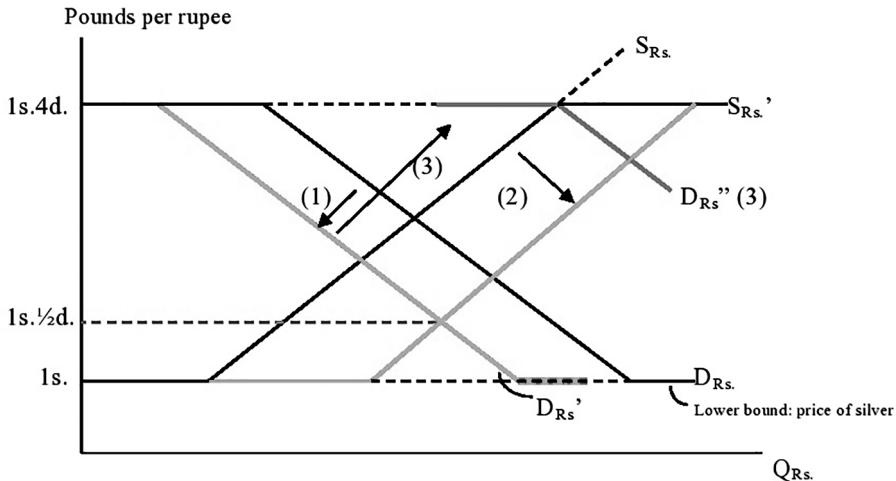
possibility that silver would continue to depreciate meant that Indians who held silver as silver would face an erosion of their savings (wealth) and would have no recourse to convert silver into coins. This could have far reaching consequences on the political stability of the British Indian government. There was also the fear that if silver prices rose so that one could exchange the silver in the coin for more gold than a rupee could be exchanged for gold or sterling then it was inevitable that rupee coins would be melted down for silver. This could have been disastrous for the Indian economy with its main currency disappearing from circulation.

In spite of these concerns the mints were finally closed in 1893; however, the rupee opened below the rate of 1s.4d. and by 1895, fell to a low of 1s.½d. This was primarily because of the low demand for rupees, triggered by the imposition of higher duties to raise revenues in India, which shifted the demand for rupees (D_{Rs}) to D_{Rs}' in Figure 2. Further, with stock of hoarded rupee coins entering circulation, the supply of Rupees shifted out from S_{Rs} to S_{Rs}'. It was only between 1896 and 1898 when the British Indian government borrowed heavily to meet expenses to offset the effects of famine and to fund the wars in the northwest provinces of India that the rate of the rupee rose to its upper ceiling of 1s.4d. The shifts (1), (2) and (3) in Figure 2 capture this sequence of events between 1893 and 1898.

Having briefly described the crisis in the Indian rupee in the last quarter of the nineteenth century, we will now turn to our exploration of how British newspapers articulated these events over two decades.

3. The Indian Rupee Crisis

1.1. Reports on the Indian rupee crisis erupt in the popular press, 1876

Although we know in hindsight that depreciation of silver and of the rupee had begun in 1873, the earliest newspaper report we found that highlighted the issue appeared only in 1876. What was, however, interesting is that the crisis was articulated as a chronic problem and not merely an acute one that could be easily resolved. The article entitled, "The low value of silver and its effect on India" extracted from the *Economist* and published in the Manchester Courier and Lancashire General Advertiser of 7 February 1876 (p.4), observes in its concluding paragraph that "how long the fall in the value of silver will continue no one can say." Apart from this commendable insight, the article also raised several important reasons for the falling value of silver and its impact on the rupee, which were constantly reiterated over the next several years. Below are some of the important points raised in the article:

1. It clearly articulated the important role played by India in absorbing the excess silver from European countries, making their transition to a gold currency possible.

"The payments of England in silver to India during the cotton famine [1860s] were probably the greatest cash payments ever made in so short a time by one country to another. There is, therefore, in the end a certain market for silver displaced from Europe." (ibid)

2. At the time the article was published (1876), Germany had "tried the experiment [gold standard] of a great scale" but this time around "there is no sudden demand for it [silver] in the East" and consequently the problem in 1876, unlike the 1860s, was "not to find the silver but to find the use of silver". After the cotton famine ended, India was no longer able to absorb the excess silver and hence the inevitability of a fall in its price. India as a drain of silver that made a *de facto* transition to a gold standard in the 1860s by European countries has often been missed in the recent debate on the transition to the gold standard (Bordo and Rockoff 1996, Redish 2006, Morys 2012) – an observation highlighted by Sivramkrishna (2015).

3. The resolution of the issue was, however, seen in the "ordinary laws that

govern foreign exchanges" or what we often term as the rules of the game. The fall in the price of silver and of the rupee would increase India's exports and reduce its imports so that larger amounts of silver would be absorbed by it. However, there was a concern whether a balance of payments surplus to absorb silver could be sustained indefinitely to absorb the excess of silver that was only mounting year after year.

4. The article further argues that the danger of this continual fall in the price of silver would have dire consequences for the Indian government, which had to make interest payments in England as well as on home charges in gold. This, as we have seen above, was one of the rallying issues that called for definitive policy action to prevent a crisis for the Indian government.

A careful scrutiny of this early piece shows that there was a clear understanding of the cause and consequence of the falling price of silver on the Indian rupee in the popular press. In an interesting analysis of the impact of rupee depreciation on Indian exports, another short piece raised a most pertinent point; was India's exports actually increasing on account of the depreciation of the rupee or was the continual fall actually adversely affecting trade, in particular, exports? The reason given was that "no trade can be prosperous while the currency in which its calculations are made may alter in value four per cent. within a week, and fifteen per cent. within a twelvemonth (Morpeth Herald, 15 July 1876, p. 7).

In yet another daily, even the effect of the depreciation on the savings of Indians and the increased burden on interest payments to Britain by the Railway Companies was raised, which received revenues in silver but paid in pounds sterling the interest of shares and loans issued in London! "And what a loss to all those natives who keep their money buried in the ground, except when the hoard consists of gold" (Chelmsford Chronicle, 10 March 1876, p.5).

Just a few days later, in the London Evening Standard of 15 February 1876 (p.2), a report of the discussions in the House of Commons reveals that an issue which grew into one of critical importance was raised almost at the start of the emerging crisis in the price of silver; its impact on the savings of British personnel employed in India and remitting their savings back to Britain. A Member of the British Parliament, Sir P. O'Brien, queried whether there was any proposal to introduce a gold currency in India or to address this issue through any other remedial steps. To this question, Lord G. Hamilton replied that the Secretary of State was well aware of the situation but the problem was of silver and not the currency of India *per se*. It was difficult if not impossible to make "further concessions to the officers of the Indian civil and military services, considering the fact that the depreciation of silver largely increased the expenditure of

the Indian government" (ibid). This reply brought out the dilemma facing the government; protecting its employees in India and at the same time, meeting the financial obligations of the Indian government to Britain.

Not only were the implications of the decline in silver well brought out by newspapers but the various options open to the government were also analysed and debated. The most obvious solution to the problem at that time was for India to transit to a gold currency. However, as pointed out by Lord Hamilton in Parliament, the government had "not contemplated to alter the currency in India". The reasons for this were elaborated in the same newspaper in another piece (ibid, p.5). First, the currency needs of India were estimated at £100 million, an amount for which gold was not easily available. Second, there were doubts if India would be able to generate a balance of trade to such an extent that would allow the inflow of this quantum of gold. Third, with countries in Europe transiting to gold, there was a concern that India's adoption of gold would drive the price of gold up across the world with a consequent deflationary effect on the general price level. But here the article cautions that "Indian policy is to be decided by Indian, not by cosmopolitan interests" (ibid). Finally, the long-held view of India as a sink of precious metals meant that if gold flowed into India it would not have returned into circulation. Hoarding of gold in India would almost certainly result in scarcity of the precious metal available for international trade and commerce.

1.2. Other measures proposed to contain the growing crisis of silver and the rupee, 1876

Even as India was reeling under the rupee crisis, there was growing debate in the popular press in 1876 over the end of bimetallism in the West and its consequences on the demand for silver. A sense of anxiety developing is evident from a remark in a report in early 1876; "what course the India government will pursue remains to be seen" (Manchester Courier and Lancashire General Advertiser, 18 February 1876, p. 4).

One possible solution to the crisis in falling silver prices and thereby in the rupee was for the reintroduction of international bimetallism and a reversal from the growing movement to a monometallic gold standard. While Gresham's Law had shown why bimetallism within a single country was doomed to failure when the mint or legal ratio of gold and silver does not correspond exactly to the market ratio of the two metals, the fact of the matter was that bimetallism was the norm rather than exception across the world. This was because "international bimetallism" had maintained stable gold:silver parity at

about 1:15½ over centuries. As long as one large country (France played this part) maintained the relative price of gold and silver, excess supply or excess demand of any one metal was rapidly drained or was forthcoming, without any change in the absolute price of any one metal (Walker 1896).

The newspaper reports clearly articulate the trend towards the abandonment of international bimetallism and move towards a gold standard by Germany, France, Holland, Austria and Italy amongst others as the root cause of the silver crisis. In the Leeds Mercury (8 March 1876, p.4), it was pointed out that although economists like M. Cernuschi in France and E. Seyd in England made an earnest bid for the restoration of international bimetallism as the only solution to the silver crisis, the response was quite muted. The situation was accentuated by the unrelenting mining of silver by the United States in California and Nevada.

In another article it was proposed that Britain leave India alone and instead adopt a bimetallic standard wherein both gold and silver coins would be accepted as legal tender at a fixed rate. This suggestion was, however, dismissed as mad, impudent and even wild (Yorkshire Post and Leeds Intelligencer, 13 April 1876, p. 3). Apart from the introduction of a gold currency in India and a return to international bimetallism, there were other proposals too, which in hindsight seem nothing less than bizarre. One remedy advocated was to for "part of the silver surplus should be artificially locked up" (The diminished value of silver, The Graphic, 4 March 1876, p.2).

The growing concern in the falling value of silver did have a policy response; from the United States. In April 1876 the Silver Currency Bill was passed wherein "silver would be used as a token coinage, in lieu of the notes representing a fractional portion of the dollar" (The Scotsman, 19 April 1876, p. 10). While it was acknowledged that this could not absorb the entire excess supply of silver, it would at least absorb the portion of supply coming from the newly discovered US mines in California and Nevada. However, it was pointed out that even if some of the largest countries like Germany, France and the United States were to substitute inconvertible paper money with silver coin (although on a gold standard) it would absorb only the additional silver coming into the market of some £14 million (for small coin) as opposed to the estimated £200 million worth of surplus silver already existing. A similar plan was also proposed for India; in 1876, paper currency in circulation amounted to £ 11 million while silver rupee coins in circulation amounted to £ 4 million. If the entire stock of paper were to be withdrawn, it would create a substantial demand for silver and therefore raise its price (Manchester Courier and Lancashire General Advertiser, 18 July 1876, p. 7). There were also calls to

suspend Clause 19 of Act 23, which made it obligatory for the government to issue notes against silver rupees (Pall Mall Gazette, 24 July 1876, p.6).

An interesting announcement appeared in June 1876; a precursor to the final solution that would be refined by A.M. Lindsay and implemented by the government in 1893. The proposal came from the Bengal Chamber of Commerce to move the Government to promptly stop coining rupees as being the best remedy for the present depression of silver (Manchester Courier and Lancashire General Advertiser, 20 June 1876, p. 8). The view of closing the mints to silver coinage was opposed by another school of thought that actually argued that "instead of closing the Indian Mint and stopping the coinage of silver the Indian government might do well and buy up silver at the low rates now ruling and coin as many rupees as India is capable of absorbing" (*Pall Mall Gazette*, 15 July 1876, p.4). This was because Indian silver coinage was widely accepted in India and had not witnessed a fall in its purchasing power domestically.

Austerity; a word we are so accustomed to today was also recommended as a possible, if not the only possible, step to overcome the crisis of the rupee, especially its effect on the Indian exchequer.

"He [Mr. Fawcett[4]] agreed with the Under Secretary as to the hopelessness of introducing a gold currency into India, which was too poor for such a currency. The loss occasioned by this depreciation of silver must be met either by borrowing, by taxation, or by rigid retrenchment, and he maintained that the only proper remedy was rigid retrenchment" (*Morning Post*, 11 August 1876, p.2).

Unproductive expenditures of the government on the railways were seen as a good point to start. The excessive expenditure on the armed forces as well as by local governments was also called for. Even new public works should be aborted in case it entailed raising of new loans (The Ipswich Journal, 12 August 1876, p. 8). This was the only way to stave off the growing debt of the government. Increased taxation was also ruled out especially reintroduction of the abandoned income tax considered to be unsuitable for the social structure of India as well as politically dangerous (Pall Mall Gazette, 11 August 1876, p.1).

The subject of the rupee had become topical in the press by 1876 and, as we have seen, there was clarity on both the causes and consequences of this financial crisis. On July 8, the hopelessness of the situation is evident. The report of select committee on the depreciation of silver threw no fresh light on the subject beyond what was already known at that time. No recommendations were made nor could any be offered, and the question was left to the course of time (Manchester Courier and Lancashire General Advertiser, 8 July 1876, p.

4). It was clear that though several propositions had been put forth, including the one that finally adopted 20 years later, the government was ambivalent to the course of action to be adopted.

The moot question then is why was no policy action by the government forthcoming? Or put differently; why did it take 17 long years for a resolution of the crisis? Perhaps the most candid answer to was a comment we unearthed in another report;

"Here is England this depreciation of silver is not likely to be productive of much inconvenience except in an indirect manner through our Indian trade connections, but in the East ... the results are already very serious ..."(Birmingham Daily Post, 25 February 1876, p.4).

Except for the situation of British nationals working in India and the British Indian government's dilemma in raising ever increasing amounts of silver rupees to buy gold for remittance to Britain, it may have indeed been the indifference to India and the priority of the Western world in keeping India away from gold that kept the issue dragging for more than a decade and a half. The reasons for this indifference of Britain to its colonial affairs seem evident in this statement too;

"A shilling is still a shilling, is still legal tender to the extent of this, and will continue to be so even if the price of silver falls 10 per cent more ... At present the SECRETARY OF STATE for India and the East India merchants *are the only people*[5] who seem to feel the effects of this depreciation of silver; and to them the depreciation is a serious matter ..." (Chelmsford Chronicle, 10 March 1876, p.5)

Small changes in the exchange rate, i.e. any appreciation of silver and the rupee also led people to withhold their recommendations to change their opinions. A resolution advising the adoption of a gold standard was proposed, but withdrawn when the price of silver recovered even slightly (Pall Mall Gazette, 24 July 1876, p.6). The newspapers also tell us that there was a feeling that the depreciation of silver would not continue indefinitely and was perhaps only a short-term phenomenon. Until the 1860s, India had been the world's best customer for silver but since the end of the cotton famine, India sent out more silver instead of taking it, and every other customer for silver had disappeared from the market. It was hoped that this would be only for a while, not more than a year or two" (Chelmsford Chronicle, 4 August 1876, 4).

As the year 1876 was coming to a close, after almost a year of heated debate on several possible solution to the crisis of silver, the government finally expressed its views explicitly on the exchange crisis (The Graphic, 7 October 1876, p.9):

1. That the mints will not be closed to the coinage of silver as this will give the rupee a false value.

2. Although a gold currency for India was a positive proposal, the circumstances were not that pressing to go in for such a costly measure.

3. The government sympathised with private losses but was against any cut back on reproductive works although those which were met in gold would be avoided.

4. The state would continue borrowings for development works as long as they could be raised in India and made payable in silver.

Between this categorical statement by the government in October 1876 and June 1877 there were few if any new points of view or any kind of active debate at all in the newspapers. As a close observation of Figure 1 reveals, there was an interlude in the depreciation of the rupee in 1877-78, which may have dampened the debate in newspapers.

1.3. An expanded history of the crisis, 1877-1892

As compared to 1876, the reportage on the rupee crisis in 1877 was subdued. The first significant report we found in June 1877 was a review of book which contained a collection of articles by the economist Walter Bagehot to the Economist. The review reiterates Bagehot view that neither was a gold currency for India warranted nor was a closing of the mints to the coinage of silver. The best option was to let market forces through exports and imports bring back silver to its equilibrium level (The Examiner, 30 June 1877, p.19).

The debate in 1878 was also placid. There was some further articulation of a scheme by Colonel J.T. Smith (former Master of the Madras and Calcutta Mints) whereby the mints would be closed to the coinage of silver on demand by private individuals so that the supply of rupees could be controlled by the government. As a further step, Col. Smith proposed that the standard of value of the rupee be transferred from silver to gold; in this way it would be possible to establish "a dominant gold currency without making the smallest further demand upon the produce of the mines ..." (Western Daily Press, 1 April 1878, p.7). This was akin to the scheme by A.M. Lindsay so often referred to by Keynes as well as recent academic discussion on the introduction of the gold-exchange standard. However, no mention of A.M. Lindsay is to be found in the newspaper articles over the entire period.

Another proposal was put forth in 1878; to put more silver into the rupee. However, this was dismissed as being ineffective against the depreciation of the value of the metal in the coin (Yorkshire Post and Leeds Intelligencer, 6

August 1878, p.5). Finally, a telegram that was quoted across various newspapers appeared towards the end of 1878 that the Indian government had resolved to move to a gold currency. The importation of bar silver would be totally prohibited and the rupee and smaller coins would be treated as fractional or token coins (The Ipswich Journal, 5 November 1878, p.1).

The debate continued to remain subdued in the beginning of 1879 with some interesting proposals which seem to have been taken seriously but, as we know from an *ex-post* view, never came into fruition. While rejecting the scheme to close the mints to the coinage of silver, an article in 1879 examines a plan proposed by Stephen Williamson of Liverpool, which traces the prime cause of the crisis to be the sales of silver from demonetization of its silver coins by Germany. To drain the excess silver in the market, Britain and Germany could reach an agreement wherein Britain would buy up half the excess silver £5 to 8 million and let the Bank of England hold them as reserves (permitted by the Bank Act of 1844) while Germany would keep the remainder from the market for a period of 5 to 7 years. But the plan was ultimately considered faulty because, it was argued, that it would be merely substituted by French instead of German selling. Therefore, the conclusion reached was that "the failure of all attempts to devise artificial remedies for the depreciation shows that it can be cured by no other way than by leaving it to the free play of those natural [market] forces which sooner or later may be relied upon to restore equilibrium between the supply of silver and the demand for it" (The Scotsman, 19 April 1879, p.6).

There were also proposals to replace a silver currency with a paper currency backed by gold in India. However, this proposal was seen as dangerous as it would only mean a further depreciation in the price of silver and on the savings of the Indian people. What commentators called for were ways to raise the demand and price of silver, not reduce it (Dundee Courier, 24 May 1879, p.3).

While the year 1879 saw some bad news for India including the discovery of new silver mines in Mexico and the discarding of the coinage of silver by the United States, there was some increase of demand for silver form China on account of silk exports to Europe. But over the year, the price of silver continued to fall, unabatedly.

Between 1880 and 1885 reports generally referred to the silver market as "quiet and unchanged" without any significant debate in the press over the decline in the exchange rate. This may have been primarily due to the fact that the depreciation slowed down in these years, remaining between 1s.7.9d to 1s.7.3d. This perhaps induced concern on its effect on Indian exports and the case against the depreciation of the rupee being reversed. The argument was

that if the rupee had not declined with the price of silver, India's may have run into a balance of payments deficit, in which case additional remittances against home charges may have actually driven it to bankruptcy. While day-to-day fluctuations in silver prices were widely reported in the market, it seemed more a matter of course than any real crisis. There would be that occasional article which drew attention of the problem. However, it seemed that concern over the crisis was more about the remittance of home charges and also the impact on British exporters (Pall Mall Gazette, 18 May 1881, p.10).

One interesting piece in the St. James's Gazette (27 January 1886, p.11), i.e. almost 10 years since the newspapers first announced the emerging crisis, that an editor of a magazine conducted a study amongst parliamentarians to ascertain what they thought was the best way to deal with the exchange issue and one possible reason for the then stagnation in commercial life in Britain. Surprisingly 5/6ths of the parliamentarians did not "deem it advisable to return an answer" simply because the question was a very difficult one and needed a knowledge beyond "political repartee". Amongst the remaining who answered, 50 per cent did know how to deal with it and many admitted that "the importance of the question had never before occurred to them, but that they would give carefully investigate it." Only a fraction had well-thought out views on the issue. The concern was how Britain could talk about free trade when its people had to compete with foreign imports that had the benefit of a depreciating exchange even as for those in India, "a rupee goes just as far as ever in purchasing produce."

In another article, it was summarized thus; "in India a rupee is simply a rupee and they are content with its stability and value, so we may well leave it alone" (Manchester Courier and Lancashire General Advertiser, 22 September 1888, p. 7). The view that prices in India "had not risen although silver has depreciated" (Glasgow Herald, 24 February 1886, p.6) was not only widely reported in newspapers but also helps us understand why the "crisis" may have sustained so long without any reaction in India except perhaps by the British Indian government and British expatriates working in India on rupee salaries.

1886 witnessed some steady decline in silver prices and with no resolution of the issue in sight as a return to international bimetallism seemed unlikely, saw renewed discussion on the issue. The subjects were, however, more about bimetallism, the adverse impact on British exports and increased imports from India and the pressure on the Indian budget. There was little negative effect of the depreciation in terms of the rupee's purchasing power.

The one issue that was gaining significant importance was the growing discontent amongst British employees in India, in particular, the "Staff Corps

subaltern" (St. James's Gazette, 5 September 1888, p. 3). While there was the argument that the cost of living had not escalated in India, the subaltern had to buy many goods from England in sovereigns. Many subalterns entered the Staff Corps because they wanted to marry but "owing to the fall of exchange a wife costs nearly as much as again as she used to" (ibid). After appealing unsuccessfully to the Indian Government and the Secretary of State, as a last resort an appeal was made to the "general English public". There was discontent not just on the front of exchange but also promotions, etc. It is apparent that this could be politically dangerous situation that may have prompted a push towards resolution of the issue. The gold standard was increasing being seen as the solution to the issue and the scheme proposed by Lesley C. Probyn was reported in the press. The shock in the silver market from this transition would have been significant but was would gradually adjust to equilibrium (St. James's Gazette, 12 June 1888, p. 13).

By 1891, the idea that the mints be closed to coinage of silver was gaining momentum. Sir David Barbour even forewarned that that though this measure may be undertaken, silver rupees coming out from hoards and from abroad could keep the rupee depreciated (Dundee Courier, 31 March 1891, p. 3). As the slide in the rupee continued from 1s.3$^3/_8$d. in June to 1s.2¾d. in August 1892, the Indian Currency Association, a key lobbyist in pushing for the closure of the mints, reiterated that the time had come for the government to overcome its "supineness ... [that was] creating grave dissatisfaction in the minds of the intelligent classes in India" (Gloucester Citizen, 16 August 1892, p.4) and move the rupee to a gold standard.

The pressure, especially from British officials working in India was no doubt the issue that was gaining maximum sympathy in Britain. Even a popular writer like Rudyard Kipling captured the plight of "hard-working officials toiling in comfortless solitude and denying themselves the luxuries of life in India tolerable in order to send their children to England to be educated" (Bristol Mercury, 26 October 1892, p.5) was becoming increasingly difficult given that the rupee had touched 1s.2d. from 2s. in 1873.

But there were concerns that had to be addressed by the government; a critical one was regarding tea exports from India. If India fixed its exchange rate to gold while China continued on silver, there could have been a significant impact on Indian tea-growers (Glasgow Herald, 23 November 1892, p. 10).

1.4. The (re)solution of the crisis, 1893

Even until March 1893 there was no guarantee of the government's plan to

stem the depreciation of the rupee. Suggestions to increase the silver content of the rupee were still being advocated in the press (Morning Post, 13 March 1893, p.2).

The reason for the final step was clearly revealed in a letter to a newspaper. While the depreciation of the rupee did not adversely hurt the Indian farmer or labourer, it had hurt British exporters, Indian importers, the government and finally the British workers in India, both civil and military. The rising discontent led the author to state "the present state of the silver market is a much more serious danger to the Empire than any we have had to face since, perhaps, the mutiny [of 1857]" (St. James's Gazette, 4 March 1893, p.11).

The final solution that was adopted in 1893 to deal with the rupee crisis, as we have seen above, was to close the Indian mints to the coinage of silver. However, this solution to the problem was not a novel one just before its implementation; it was already in circulation as early as 1876. In an article in the Pall Mall Gazette, 15 July 1876, p.4, the author argues the adoption of such a policy and instead suggests that the government buy up as much silver as it could and coin as many coins as possible. Following the same argument, an article in the Manchester Courier and Lancashire General Advertiser, 28 September 1885, p. 4 draws from the Economist to state that closing of the Indian mints would be "suicidal". The most appropriate course of action would be to let silver find its market equilibrium price. Although it seems that the scheme to close the mints did hold some traction, especially amongst British nationals working in India (Dundee Evening Telegraph, 4 August 1886, p. 3), there were stronger warnings against the scheme. By closing the Indian mints raise the exchange rate of the Indian rupee would definitely rise; but this would help only British exporters and foreigners working in India while adversely affecting Indian exporters. Moreover, India's domestic savers would not benefit as such because, silver would remain depreciated even as the rupee appreciated (Manchester Courier and Lancashire General Advertiser, 9 April 1890, p. 4).

A sudden surge in the number of articles appears in 1893, but only just before the actual closure, i.e. in June 1893. Pressure it seems came from the Bombay chapter of the Indian Currency Association (Sussex Agricultural Express, 13 January 1893, p. 4) who advocated the immediate closing of the mints to coinage of silver but agreed to defer the change in standard (to gold) to a later date. The news of the Association submitting their proposal to the Viceroy was widely reported in many newspapers in Britain. It was no doubt an important proposal to have been reported so widely.

In spite of the lobbying, the Herschel Committee seemed against both, closing of the mints as well as a change to the gold standard; it was still

contemplating alternative measures including the imposition of an import duty on silver. This would prevent the need to raise domestic taxes in India (to meet the growing budget deficits) and at the same time not matter to future importers of the metal (Shields Daily Gazette, 15 February 1893, p. 2). As late as February 1893, there was also an ongoing dialogue for the reintroduction of bimetallism; however, it seems that while European nations were not opposed to bimetallism, "it was England which stood in the way of international agreement in this matter" (Glasgow Herald, 1 March 1893, p. 12).

By June 1893, it seems there was a real buzz all-around of imminent closure of the mints. The Indian Currency Association, representatives of British civil and military personnel stationed in India are lobbying for while traders and exporters are lobbying against the policy step (Yorkshire Post and Leeds Intelligencer, 3 June 1893, p. 6; Aberdeen Journal, 16 June 1893, p. 5; Morning Post, 16 June 1893, p. 2; Manchester Courier and Lancashire General Advertiser, 16 June 1893, p. 6).

Ultimately on 27 June 1893, the mints were finally closed to the coinage of silver and instead rupees were to be coined at the price of 1s.4d. in exchange for gold or sovereigns. The latter would not be legal tender in India; however, they would be accepted in settlement of dues to the government at the rate of one sovereign for fifteen rupees (Leeds Mercury, 27 June 1893, p.5).

4. Conclusion: what can we learn from newspaper archival research?

Reading through historical accounts of the rupee depreciation between 1873 and 1893 one unequivocally comes to the conclusion that this was indeed a "crisis" in Indian monetary history. Vakil and Muranjan (1927) summarized the effect of this "evil" phase as "very grave" and one which put the people of India in "most serious difficulties". Macleod (1898) described it as "a monetary crisis of the most momentous gravity has arrived in the affairs of India … which have brought India onto the verge of Bankruptcy. The Government themselves describe the state of the country as "intolerable"" (p. 34, 38). In the Introduction to his book, Monson (1914) stated that he had "endeavoured to call attention to the great evil to the universe, and India and Great Britain in particular, caused by the depreciation in the gold value of silver" (p.5). According to Shiras (1920), who was on special duty in the Finance Department of the Government of India, "no period of our currency history is so rich in literature as in the third period, 1874-1893 … The currency machine was the master of man, not the man of machine" (p. v). Perhaps the most eloquent remark was

Figure 3. US cents per rupee, 1990-2015

Source: http://www.forecast-chart.com/usd-indian-rupee.html
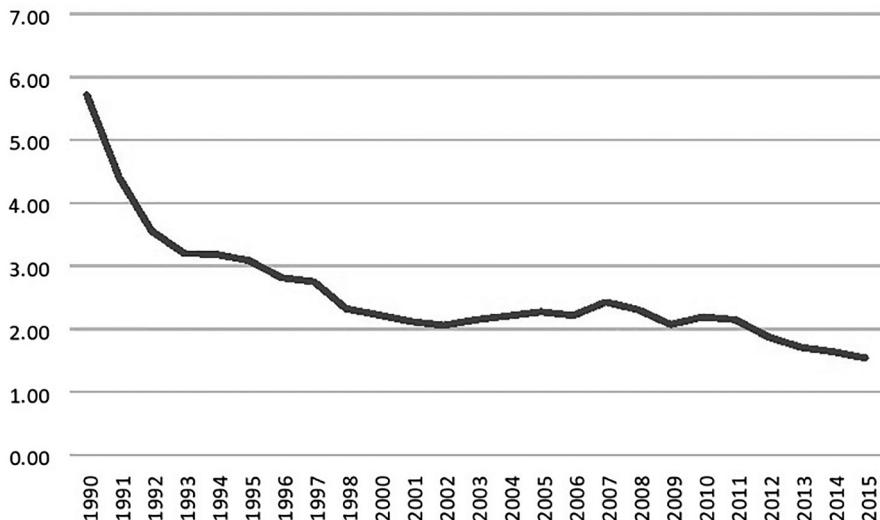
by Lord George Hamilton (1895); "I wish the Committee to bear this fact prominently in mind, that right throughout the statement I have to make, the one difficulty with which the Indian Government have to contend is the fall in exchange – it has a blighting and withering influence in every direction."

History is often viewed in a condensed form. When we expand history it seems altogether different; the "crisis of the rupee" which we often speak of never appeared in the front page of any newspaper. It was never headlines and it seems that there were small groups of people who really felt the pinch. Were they really that important in the larger picture? Yes and no. Reading through the newspaper archives it was apparent that more than all else the British government may have been especially worried about the dissatisfaction amongst the military personnel. This was one issue that the erstwhile East India Company and later the British government were always weary off, especially post-1857; mutiny.

The common people of India were not agitated at all by the crisis. There were no reports of protests or violence. However, this is not surprising because as long as inflation was under control, it did not perhaps affect common people. Even those who hoarded gold never really worried about the gold price of silver.

Moreover, the change in exchange rate when viewed as a statistic between

1873 and 1893 seems large; 50 per cent! But is it really that large? Taking a more recent experience – as seen in Figure 3, the rupee depreciated almost 200 per cent between 1991 and 2015. Did the common person in India, generally speaking, actually feel the "crisis"?

To conclude, reconstructing and expanding day-to-day news does not add up to a crisis. This is an important lesson that can be inferred from our study of the newspaper archives of the Indian rupee "crisis" between 1873 and 1893.

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Notes

1. The rupee was a silver coin weighing approximately 11.3 grams and of 97 percent purity. It was introduced by Emperor Sher Shah Suri in 1542.

2. The sterling pound is denoted in the £-s-d system. Under this system, there were 12 pence (d.) in a shilling (s.) and 20 shillings, or 240 pence, in a pound (£).

3. Rs. (Re.) refers to Indian rupees (rupee).

4. Mr. Fawcett was a Member of Parliament. The others who endorsed this view were Lord G. Hamilton and Goschen.

5. Italics my own for emphasis.

TRADE OPENNESS AND ECONOMIC GROWTH: AN EMPIRICAL ANALYSIS OF USA WITH GRANGER CAUSALITY

A. ADAMOPOULOS*

Abstract

This study investigated the causal relationship between trade openness and economic growth for USA for the period 1982-2012 estimating a vector error correction model (VECM). The purpose of this study was to investigate the short-run and the long-run relationship between the examined variables applying the Johansen cointegration analysis based on unit root tests theory. The results of Granger causality tests indicated that there is a bilateral causality between trade openness and economic growth for USA.

JEL Classification: O11, C22

Keywords: trade openness, economic growth, Phillips-Perron unit roots test, Johansen cointegration, Granger causality

1. Introduction

The relationship between economic growth and trade openness has been an extensive subject of empirical research. The theoretical ambiguity on the positive effect of trade openness is reflected in the modern empirical literature. Some researchers point out the strongly positive effects of trade openness on economic growth (Chang et al 2009), but others such as Harrison (1996) and Rodríguez and Rodrik (2001) are keenly supporters of the different aspect. According to Adam Smith's analysis of market specialization, trade openness promotes the efficient allocation of resources through comparative advantage, allows the dissemination of knowledge and technological progress, (Chang et al 2009). Furthermore, trade openness encourages competition in domestic and international markets increasing returns to scale (Grossman and Helpman, 1991). However, if market or institutional imperfections exist, trade openness can lead to under-utilization of human and capital resources and concentration

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in extractive economic activities, leading specialization not to technologically advanced and increasing-return sectors (Matsuyama, 1992, Chang et al 2009).

This empirical study has the following two objectives:

- To examine the interrelation between economic growth and trade openness

- To test for causality between economic growth and trade openness based on Johansen cointegration methodology.

The remainder of the paper proceeds as follows: Section 2 describes the specification of the model, develops the Johansen cointegration analysis based on unit roots tests theory, analyses the vector error correction models and presents Granger causality tests, while section 3 presents the empirical results. Finally, section 4 provides the conclusions of this paper.

2. Data and Methodology

2.1. Data analysis

In this study the method of vector autoregressive model (VAR) is adopted to estimate the empirical relationship between economic growth and trade openness. Suppose that a general vector model can be estimated separately, regarding each variable as a dependent one with other independent variable respectively

$$V = f(OPG, GDP) \tag{1}$$

where

GDP = gross domestic product
OP = trade openness

Following the empirical studies of Katsouli (2003), and Dritsaki et al (2004), Vazakidis and Adamopoulos (2010), Adamopoulos and Vazakidis (2013), Adamopoulos (2014), the variable of economic growth (GDP) is measured by the rate of change of real GDP, while the trade openness is expressed by the total sum of exports and imports as percentage of real GDP (OPG). The data that are used in this analysis are annual covering the period 1982-2012

Figure 1: Graphs of examined variables in their levels and first difference
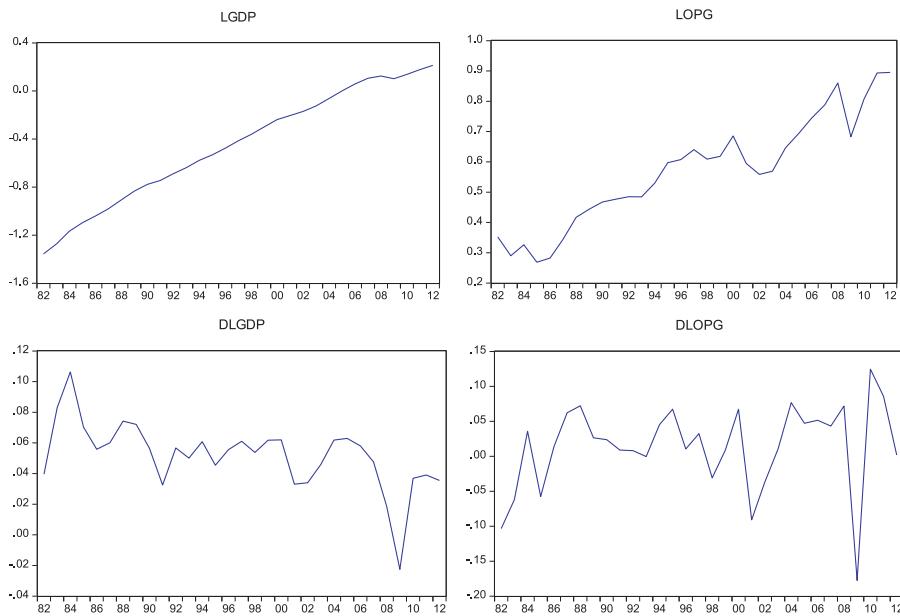
for USA, regarding 2005 as a base year. All time series data are transformed in logarithmic values and are obtained from International Stock Statistics, (International Monetary Fund, 2012). The graphs of examined variables are presented as follows (Figure 1). The Eviews 7.1 (2009) software is used to conduct the empirical results.

The statistical data are expressed in their levels in first column and in their first differences in second column, where LOPG is the logarithm of trade openness, LGDP is the logarithm of gross domestic product and finally DLGDP, DLOPG are the examined variables transformed in their first differences respectively.

2.2 Descriptive statistics

The basic descriptive statistics measures of examined variables for their levels and first differences appear in the following histograms (Figure 2).

Figure 2: Histograms and descriptive stats for examined variables for their levels and first differences
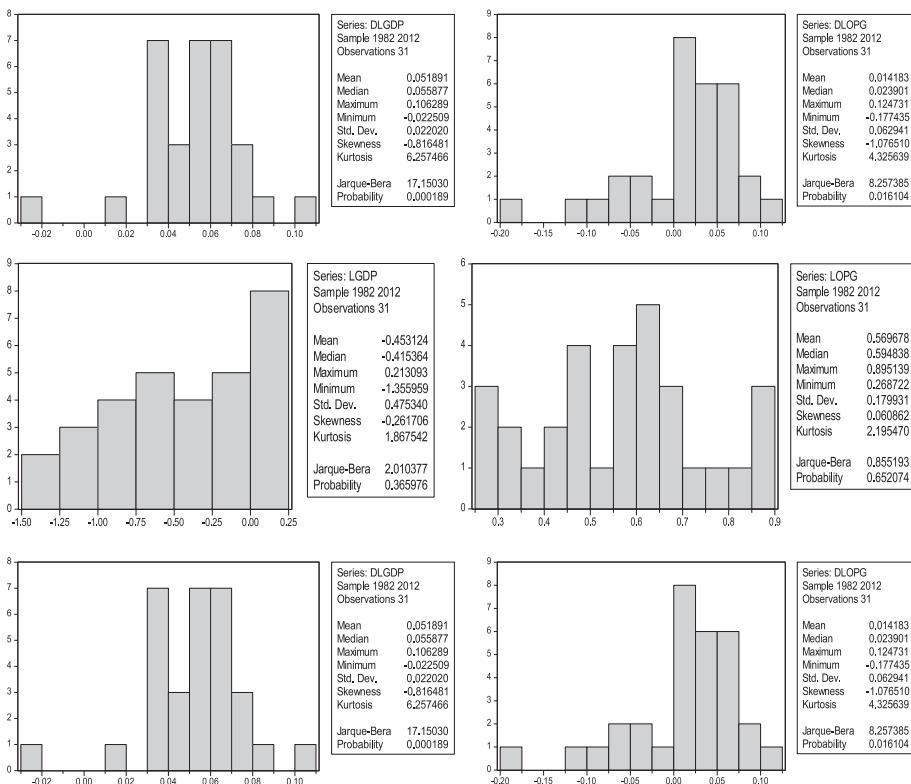
Also the correlograms of examined variables indicate that there is a problem in autocorrelation test in the levels of examined variables but not in their first differences (Figure 3).

Figure 3: Correlograms of LGDP and LOPG in their levels and first differences
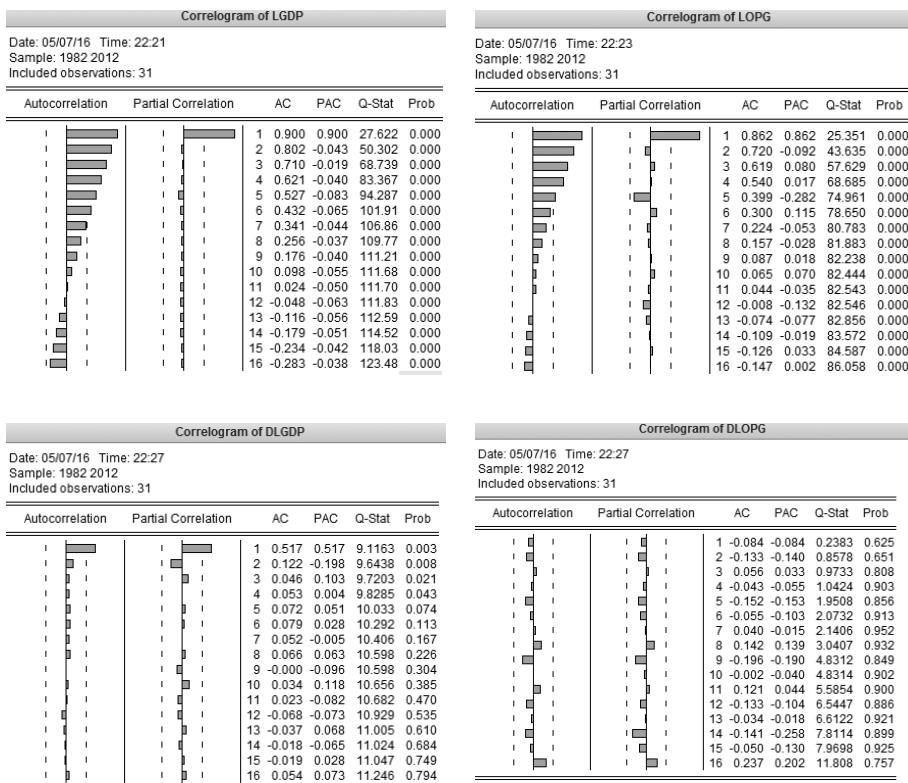
2.3. Phillips-Perron unit roots test

The Phillips-Perron unit root test can be used based on the existence of heteroscedasticity estimating the following equation:

$$\ln(1 + r) = \alpha + \beta\left(\frac{t\text{-}T}{2}\right) + \delta\ln(1 + r_{t\text{-}1}) + \zeta_t \tag{2}$$

for t = 1,2,.....,T namely r_t defines the interest rate at time t, while the difference between (t-T/2) expresses a time trend and T is the sample size. Specifically, in equation 2 three hypotheses are examined. (Phillips-Perron , 1988). The first hypothesis defines that the time series contains a unit root with a drift or both a drift and a time trend: $H_0^1 : \delta = 1$. The second hypothesis defines that the time series contains only a unit root without a time trend: $H_0^3 : a = 0$, δ = 1. The third hypothesis defines that the time series contains a unit root but without a drift or a time trend: $H_0^3 : a = 0$, β = 0, δ = 1. Consequently, the three test statistics $Z(t_\delta)^{(1)}$, $Z(\Phi_2)^{(2)}$, $Z(\Phi_3)^{(3)}$ are examined for each one hypothesis separately (Phillps-Perron, 1988, Laopodis and Sawhney, 2007). The results of Phillps-Perron unit roots tests (PP) for each variable appear in Table 1.

2.4. Cointegration test

If the time series are stationary in their first differences, they can be integrated with integration of order 1 and then the cointegration test is performed. The alternative testing hypothesis implies the existence of cointegration estimating the Johansen maximum likelihood method (Johansen and Juselious, 1990). Following the study of Chang and Caudill (2005), Johansen and Juselius (1990) propose the trace (λ_{trace}) statistic for testing the number of cointegrated vector which is regarded as more powerful than the maximum eigenvalue test statistic:

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{p} \ln(1 - \widehat{\lambda}_i) \tag{3}$$

where $\widehat{\lambda}_i$ = is the largest estimated value of ith characteristic root (eigenvalue) obtained from the estimated Π matrix, r = 0, 1, 2,.......p-1, and T is the number of usable observations. The λ_{trace} statistic tests the null hypothesis that the number of distinct characteristic roots is less than or equal to *r*, (where *r* is 0, 1, or 2,) against the general alternative. Johansen's cointegration test implies that the choice of lag length is very sensitive in order to complete the test. The Schwarz Criterion (SC) (1978) is used to select the number of lags required

in the cointegration test and suggested that the value p=1 is the appropriate specification for the order of VAR model for USA. The results of he Johansen and Juselius cointegration test are presented in Table 2.

2.5. Vector error correction model

Since the variables included in the VAR model are found to be cointegrated, then a vector error correction model (VECM) including the error correction term is examined based on *general to specific* methodology suggested by Henry (Engle and Granger, 1987). The general form of the vector error correction model (VECM) is the following:

$$\Delta X_t = b_0 + \sum_i^n b_1 \Delta X_{t-i} + \sum_i^n b_2 \Delta Y_{1t-i} + \sum_i^n b_3 \Delta Y_{2t-i} + \sum_i^n b_4 Y_{3t-i} + \lambda EC_{t-1} + \varepsilon_t \quad (4)$$

where: Δ is the first difference operator, EC_{t-1} is the error correction term lagged one period, λ is the short-run coefficient of the error correction term ($-1 < \lambda < 0$), ε_t is the white noise term (Chang 2002).

The error correction (EC) term, picks up the speed of adjustment of each variable in response to a deviation from the steady state equilibrium. The VEC specification forces the long-run behaviour of the endogenous variables to converge to their cointegrating relationships, while accommodates the short-run dynamics. The error-correction model with the computed critical values of the regression coefficients in parentheses is presented in Table 3.

2.6. Granger causality tests

Granger causality is used for testing the long-run relationship between trade openness and economic growth. The Granger procedure is selected because it consists the more powerful test of causality (Granger, 1986). The following bivariate model is estimated:

$$Y_t = a_{10} + \sum_{j=1}^k a_{1j} Y_{t-j} + \sum_{j=1}^k \beta_{1j} X_{t-j} + u_t \quad (5)$$

$$X_t = a_{20} + \sum_{j=1}^k a_{2j} X_{t-j} + \sum_{j=1}^k \beta_{2j} Y_{t-j} + u_t \quad (6)$$

where Y_t is the dependent and X_t is the explanatory variable and u_t is the white noise error term in Eq (5), while X_t is the dependent and Y_t is the explanatory variable in Eq (6). The hypotheses in this test may be formed as follows:

H_0: X does not Granger cause Y, i.e. $\{\alpha_{11}, \alpha_{12}, \ldots \alpha_{1k}\}=0$, if $F_c <$ critical value of F

H_a: X does Granger cause Y, i.e. $\{\alpha_{11}, \alpha_{12}, \ldots \alpha_{1k}\}\neq 0$, if $F_c >$ critical value of F

$$\text{(7)}$$

and

H_0: Y does not Granger cause X, i.e. $\{\beta_{21}, \beta_{22}, \ldots \beta_{2k}\}=0$, if $F_c <$ critical value of F

H_a: Y does Granger cause X, i.e. $\{\beta_{21}, \beta_{22}, \ldots \beta_{2k}\}\neq 0$, if $F_c >$ critical value of F

$$\text{(8)}$$

(Katos, 2004, page 1043). The validity of the test depends on the order of the VAR model and on the stationarity or not of the variables. The results related to the existence of Granger causal relationships between trade openness and economic growth appear in Table 7.

Then, the impulse response function analysis is used based on Cholesky decomposition methodology in order to examine the sensitivity analysis of the examined variables. The impulse responses suggest the direction of the impact of one's variable innovation on the changes of other variables of the examined model.

3. Empirical results

Based on Dritsaki et al (2004), Vazakidis and Adamopoulos (2010) studies the model of trade openness is mainly characterized by the effect of economic growth. The significance of the empirical results is dependent on the examined variables. The Phillps-Perron (PP) unit root test results for both levels and first differences of economic growth and trade openness are reported in Table 1[1].

The results of Phillps-Perron unit root tests (PP) suggested that all variables can be characterized as stationary and integrated of order one, I(1). So, these variables can be cointegrated as well, if there are one or more linear combinations among the variables that are stationary.

The process of estimating the cointegration vector is related with the assessment of eigenvalues, which are the following for USA: $\hat{\lambda}_1 = 0.55$, $\hat{\lambda}_2 = 0.33$. The critical values for the trace statistic defined by equation (3) are 14.26 for none vector, 3.84 for at most 1 at the significance level 5%.

The number of statistically significant cointegration vectors for USA is equal to 2 but only one has more reliable results. It is obvious from the estimated cointegrated vector that economic growth has a positive effect on trade

Table 1: Phillips-Perron (PP) unit root tests

PP_ test statistics			
Variables	$Z(\Phi_3)$ [prob] Equation AIC,SBS	$Z(\Phi_2)$ [prob] Equation AIC,SBS	$Z(t_\delta)$ [prob] Equation AIC, SBS
In levels			
LGDP	-7.95***,**,* (k = 0) [0.0001], (1a), (-3.98), (-3.94)	-3.85***,**,* (k=0) [0.0062], (1b) (-5.11), (-5.01)	-0.41 (k=0) [0.9822], (1c) (-5.04), (-4.9)
LOPG	1.14 (k=0) [0.9315], (1d) (-2.65), (-2.60)	-0.16(k=0) [0.9330], (1e) (-2.59), (-2.5)	-3.99**,*(k=0) [0.0196], (1f) (-3.02), (-2.88)
In 1ʳˢᵗ differences			
ΔLGDP	-1.96*** (k=0) [0.0584], (2a) (-4.60), (-4.55)	-4,11 (k=0) [0.003], (2b) (-4.88), (-4.79)	-5.19(k=0) [0.0011], (2c) (-5.04), (-4.91)
ΔLOPG	-5.44 (k=0) [0.0000], (2d) (-2.61), (-2.56)	-5.66(k=0) [0.0001], (2e) (-2.59), (-2.5)	-5.79(k=1) [0.0002], (2f) (-2.58), (-2.44)

Notes:
$Z(\Phi_3)$, $Z(\Phi_2)$, $Z(t_\delta)$, are the PP statistics;
k, l= bandwidth lengths: Newey-West using Bartlett kernel.
The critical values at 1%, 5% and 10% are -2.64, -1.95, -1.61, (none) $Z(\Phi_3)$, -3.66, -2.96, -2.61
for (intercept) $Z(\Phi_2)$ and for -4.28,
-3.56, -3.21 for (intercept and trend) $Z(t_\delta)$, respectively.
***, **, *: indicate that those values are not consistent with relative hypotheses at the 1, 5 and
10% levels of significance relatively

openness in the long-run. according to the signs of the vector cointegration components and based on the basis of economic theory. So, this cointegrating equation can be used as an error correction mechanism in a VAR model for USA respectively.

The results of the estimated vector error correction model suggested that a short-run increase of trade openness per 1% induces an increase of economic growth per 1,4% for USA. The estimated coefficient of EC_{t-1} is statistically significant and has a negative sign, which confirms that there is not any problem

Table 2: Johansen and Juselious Cointegration Tests

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.5502	37.4274	15.4947	0.0000
At most 1	0.3352	12.6587	3.8414	0.0004

Trace tests indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 3: Vector Error Correction Model

Sample (adjusted): 1982 2012 Included observations: 31 after adjustments Standard errors in ( ) & t-statistics in [ ]		
Cointegrating Eq:	CointEq1	
LOPG(-1)	1.0000	
LGDP(-1)	-1.8733	
	(0.2616)	
	[-7.1607]	
C	-1.5015	
Error Correction:	D(LOPG)	D(LGDP)
CointEq1	-0.0213	0.0159
	(0.0148)	(0.0004)
	[-1.4337]	[3.5487]
C	0.0141	0.0518
	(0.0111)	(0.0033)
	[1.2765]	[15.4496]
R-squared	0.0661	0.3027
F-statistic	2.0555	12.5937

in the long-run equilibrium relation between the independent and dependent variables in 5% level of significance, but its relatively value (-0.021) for USA shows a satisfactory rate of convergence to the equilibrium state per period

From the above results the VAR model in which trade openness is examined as a dependent variable has obtained the best statistical estimates.

The vector error correction model can be tested for existence of autocorrelation of residuals as it appears in Figure 4. The test is valid for lags larger than the VAR lag order (Table 4).

Also the vector error correction model can be tested for existence of normality and heteroskedasticity of residuals as it appears in Table 5 and Table 6. Normality and heteroskedasticity tests are valid when probabilities are larger than level of significance 5% or 10%. Also, the graphs of autocorrelations of examined variables in their levels and first differences are presented in Figure 5 and Figure 6.

Table 4: VEC Residual Portmanteau Tests for Autocorrelations

Null Hypothesis: no residual autocorrelations up to lag h
Sample: 1982 2012
Included observations: 31

Lags	Q-Stat	Prob.	Adj Q-Stat	Prob.	df
1	6.322316	0.3881	6.533060	0.3662	6
2	9.953916	0.4445	10.41511	0.4049	10
3	13.98826	0.4506	14.88171	0.3863	14
4	14.85277	0.6721	15.87430	0.6013	18
5	15.60875	0.8348	16.77566	0.7756	22
6	16.37479	0.9268	17.72555	0.8855	26
7	17.96035	0.9592	19.77356	0.9223	30
8	19.82569	0.9748	22.28771	0.9386	34
9	22.70227	0.9766	26.34108	0.9232	38
10	27.10828	0.9637	32.84519	0.8433	42
11	31.39978	0.9505	39.49702	0.7397	46
12	34.94818	0.9475	45.28650	0.6627	50

df is degrees of freedom for (approximate) chi-square distribution

Figure 4: Graphs of autocorrelations in levels of variables
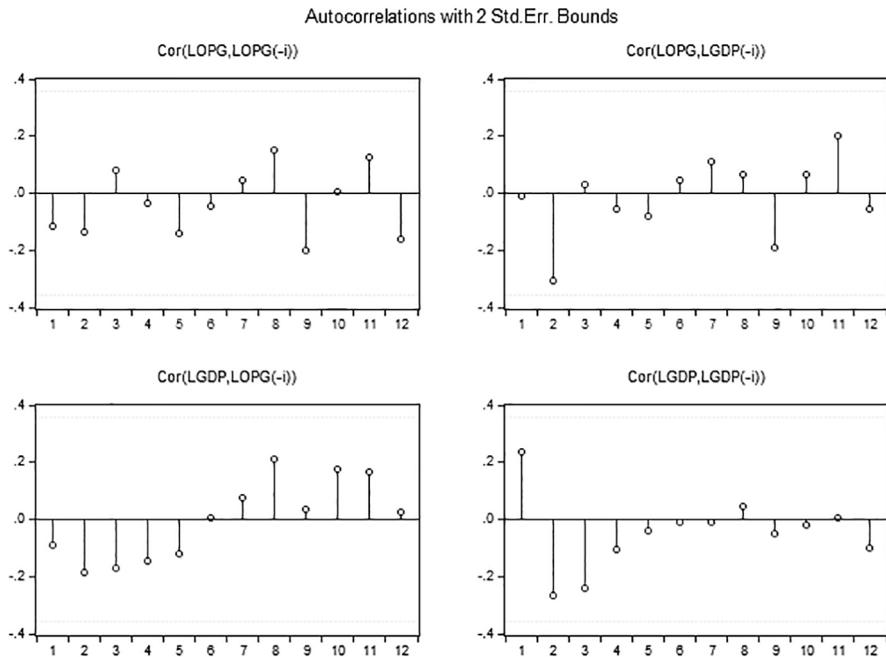
Figure 5: Graphs of autocorrelations in first differences of variables
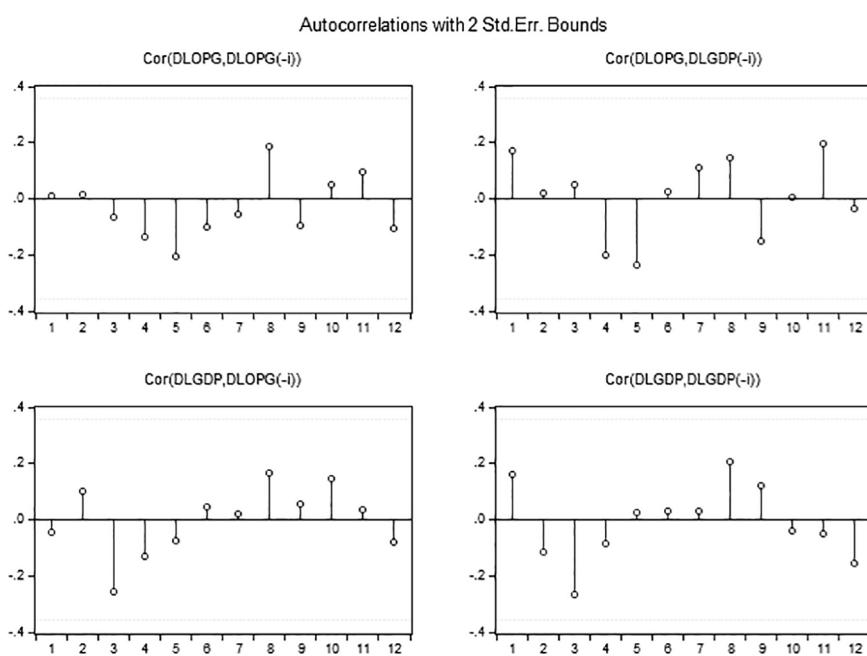
Table 5: VEC Residual Normality Tests

Orthogonalization: Cholesky (Lutkepohl)
Null Hypothesis: residuals are multivariate normal
Sample: 1982 2012
Included observations: 31

Component	Skewness	Chi-sq	df	Prob.
1	-1.478377	11.29226	1	0.0008
2	-0.304645	0.479510	1	0.4886
Joint		11.77177	2	0.0028
Component	**Kurtosis**	**Chi-sq**	**df**	**Prob.**
1	5.890703	10.79338	1	0.0010
2	2.187555	0.852586	1	0.3558
Joint		11.64597	2	0.0030
Component	**Jarque-Bera**	**df**	**Prob.**	
1	22.08564	2	0.0000	
2	1.332097	2	0.5137	
Joint	23.41774	4	0.0001	

In order to proceed to the Granger causality test the number of appropriate time lags was selected in accordance with the VAR model. According to Granger causality tests there is a bilateral causality between economic growth and trade openness for USA (Table 7).

Analysing the impulse response functions between the examined variables in Figure 6, it seems that all variables have permanent effects by their own innovations on their self-responses. Furthermore, the response of trade openness has a negative and insignificant effect on gross domestic product, while the response of gross domestic product has a negative and insignificant effect on trade openness, but not in the whole time period.

Table 6: VEC Residual Heteroskedasticity Tests:
No Cross Terms (only levels and squares)

Sample: 1982 2012
Included observations: 31

| **Joint test:** |

Chi-sq	**df**	**Prob.**
8.877620	6	0.1806

| **Individual components:** |

Dependent	**R-squared**	**F(2,28)**	**Prob.**	**Chi-sq(2)**	**Prob.**
res1*res1	0.088097	1.352503	0.2750	2.730993	0.2553
res2*res2	0.125945	2.017307	0.1519	3.904309	0.1420
res2*res1	0.081181	1.236950	0.3056	2.516610	0.2841

Table 7: Pairwise Granger Causality Tests

Sample 1982-2012			
Lags (2)			
Null Hypothesis:	**Obs**	**F-Statistic**	**Probability**
LGDP does not Granger Cause LOPG	31	7.4760	0.0027
LOPG does not Granger Cause LGDP		3.4450	0.0471

Figure 6: Impulse response function

Response to Cholesky One S.D. Innovations ± 2 S.E.
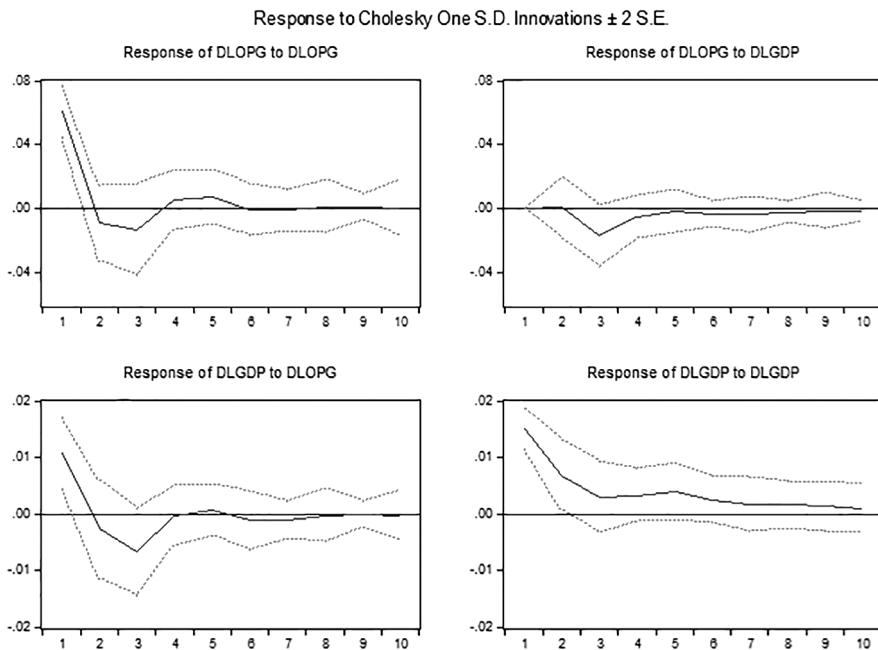
5. Conclusions

This study examined the causal relationship between trade openness and economic growth estimating a multivariate vector error correction model for USA for the period 1982-2012. Initially, the results of Phillips-Perron unit root tests suggested that all variables are stationary and cointegrated of order one, I(1). The results of Granger causality tests indicated that there is a bilateral causal relationship between trade openness and economic growth. Many empirical studies examining the relationship between trade openness and economic growth may differ relatively to the sample period, the examined countries, the measures of trade openness and the estimation method. The results of this paper are agreed with the studies of Dritsaki et al (2004), Vazakidis, (2006), Adamopoulos (2014). However, more interest should be focused on the comparative analysis of empirical results for other countries in future research.

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Notes

1 Notes (1), (2), (3) The following equations are cited in Laopodis and Sawhney (2007)

$$Z(t_\delta) = \left(\frac{\sigma_0}{\sigma_{Tl}}\right) t_\sigma - \left(\frac{T^3}{3^{1/2} 4 D_{xx\sigma_{Tl}}^{1/2}}\right)\left(\sigma_{Tl}^2 - \sigma_0^2\right) \quad \text{(2a)}$$

$$Z(\Phi_3) = \left(\frac{\sigma_0^2}{\sigma_{Tl}^2}\right)\Phi_3 - \left(\frac{1}{2\sigma_{Tl}^2}\right)\left(\sigma_{Tl}^2 - \sigma_0^2\right)x$$
$$\left[T(\delta - 1) - \left(\frac{T^6}{48 D_{xx}}\right)\left(\sigma_{Tl}^2 - \sigma_0^2\right)\right] \quad \text{(2b)}$$

$$Z(\Phi_2) = \left(\frac{\sigma_0^2}{\sigma_{Tl}^2}\right)\Phi_2 - \left(\frac{1}{3\sigma_{Tl}^2}\right)\left(\sigma_{Tl}^2 - \sigma_0^2\right)x$$
$$\left[T(\delta - 1) - \left(\frac{T^6}{48 D_{xx}}\right)\left(\sigma_{Tl}^2 - \sigma_0^2\right)\right] \quad \text{(2c)}$$

where:

$$\Phi_3 = \frac{T\left(\sigma_0^2 - \left(\bar{r} - \bar{r}_{t-1}\right)^2 - \sigma^2\right)}{2\sigma^2} \quad (2d)$$

$$\Phi_2 = \frac{T\left(\sigma_0^2 - \sigma^2\right)}{3\sigma^2} \quad (2e)$$

and σ^2 is the OLS estimated residual variance, while σ_0^2 is the variance for the specific hypothesis for the classical t-test statistic for $\delta = 1$. Finally, D_{xx} is the determinant of the (X'X), where X is the T_3 matrix of explanatory variables in Equation 2. Finally, σ_{Tl} is a consistent estimator of the variance of ζ and is calculated by the following equation:

$$\sigma_{Tl}^2 = \sum_{t=1}^{T}\frac{\zeta_t^2}{T} + \frac{\left(2\sum_{t=1}^{l}\sum_{t=s=1}^{T}\left(1 - s/(1+1)\right)\zeta_t\zeta_{t-s}\right)}{T} \quad (2f)$$

where, s and l are the time lags implying that s<l (as cited in Laopodis and Sawhney, 2007).

Note for Table 1: Estimated equations with ordinary least squares method
Equation (1a)   DLGDP = -0.06*LGDP(-1)
Equation (1b)   DLGDP = 0.03 -0.02 *LGDP(-1)
Equation (1c)   DLGDP = 0.03 -0.02 *LGDP(-1) + 7.63E-05*trend
Equation (1d)   DLOPG = 0.02*LOPG(-1)
Equation (1e)   DLOPG = 0.02 -0.01 *LOPG(-1)
Equation (1f)   DLOPG = 0.16 -0.58 *LOPG(-1) + 0.01*trend
Equation (2a) D^2LGDP= -0.14*DLGDP(-1)
Equation (2b) D^2LGDP= 0.03-0.62*DLGDP(-1)
Equation (2c) D^2LGDP= 0.06-0.91*DLGDP(-1)-0.001*trend
Equation (2d) D^2LOPG= 0.02*DLOPG(-1)
Equation (2e) D^2LOPG= 0.01-1.03*DLOPG(-1)
Equation (2f) D^2LOPG= -0.008-1.09*DLOPG(-1)+0.001*trend

CHANGING ORGANIZATIONAL CULTURE IN A PUBLIC ORGANIZATION. THE CASE OF MANPOWER EMPLOYMENT ORGANIZATION OF GREECE (OAED)

A. SACHINIDOU*

Abstract

Organizational culture as a structured set of basic assumptions, beliefs and values determines the behavior, the operation and the activities of an organization. Empirical studies have demonstrated the importance of the organizational performance (Cameron and Quinn 2006) and has recognized as a critical factor in their success. In the globalized environment, changing is a phenomenon of the organization life and an essential element of their sustainability. Organizational change is a transformation from one situation to another and might even be related to all aspects of the organization.

The purpose of this paper is to study the process of changing the organizational culture of a large public agency in Greece, the Manpower Employment Organization (OAED), which now days implements uniformly a business plan reengineering of the operating systems focusing on organizational, operational and functional upgrading, in order to improve its services and to remove negative impacts on the labor market. We attempt to diagnose the characteristics of the organizational culture of the OAED, using a structured questionnaire to collect data mainly regarding the difference between the current and desired situation by members of the reengineering group. The results have been analyzed, the findings have been discussed and ways been have described where the process of change could be aided by our findings.

The results is of particular importance during the current period of the country, given the urgent need for positive changes and reforms in the public administration organizations. These organizations are called upon to complete their mission in a tight economic environment of budgetary restrictions and continuous social disturbance, which is probably not possible unless in-depth changes take place in organizational culture.

JEL Classification: M14, M10, O15
Keywords: Organizational Culture, Organizational Change, Public Organizations

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Summary report

This article first presents the theoretical framework of the model of the "Competing values model", one of the established models in the field of organizational culture, and the method of the Competing Values Framework ['Organizational Culture Assessment Instrument' (OCAI)] of Cameron & Quinn (1999), a diagnostic tool of organizational culture. Also presented the model of data collection and analysis of demographic data for the investigation of the current and desired culture of OAED (the data collection took place in 2014). Then the findings are discussed, such as the diagnosis of cultural type and its strength and the profile of dimensions that examined. Finally, in the following pages, the study's conclusions are presented, regarding the dominant culture type of OAED, the difference between current and desired culture, the strength, leadership style and comparable observations along with general organizational trends.

1. Summary

The economic crisis requires fundamental and drastic changes in the field of Public Administration concerning all the organizational system structures and not just the individual subsystems (Rapanos & Kaplanoglou, 2014). According to Cameron & Quinn (2006) the most common cause of failure for new organizational systems as Redesign, Total Quality Management, Strategic Planning, etc. is the neglect of organizational culture . Managers often end that all the techniques they adopt and look promising are not sufficient. A study by Brain & Co showed that 77% of directors reported that these tools promise more than they can deliver (Ashkanasy, Wilderom & Peterson 2000). In other words, failure to change the organization's culture precipitated the failure of the other kinds of organizational changes that were initiated.

The organizational culture is defined as a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that have worked well enough to be considered valid and, therefore to be taught to new members of the organization as the indicative way to perceive, think and of those problems (Schein 1985), concerning that the underlying values affect the behavior of members and guide their decisions. The definition of Schein covers the range of the numerous conflicting definitions, nevertheless, despite the differences, all definitions refer to values and assumptions. The organizational culture was appealing to researchers of management and managers who were looking for ways to improve efficiency,

by shifting the weight of the more quantifiable functional and technical aspects of management (hard side) to the interpersonal and symbolic aspects (soft side), which require qualitative and in-depth analysis of organizational life. Kotter (2001) argues that the first step in a major transformation is to change the rules and values.

The tool used for the diagnosis of culture is the 'Organizational Culture Assessment Instrument' (OCAI) of Cameron & Quinn (1999). It is a diagnostic tool of culture and it is used to make suggestions on the necessary changes, designed to illustrate the perceptions of business members, considering specific parameters. This tool has taken the form of a questionnaire.

The purpose of this paper is to study the process of changing the organizational culture of the Manpower Employment Organization (OAED), -into a context of my thesis of MBA studies in the Open University of Cyprus - which now days implements uniformly a Business Plan Reengineering of the operating systems. The data were collected after distributing the questionnaire to employees of the OAED, at all levels of the hierarchical scale of the reengineering team.

In section section 2, we refer the theoretical framework and the research methodology we used for the diagnosis of organizational culture, in section 3 we analyze and interpreter the results and finally, in section 4 we present conclusions and comments.

2. Orgnanizational Culture Framework and Methodology analysis of data

To facilitate the way that they study organizational culture, researchers have documented various types, based on their common features. In the present research it is used the Competing Values Model (CVM) which was developed by Quinn and associates and it is used for diagnosing the type of culture of an organization. The conceptual framework of CVM summarizes the basic models of organizational theory and separates them into four types along two dimensions. The first dimension differentiates the effectiveness criteria that emphasize flexibility and control of the criteria that emphasize control and stability. The second dimension differentiates the effectiveness criteria that emphasize introversion and extroversion of business orientation of the criteria that emphasize competitiveness and extroversion of business orientation. Forming in this way four quadrants, each one representing a type of culture with its particular characteristics.

Type I (clan culture). In this type emphasis is given on human resources.

The organization is an extended family that the leader has the role of father figure. Generally based on tradition and loyalty, while giving priorities in teamwork, participation and consensus.

Culture Type II (adhocracy culture). This type focuses on the external environment and prepares the business to upcoming changes, initiative actions (proactivity), dynamism, risk-taking and innovation. The main objective of such a culture is to strengthen the resilience, flexibility and creativity (Quinn & Cameron, 2006), where the uncertainty, ambiguity and information are standard. **Culture Type III (hierarchy culture)**. This type emphasizes regulations, hierarchy and the operation of procedures rather than flexibility. In the hierarchy culture, an effective leader coordinates and organizes well. Maintaining smooth operation and long-term goals for stability, predictability and efficiency are important factors.

Culture Type IV (market culture). In this type of the organization priorities are competitiveness, productivity and profitability, which are monitored through objectives. Key elements are the short-term planning, the existence of performance standards, setting tasks and resources efficiently. Success is defined in terms of market share and penetration.

What is important for the sustainability of organizations is not only to create a particular type of culture, but the ability of management and culture to change over time and adjust depending on the conditions and needs of the organization. This requires a more dynamic understanding of culture and the role of leadership, to ensure that culture contributes to the present and future success (Quinn & Cameron 2006). The role of leadership is to create, manage and, if necessary, the complete change of culture. The necessary talent of leaders is to understand and operate within its framework (Schein 1992).

Examining specific dimension of the organizational culture can help to reveal aspects of it, which are not easily identifiable or clear to the members of the organization and may therefore provide support to the managers in managing upcoming changes more effectively. This is part of a systematic process for refining the measures to be taken, at the level of culture, and thus help to shape a series of actions (Cameron & Quinn 2006). The reliability of this instrument was demonstrated in published research such as, Quinn & Spreitzer 1991, Yeung, Brockbank & Ulrich 1991, Zammuto & Krakower 1991, Peterson, Cameron, Spencer & White 1991, Cameron & Freeman 1991. Cameron & Quinn make reference to many companies they have used it, and to the results obtained, to support their organizational change projects.

OAED is a public authority and managed by the government, whose main role is to implement the social security policies, provide various unemployment

benefits and take action in halting unemployment and promoting employment. The challenges of the external environment require an upgraded institutional role with new structure and systems to meet current needs. Reforms in the labor market make the environment more competitive for OAED, which as an official public body is required to meet these challenges, for the benefit of citizens and social cohesion. OAED has already started in 2012 the reengineering of its organization model, aiming at a total adjustment of operations and culture, so as to improve the quality of service and its effectiveness.

A questionnaire was completed for the data collection including demographic information, which was formed according to the standards of the creators of OCAI, and was designed to measure the perception of employees of their organizational environment. The questionnaire was distributed to employees of the OAED, at all levels of the hierarchical scale. Considering that the reengineering team members are more aware of the organizational culture and the necessary future changes, the questionnaire was distributed to 62 employees of OAED at all levels and in a perception of 66,1% to reengineering team. From 62 answered 27, 62.9% of whom were members of the reengineering team. This is important because it reflects well the current situation and the expectations in terms of design, from a group of people who plan and implement changes and they have a detailed view of the organization.

The demographic data on gender, age, level of education, job, and years of employment in the job showed that 74,1% of the sample are women and 25,9% men. The percentage of those between 35-45 years of age is 44,4%, 40,7% have university education and 40,7% post-graduate degree. Therefore all of university education have master degree. 74,1% are lower level employees, while 51,9% work at the site between 1 and 10 years. The conclusion are presented in the table A, B and C.

The questionnaire consists of six questions each of which includes four alternative scenarios (A, B,C,D) that can characterize a business. Each scenario describes a type of culture. The content of questions related to the four types of culture and characteristics:
- **Clan Culture (A)**: Participation, moral empowerment, commitment, internal stability and consensus.
- **Adhocracy culture (B)**: innovativeness, adaptability, initiative, self-motivated
- **Hierarchy Culture (C)**: Stability, control, processes, predictability
- **Market Culture (D)**: Goal achievement, productivity and competitiveness.

It was asked from the examinee to divide 100 points among these alternative scenarios to provide an answer for the column 'current' state and one for

the 'preferred', as shown in table 1. Then we added all the responses of the scenario A and divide them by 6, the number of questions. The same is repeated for the remaining alternative scenarios B, C and D and the final individual score was obtained. The same procedure applies for the preferred column. Then collecting all the individual scores we compute the average score for each alternative. Each of these scores related to the type of organizational culture. The process involves the views of both managers who are responsible for the changes, and executives from all levels. The questionnaire examines six dimensions of organizational culture:

- dominant characteristics,
- leadership styles,
- organizational glue – the glue that holds the organization together,
- management of employees,
- criteria of success and
- strategic emphases

The results were approached from different perspectives, such as a) the type of culture b) the discrepancies between the current culture and preferred future culture c) the strength of the type of culture that dominates in the organization d) leadership style and e) comparability of organizational culture of OAED with some general trends.

The alternative with the highest score is the dominant type. The results of the scores are presented in Table 1.

Table 1: Score of the type of culture

Type of Culture	Current	Preferred
Clan Culture (A)	16,7	26,9
Adhocracy culture (B)	10,8	28,8
Hierarchy Culture (C)	56,1	24,5
Market Culture (D)	16,9	19,7
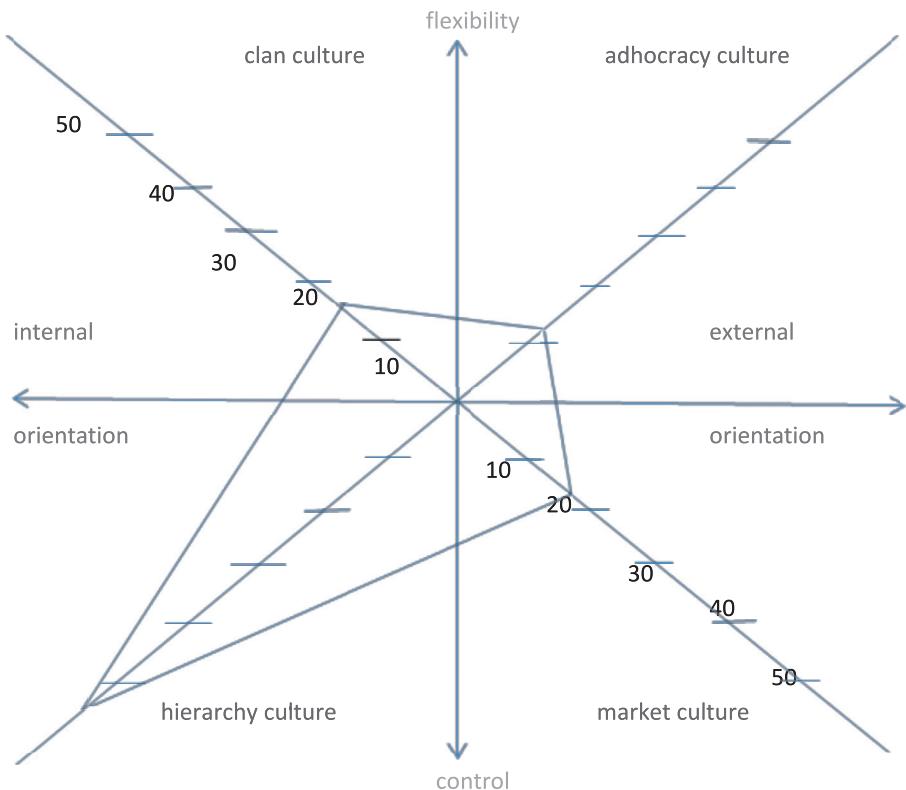
Figure 1: Culture Profile of the current situation

3. Diagnosis of culture type

The findings were enlightening regarding the dominant type of culture and strength, as well as the expectations of the employees in relation to the organization and their workplace. It also provided information on the dominant characteristics, leadership styles, management of employees, working environment, success and focus strategic criteria. Finally, it helped identify dimensions that define the organizational environment and have an impact on organizational performance.

The picture of the current situation is given in the form of the shape of Figure 1. The formulation according to Tukey (1997) , helps effectively to understand and interpret numbers, because pictures give a better sense of what

the numbers mean than a statistical test, which may conceal the relationship, help make more comparisons and identify more interesting patterns by analyzing images and representations, than by simply looking at the results of numerical analysis. The shape was formed on the model of competing values, where each quadrant reflects the values and characteristics of each culture type. The separation was based on the dimensions internal- external orientation and flexibility - stability. Connecting the points in each quadrant, we formed a four-sided figure in a kitelike shape and plot the profile of the organization.

The results of the score, as shown in Figure 1, show that the dominant culture type is C, with a score of 56,1. It is the hierarchy Culture with internal orientation and emphasis on the control and stability. The dominant leadership style is focused on coordination and management, and the effectiveness depends on the performance, compliance schedules, predictability and smooth operation. The management focuses on monitoring and force effectiveness.

The picture of the preferred situation is given in the form of the shape of Figure 2. In the preferred situation, the score of the hierarchy culture fell to 24,5, indicating a preference for less bureaucracy, centralization and a turn to the decentralization of decisions.

Similarly, the preferred type of culture is the type B, adhocracy culture with a score of 28,8, which is characterized by its creative and dynamic workplace and the assumption of taking risks. Leadership is characterized by innovation and a professional vision, while the effectiveness criteria are innovation, creation and development. The management of employees emphasizes self-motivation and individual initiative and freedom with a relative tolerance to error. The management focuses on acquiring new resources, flexibility and adaptability. In the current situation the type B score is 10,8.

The other type of culture is the clan culture with current score 16,7 and preferred score 26,9. This indicates a preference of employees to a more supportive environment for human resources, where the leader will help, guide and has the form of a paternal figure and mentor. The success criteria will be the cohesion of employees, teamwork, development and recognition. The management will enhance the commitment, tradition and dedication of the employees.

The current culture score of type D, market culture, is 16,9, while the preferred one increases to 19,7. Type D is characterized by competition-focused goals with success criteria to achieve them, while management enhances competition and productivity. Reputation and success are common values.

Apart from the diagnosis of culture type, it was investigated the profile of each of the 6 dimensions considered in the questionnaire. Calculating the average of all questions determined the extent to which each dimension reflects the
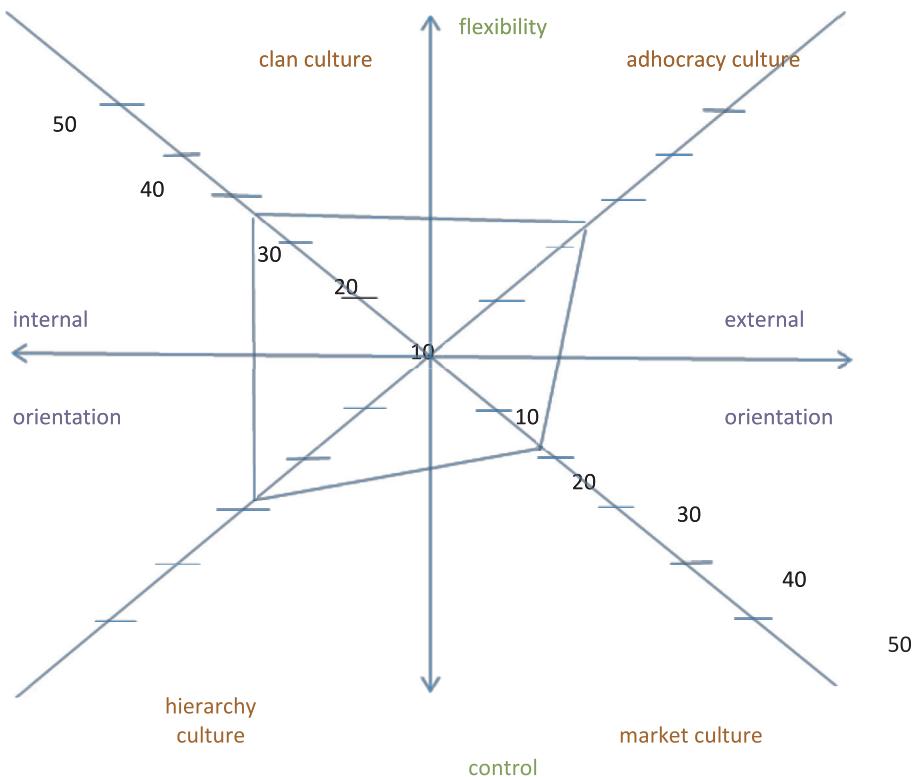
Figure 2: Culture Profile of preferred situation

same dominant culture type, as well as the extent to which the current culture matches the preferred culture.

The following tables 2-7 formed based the data of table C of the Annex and specifically present the data of line with title "Average" of all 6 questions. They consist of two columns, one for the current situation (CS) and one for the desired (DS) and 4 lines, a, b, c and d for each type of culture. Interpreting the score of all types of culture we make conclusions for the existing and as well as the desired situation of all the dimension we examined.

Table 2: The dominant characteristics of the organization

	CS	DS
a.	15	31.5
b.	7.3	30.2
c.	63.9	21.9
d	13.8	16.5

Regarding the dominant characteristics it is clear that much of the current situation is identical to the predominant type. Employees want a noticeable reduction of hierarchy culture and prefer a more family resembling environment, participatory, dynamic and prone to change, to innovation and to productive.

Table 3: The leadership of the organization

	CS	DS
a.	20.9	16.7
b.	13	29.4
c.	51.8	31.5
d.	14.3	23.1

In leadership style, a similar picture is given, with preference of employees for a slight reduction in of the organizational and coordinative way to a more innovative, pioneering and competitive in relating of achieving objectives.

Table 4: The catalyst item joining the staff

	CS	DS
a.	18.5	28
b.	9.9	25.2
c.	52.1	22.4
d.	21.1	24.4

The results of the catalyst component shows a preference to increase the commitment in order to create innovative services, adapt quickly to changes in the external environment and increasing the commitment, dedication and consistency. Also again is observed a significant reduction for the strict observance of rules and policies as a common point of unity.

Table 5: The employee management

	CS	DS
a.	18.9	31.3
b.	15.2	28.9
c.	48.5	23.3
d.	19.1	16.9

With regard to the management of employee seems the desire for human resource development and strengthening the skills and inclusivity of employee. It is also preferred the facilitation of the transformative changes and organizational renewal, the encourage of initiatives and reduction of stability and predictability.

Table 6: The criteria for success

	CS	DS
a.	16.1	26.9
b.	11.9	29.8
c.	53.1	28.1
d.	18.1	14.4

As success criteria mainly expected creativity, growth, new services and risk taking are opted for rather than the routine operation and implementation services. Moreover, the preference for cohesion and human resource development is revealed, as well as the sensitivity and interest in the service of citizens.

Table 7: The management-focus strategy style

	CS	DS
a.	10.7	27.4
b.	7.6	27.6
c.	66.9	19.8
d.	14.8	22.8

Finally, it is observed a high degree of identification with the dominant type in the management style. The high score of the current management style focused on rules, stability and internal direction, is significantly reduced in the preferred situation, where the results showed a preference for a more flexible management style characterized by consensus, teamwork and participation, alongside with encouraging initiative and originality, remaining focused on productivity. The strength of culture seems to be particularly high, since the higher the score, the stronger and more dominant the culture is. In Table 1, we see that hierarchy culture of OAED is scoring 56,1, far higher than the score of market and clan culture with 16,9 and 16,7 points. The results of the score of

the preferred situation indicate a trend towards a more balanced culture with similar emphasis on all types.

3. Conclusions

The culture of an organization is influenced by the founder - top management, structure, management systems and the environment (Robbins & Judge 2011; Μπουραντάς 2002; Sahinidis and Kanellopoulos, 2010). The strategies followed by an enterprise, the goals it wants to achieve and the methods and means to be used, depend on the type of culture and its suitability for achieving the objectives. Therefore, approaching the preferred type, the organization will take the appropriate decisions and will follow specific strategies. According to Kotter & Haskett (1992) there is no culture applicable to all companies or organizations.

In the case of OAED, the results showed that the dominant type of culture is the hierarchy type, with powerful features of internal orientation, stability and control, predictability, procedures, coordination and smooth implementation of new policies. The priority in terms of the preferred type of culture is the adhocracy type, whose powerful features are openness, adaptability and flexibility, self-motivation and encouragement of employees, innovation and leadership in services, priority in the citizenship and risk taking. There also appears a clear preference to clan culture, which emphasizes the development of human resources, teamwork, participation, horizontal communication, trust and commitment of employees, as satisfaction increases productivity, the promotion of family climate, flexibility, and dedication, tradition and internal direction. This does not mean that the other types would not exist, but that management should be focused on actions to strengthen the two types, while reducing the strong current cultural norms and a small increase in the market culture, so as for OAED to become more competitive and focused on its objectives under the new challenges of the external environment.

Regarding the strength of culture, a very strong hierarchy culture occurs with a score of 56,1 and a distant second the market 16,9, clan and 16,7 support culture, with the characteristics that each one involves, without any one of those being dominant.

Regarding leadership style, a preference shift is indicated in adhocracy management style, which encourages employees to innovate, develop alternative plans and to facilitate new ideas and creativity. Usually the leadership has a vision for the future and promotes its fulfillment through changes, continuous improvement and flexibility in the workplace. Moreover there is a desire

for opening to the market type of leadership style, which would strengthen the competitive skills with aggressive performance orientation, motivation and inspiration for employees productivity, initiative and dynamism in their performance, with a focus on serving the citizens to fulfill their expectations of the provided services. Also, based on the results, we see a preference the reduction of the dominant hierarchy leadership style, while keeping its main features, organization, control, monitoring and maintaining performance. The preferences for reducing clan type leadership style, may be an indication for reducing the steering role of leadership.

At the same time we found some common ground of OAED culture with general trends in formal public organizations. Over the years the organizations tend to focus on the hierarchy and market type –the two lower quadrants of Figure 1 and 2– which are characterized by stability and control and there is a tendency these two types to dominate longer (Cameron & Quinn, 1999). A major effort and strong leadership is required to make the change to the clan or adhocracy culture type (Mullin, 2010). Also apparent is a preference to shift to adhocracy culture that focuses on innovation and change, while maintaining a sufficiently high degree of a hierarchy culture characterized by control and stability.

Acknowledgments

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FROM "BUSINESS AS USUAL" TO TOTAL WAR: A RE-EXAMINATION OF THE BRITISH ECONOMIC / INDUSTRIAL MOBILIZATION IN WORLD WAR I

I. D. SALAVRAKOS*

Abstract

The intellectual aspiration of the current paper is to provide an assessment of the British economic / industrial mobilization during World War I. The conflict was a static war mainly fought in trenches (static defence) with limited use of air power and with infantry and artillery as the major opposing forces. However it was not just the military might that decided the outcome of the struggle. During the conflict the combined economic, financial, military, demographic and technological strength of Central Powers (Germany, Austria-Hungary, Bulgaria, Ottoman Empire) was much smaller compared to that of the Entente Cordiale. The contribution of Britain was essential but the question of efficiency remains open to debate until today. This re-assesment is the main aspiration of the paper, which demonstrates that British economic and industrial power played a critical role in the Entente camp. If Britain was not involved in the war, the economic power of France and Russia alone could not balance the Central Powers. Thus the British war effort was pivotal for the allied victory.

JEL Classification: N40, N14, H56
Keywords: Economic mobilization, Britain, World War 1

1. Introduction

The intellectual aspiration of the current paper is to demonstrate that in case of war economic forces have, a critical role to play; thus the outcome of the war is not associated exclusively with military factors (leadership, training of the army, terrain of the front etc.). In order to demonstrate the importance of economics we select as a case study the British economic / industrial mobilization during World War I. The conflict was a static war mainly fought in trenches (static defence) with limited use of air power and with infantry and artillery as the major opposing forces. In Jutland in 1916 the huge battleships and battle cruisers determined the outcome of the struggle. However it was

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not just the military struggle that decided the outcome of the struggle. During the conflict the combined economic, financial, military, demographic and technological strength of Central Powers (Germany, Austria-Hungary, Bulgaria, Ottoman Empire) was much smaller compared to that of the Entente Cordiale. The civilian population was directly involved in the war effort thus making it a "total war". The mobilization of economic and financial resources was immense and the scale of intensity of warfare was unprecedented[1]. The contribution of Britain was essential but the question of efficiency remains open to debate until today. This is mainly the main aspiration of the paper. The structure of the paper is as follows: The first section assesses the economic / industrial mobilization in WWI focusing on five elements: 1) Production of defence articles, 2) Supply of allies with war material, 3) fiscal and monetary policies. 4) Production of raw materials, 5) trade issues. The second section a comparative assessment of the mobilization efforts of Britain with at of other states. Finally conclusions follow.

2. The Economic / Industrial Mobilisation during WWI (1914-1918)

The British economy as well as society was totally unprepared in 1914 to sustain a long war since the prevailing rationale at the time was that any military conflict would be of short duration and this was well accepted across European public opinion which in August 1914 forecasted that the "boys will be back by Christmas". The assertion was correct the boys were back for Christmas of 1918 instead of 1914. The British mobilization of August 1914 used 1,800 trains and the ships of the Navy which transported daily to France 50,000 tons of supplies[2]. The British send to France 80,000 men with 315 guns, 125 machine-guns and 30,000 horses. Every ten minutes of the hour a ship departed from the ports of Southampton or Portsmouth towards the French ports[3]. This was just the beginning of an immense war effort. The economic developments were as follows.

2.1. Defence Production

The evolution of defence articles production is presented in Tables 1-3.

According to Table 1 Britain produced 25,031 artillery guns, 239,840 machine-guns, 5,090,442 rifles, 19,096 mortars, 8,637,112,000 rounds of ammunition, 16,994,315 mortar shells, 100,102,719 grenades, 2,818 tanks, more than 300 armoured vehicles, 54,798 aeroplanes and 213 balloons. In April 1915 the major private British defence industries were as follows: 1)

"Armstrong Whitworth & Co", 2) "Vickers", 3) "Firths", 4) "Hadfields", 5) "Birmingham Metal & Munitions Co.", 6) "Electrical and Ordnance Accessories" (this was part of the Vickers group), 7) "Birmingham Small Arms", 8) "Dick Kerr & Co.", 9) "Cammell Laird & Co", 10) "Coventry Ordnance Works", 11) "Greenwood & Batley", 12) "Projectile Co.", 13) "London Small Arms", 14) "Beardmore", 15) "Kynochs" at "Lions Work" (near Birmingham). Turning to government factories these were: 1) "Royal Arsenal", 2) "Royal Small Arms Factory", 3) "Royal Gunpowder Factory"[5]. The production capacity of these firms is partially highlighted by the following selective data: "Armstrong" produced in round figures 9,000 guns for the Army and 4,000 for the Navy. In addition its total shell production during the war was 14,500,000 pieces[6]. The Birmingham Small Arms Company (BSAC) had a rifle production of 135 rifles per week in August 1914; however this figure was up to 10,000 rifles during the war. We point out that the production of Lee-Enfield rifles, which was the standard British rifle, was complex since its rifle had 131 distinct parts and thus BSAC produced 1,310,000 rifle components per week[7]. Finally another impressive statistic comes from the case of the Kynochs factory at Lions Works. This factory produced 25 million rifle cartridges per week on average during the war and during the German Offensives of 1918 the weekly production was increased to 29,750,000 cartridges. The company also produced 700,000 revolver cartridges per week, 5,000,000 cartridge clips and 110,000 18 pounder brass cases. The production of cartridges was also complex since it requested 102 distinct tasks[8]. Other sources provide the following data. (Table 2).

The epitomy of the British armaments production was the city of Woolwich. According to one source: "There has sometimes been a tendency to forget Woolwich [but] without [it] we could not have survived 1915…"Try Woolwich" was the first and final resource when a sudden, pressing demand came from the Front for guns, gun carriages, small arms, small-arms ammunition, shells of all calibre…and innumerable accessories…[the city] was converted into a munition metropolis, and …was turning out 120,000 shells a week, twelve million fuse components, 100 tank hulls, 25 tank gear boxes, 50 searchlights, 200 machine gun emplacements and half a million aircraft details"[10]. Woolwich in August 1914 used 4.2 million cubic feet of gas per week; however during the war the weekly gas consumption increased to 31.5 million cubic feet. Maximum electricity demand in August 1914 was 2,100 kw. but during the war increased to 11,000 kw[11]. The case of "Hadfields" became legendary as well since it melted some 630,000 tons of material for steel products and from those the 70,000 tons were used for helmets and body guards. British helmets

Table 1: Evolution of British armaments production (1914-1918)[4]

	1914	1915
Guns	91	3,226
Machine-guns	274	6,064
Rifles *	120,093	616,111
Mortars	12	976
Small arms ammunition**	121,995,000	1,261,546,000
Mortar ammunition	545	352,882
Grenades	2,152	12,282,182
Tanks	-	-
Armor vehicles		
Airplanes		2,542 (joint production 1914-1915)
Balloons		

1916	1917	1918	Total
4,551	6,483	10,680	25,031
33,200	79,438	120,864	239,840
1,168,899	2,123,287	1,062,052	5,090,442
5,554	6,194	6,360	19,096
2,955,425,000	1,573,864,000	2,724,282,000	8,637,112,000
6,493,555	5,669,619	4,477,714	16,994,315
34,867,966	29,226,753	23,723,666	100,102,719
150	1,277	1,391	2,818
			300+
6,642	14,832	30,782	54,798
			213

Table 2: Evolution of British armaments production (1914-1918).[9]

	1914	1915
Airplanes	245	1,933 (1,680)
Airplane engines	99	1,721
Tanks		
Artillery guns	91	3,390 (3,226)
Mortars	12	945
Machine guns	300 (274)	6,100 (6,064)
Rifles	120,000 (100,000)	613,000 (600,000)
Grenades	Not available	2,000,000
Shells	500,000	7,400,000 (16.460.901)
Explosives (in tons)	5,700 (5,000)	29,400 (24,000)
Bullets	Not available	396,000,000
Commercial ships (in tons)	1,683,000 (1,680,000)	651,000 (650,000)

1916	1917	1918	Total
6,149 (5,716)	14,748 (14,382)	32,018 (32,536)	55,093 (54,559)
5,363	11,763	22,088	41,034 (another 16,897 were bought from abroad)
150	1,110 (1,277)	1,359 (1,.391)	2,619 (2,818)
4,314 (4,947) (4,551)	5,137 (6,483)	8,039 (10,680)	20,971 (25,031)
5,192 (5,554)	5,951	6,473	18,573
33,500 (33,200)	79,700 (79,438)	120,900 (120,864)	240,500 (239,840)
953,000 (1,000,000)	1,206,000 (1,200,000)	1,062,000 (1,100,000)	3,954,000 (4,000,000) (5,090,442)
9,000,000	8,000,000	Not available	19,000,000+
51,600,000	87,700,000	69,800,000	217,000,000
139,200 (76,000)	328,900 (186,000)	280,400 (118,000)	783,600 (409,000)
808,000,000	619,000,000	Not available	1,823,000,000
608,000 (610,000)	1,163,000 (1,160,000)	1,348,000 (1,350,000)	5,453,000 (5,450,000)

could resist a hit of bullets with a velocity of 750 foot / per second and even bullets with a velocity of 900 foot per second[12]. Another legend was Vickers. The company already from 1902 had made innovations in its production process and in the quality of armaments. It had bought smaller companies like the "Maxim-Nordenfeld" and the "William Beardmore". It had established wholly owned subsidiaries in various countries (Sweden, Spain, France, Italy, Russia, Japan) and even in two later adversaries (Austria-Hungary and Ottoman Turkey). The 33% of its production was exported[13]. During the war years the company produced more than 100,000 machine guns almost half of total British production. In addition the company was able to produce shells at cheaper prices from those which the Ministry of Munitions demanded. To illustrate, the cost of producing one 9-2 inch shell in the factory was £7:15:10 as opposed to the Ministry's standard price of £10:7:6. The cost of one 6 inch shell was £2:15

Table 3: Construction and losses of British Ships (1914-1918).[21]

Types of ships	Construction	Losses
Battleships	13	13
Heavy Battle cruisers	5	3
Battle cruisers	-	13
Light cruisers	54	12
Spy-monitor ships	39	5
Gun boats (with torpedoes)		5
Destroyers	329	67
Aircraft carriers	16 (former commercial ships)	3
Submarines	98	54
Minelayer	-	2
Minesweeper	156	-
Torpedo boats	-	11
Sloop	134	18
Total	844	206

11 as opposed to the Ministry's standard price of £3:8:6[14]. However armaments production increased modestly during the 1914-1916 period, whereas during 1917-1918 the increases are immense. Procurement production became central after the establishment of the Ministry of Munitions, (June 9th 1915). By December 1915, the Ministry had under its direct control 2,026 industries and by March 1916 the number was increased to 3,078[15]. In 1913 there were 1,500 shells for every field gum and another 1,200 for every howitzer. In 1914 the stocks of shells per gun were two and a half times higher from those of 1899; a quantity adequate for just 24 days of intense bombardment[16]. When the infamous "Shell Scandal" occurred (29-5-1915) from total army orders of 38,806,046 shells of all calibres only 1,972,558 were delivered to the army. At that time the army had consumed all its stock of 654,000 shells of 18 livres by February 1915. By December 1915 the situation was slightly better and the army had been supplied with 16,460,901 shells[17]. However by August 12th 1915 out of a total order of 1,000 mortars only 50 were just delivered[18]. Turning to the shipping industry the situation was as follows (Table 3). The British shipping industry was quite developed with 8 state owned shipyards and 27 privately owned facilities[19]. Turing to aircraft production an additional source for points out that during the 1914-1918 period British internal production was 55,093 airplanes and another 3,051 were purchased from abroad. Turning to air-engine figures the domestic production was 41,044 items and another 16,897 purchased from abroad[20].

2.2. Supply of allied states with war material (1914-1918)

Only in the Western Front between August 9th 1914 and November 10th 1918 Britain transported more than 25,000,000 tons of various materials including 3,240,948 tons of food, 5,438,602 tons of fodder and oat, 5,253,338 tons of ammunition, 3,922,391 tons of coal, 1,761,777 tons of military supplies (excluding ammunition), 3,962,497 tons of construction materials for bridges, roads, depots etc. By the end of March 1916 more than 108,000 km. of telephone wires were send to France only for the repairs of the network. The number of cars shipped to France increased from 80 in 1914 to 121,702 by 1918[22]. The complete British supplies, to allied countries, were as follows (Table 4).

At this point we stress that British aid to other states was not only military but financial as well. Thus during the 1914-1925 period the war loans of Britain to other states was as follows: Belgium: £110 m, France: £626 m, Italy: £590 m, Portugal: £23 m, Romania: £26 m, Russia: £757 m, Serbia: £30 m.

Table 4: British Supplies to Allied States (1914-1918)[23]

Material	France	Belgium	Italy
Heavy Machine guns	17	53	174
Machine guns	14,000 (12,849)	296 (296)	8,358 (8,358)
Bullets	140,000,000	50,000,000	100,000,000
Mortars	1,430 (213)	- (1,430)	213 (-)
Mortar shells	998,000	-	100.000.000 (including bullets)
Rifles	-	189,000	50,000
Grenades	4,811,000	151,000	-
Machines & Bicycles	27,600	25,000	2,500
Vehicles	37	-	-
Tanks	101	-	-
Trucks & Ambulances	1,171	878	-
Airplanes	11	34	-
Airplane engines	30	-	-
Shells	119,324	75,520	821,035
Explosives (in tons)	416,000	17,000	140,000
Iron & Steel (in tons)	4,332,000 (950,000)	- (4,332,000)	950,000 (-)
Other metals	4,536,000	-	-

Romania	Russia	USA
8	247 (another 509 light)	164
400 (520)	27,000 (1,602)	(268)
18,000,000	2,740,000 (the 240,000 were for medium range guns) 2,500,000,000	11,000,000
- (-)	264 (264)	1,800 (1,800)
-	-	-
-	1,000,000	15,000
-	8,400,000	300,000
1,098	10,000	2,219
-	1,323 cars	811 cars
-	-	18
177	4,533	4,553
19	308	452
-	649 (and 6 balloons)	-
54,000	2,985,528	427,710
-	217,000	-
- (-)	64,000 (64,000)	- (-)
-	-	-

Also after the war a reconstruction loan of £11 million was given to Austria. Belgium received £9 million, and Poland £5 million[24].

2.3. Fiscal and Monetary Policies (1914-1918)

2.3.1 Fiscal policy

In spite of the war government intervention remained limited. It was only after the submarine warfare campaign of 1917 that forced the government to intervene in the economy.

According to one source: "up to the end of the financial year 1914-1915 the total expenditure had been about £560 million, of which £226 million came from revenue leaving about £334 million to be obtained by loans"[25]. Public expenditure increased by a factor of 13 during the war years and the 60% of increased spending in 1918 was financed via loans. Kennedy (2001) points out that in 1915 the daily war cost was £3 m. and by 1917 it was increased to £7 m. The Army expenditure which was £29 m. in 1914 increased to £405m. in 1919. The Navy expenditure increased from £5.5 m. to £160 m. respectively[26]. War finance can occur from three sources: 1) Tax increases, 2) Money supply increases and 3) Loans either from domestic or international financial markets. In the British case a nexus of these three sources occurred.

Taxes increased fourth-fold during the 1914-1918 period. The emphasis was placed on direct rather than indirect taxation. Property taxes and income taxes increased whereas inheritance tax decreased[27]. Important new taxes were the Excess Profits Duty Tax imposed in 1915 on the net profits of enterprises. This additional tax had an initial rate of 50% but in April 1916 it was 60% and in May 1917 it was 80%. Tariffs were also increased especially those on cigarettes alcohol and tea. (The notorious McKenna Duties).

The second source of finance was domestic and international loans. Domestic debt by the fiscal year 1918-1919 was ten times higher the pre-war level and reached the amount of £6,142 m. Turning to foreign loans most of them came from the US. The US provided to Britain loans worth of £959 m. ($4,277 m.). Total foreign lending throughout the war was staggering. It reached the amount of £1,365,000,000, and the 75% came from the US. Canada provided the 9.9%, Japan the 2.1%, Argentina provided the 1.4% and Norway the 0.9%. On the other hand British loans to various allies throughout the war reached the level of £1,741,000,000. The 10% was granted to countries of the Empire, the 32.6% was given to Russia, the 25% to France and the 23.7% to Italy. Thus Britain was a net capital exporter (lender) throughout the war. (The fiscal

Table 5: Fiscal evolution (1913-1918) (in m. £)[28]

	1913	1914	1915	1916	1917	1918
Expen-diture	197 (192)	561 (559)	1,559	2,198	2,696 (*)	2,579
Taxes	198	227	337	573	707	889
Surplus / Deficit	+ 1	-334	-1,222	-1,625	-1,989	-1,690

Table 6: Public Debt in the UK (1913-1918) (in m. £)[29]

Year	Public Debt (in m. £).	GDP (in m. £).	Debt to GDP ratio (%)
1913	706	2,690	26.2
1914	1,162	2,859	40.6
1915	2,190	3,400	64.4
1916	4,064	4,068	99.9
1917	5,921	5,091	116.3
1918	7,481	5,866	127.5

evolution is demonstrated in Tables 5and 6). The data of Table 6 demonstrate that Britain entered the war with a very low public debt (only 26% of GDP). This strong fiscal position allowed the country to enjoy a high credit rate in the international financial markets and as a result borrowing (with low interest rates and long term time horizon) was possible. To illustrate the last war bond loans were repaid by the British Treasury one hundred years later!

2.3.2 Monetary policy

The week before the outbreak of the war was extremely volatile for the London money market. During that week gold withdraws of the following

Table 7: Money supply and inflation in the UK economy (1913-1918)[32]

	M0	M3	Consumer Price Index
1913 (=100)	100	100	100
1914	122	108	101
1915	142	125	121
1916	162	138	143
1917	178	156	173
1918	224	190	199

value occurred: 1) France: £1,762,000, 2) Belgium: £639,000, 3) Switzerland: £60,000, 4) Rest of Continental Europe: £847,000, 5) Egypt: £565,000, 6) Gibraltar: £250,000, 7) Malta: £80,000. Thus a total of £4,203,000 in gold where withdrawn. However between August 4th to November 4th 1914 the Bank of England received from abroad the gold amounts worth of £52,350,000: 1) From the US (£22,087,000), 2) India (£3,400,000), 3) Canada, South Africa and other sovereigns (£4,852,000 including £3,400,00 from Russia), 4) Bar golds bought in the international markets (£22,011,000)[30]. According to the "Bank Charter Act of 1844" the Bank of England could issue notes (paper currency) up to £18,450,000. Above that limit every £5 note (or any note) should have £5 worth of gold behind it (gold standard rule). Immediately note circulation increased from £29,706,000 to £36,105,000[31]. Throughout the war money supply increased and bank deposits increased from £1,032.9 m. (31-12-1914) to £1,988.3 m. (31-12-1918). The evolution of money supply and inflation is demonstrated in Table 7.

From the data of Table 7 it is obvious that M3 almost doubled during 1913-1918; and this resulted in equal inflation increases. Interest rate movements were as follows: The inter-bank rate at the beginning of the war (1-8-1914) was 10%, whereas before the war it was just 3%. On August 8th 1914 it was reduced to 5%; in July 1916 it was 6% and was reduced in January 1917 to 5.5%. When, the US entered the war, in April 1917 it was down to 5%[33].

Table 8: UK Industrial Production 1913-1918 (in m. tons)[36]

	1913	1914	1915	1916	1917	1918
Coal	287.4 (292.0) [292.042]	265.7 (269.0) [269.927]	253.2 (257.3) [257.269]	256.4 (260.5) [260.489]	248.5 (252.5) [252.487]	227.7 (231.4) [231.404]
Cast-iron	16.0 (16.3) [10.425]	14.9 (15.1) [9.067]	14.2 (14.5) [8.864]	13.5 (13.7) [9.062]	14.8 (15.1) [9.488]	14.6 (14.8) [9.253]
Steel	7.7 (7.8) [7.787]	7.8 (8.0) [7.971]	8.6 (8.7) [8.687]	9.0 (9.1) [9.136]	9.7 (9.9) [9.873]	9.5 (9.7) [9.692]
Electric Energy (in hours GigaWatt)	2.5	3.0	3.5	4.1	4.7	4.9
Iron (m. metric tons)	16,254	15,107	14,463	13,712	15,084	14,847

2.4. Production of raw materials (1914-1918)

Throughout the war years there was a constant under supply of labor force throughout the industries of the extractive and energy sectors. To illustrate in the middle of 1915 the work force in the mining industry was 21.8% down form it pre-war level. The steel and iron industries had lost the 18.8% of the work force. Machinery was down by 19.5%. Electrical industry was down to 23.7%. The shipyards were down to 16.5%; the light arms industry was down by 16%, the chemical and explosives industry had a labor shortage of 23.8%. In June 1915 the two state and the 16 private ammunition factories had a shortage of 14,000 specialized workers[34]. In April 1918 the 90% of shell production was made by 750,000 female workers. Between January 1st and June 30th 1918 the ammunition industry was deprived by 114,000 male workers[35]. The man power shortages had a mixed effect on industrial production (Table 8).

The data of Table 8 demonstrate that cast iron production reduced during 1914-1916 period, increased in 1917 and was again reduced during 1918. Steel production is also adjustable whereas iron production decreased during 1913-1916; increased in 1917 and was again reduced in 1918. Coal production is reduced throughout the period. The number of coal workers was reduced from 1,134,000 in 1914 to 953,000 workers in 1915. The above trend was

Table 9: UK Trade balance 1914-1918 (in m. £)[38]

	1914	1915	1916	1917	1918
Exports	526	484	604	597	532
Imports	696	852	949	1,064	1,316
Deficit	-170	-368	-345	-467	-784

Table 10: Expenditure of the Great Powers (in m. USD / in billion USD)[41]

Countries	Amount
UK	39,260m / 43,8
British Empire	51,975m / 5,8
France	49,877m / 28,2
Italy	18,143m / 14,7
Russia	21,600m / 16,3
USA	32,320m / 36,2
Germany	58,072m / 47,0
Austria-Hungary	23,706m / 13,4

reversed after 1917; however the production volume did not increase[37]. Thus the production of raw materials necessary for the war effort was normalised after 1916, with upward trends in 1917.

2.5. Trade Developments (1914-1918)

Throughout the war imports increased whereas the exports followed an ups and down pattern. These developments are illustrated in Table 9.

It is obvious that trade deficit increased during 1914-1915, decreased in 1916, and increased again during the 1917-1918 period. Sterling was devalued in 1915 however after the US entry into the war it was stabilized. Thus the pre-war exchange rate of £1=$4.86, changed[39]. However gold reserves increased by 109% over the war and if the foreign exchange reserves are included the

Table 11: Stocks of Gold (July 1914) of major countries[42]

Central Banks	(in m. £).
Bank of England	40
Bank of France	164
Bank of Russia	174
Bank of Italy	48
Bank of Germany (Reichsbank)	68
German War Reserve Fund	10
Total German Gold Reserves	78
Bank of Austria	51
USA Treasury	245
Argentina	40
Brazil	10
Spain	22

increase was 210%. To illustrate on September 23rd 1914 the gold reserves were £51.6 billion. On November 4th 1914 they were around £69 billion; by October 9th 1918 they were £73.1 billion[40].

3. The British mobilization viz. a viz. other states (1914-1918)

The scale of British mobilization has to compared and contrasted viz. a viz. other states. It is only then that an efficiency assessment can be made. For the purpose of the current exercise we provide an assessment of the British effort viz. a viz. that of France and Germany and the other belligerents. The first table provides data related to total war expenditure of the states involved; whereas the second table provides an assessment of the July 1914 gold reserves of major economies. The third table provides data related to the cost of previous wars to the British economy. The fourth table demonstrates the industrial production of the major states during the war (Tables 10-13).

The above data demonstrate that total war spending of the Entente Cordial

Table 12: Evolution of British Debt 1689-1919[43]

Year	Event	Total Debt in £	War Debt added in £
1689	Revolution	664,000	
1697	War of League of Augsburg	21,515,000	+20,851,000
1702	Peace	16,894,000	-5,121,000
1713	War of Spanish Succession	52,145,000	35,751,000
1748	War of Jenkins	79,298,000	31,889,000
1756	Peace	74,332,000	-4,961,000
1763	Seven Years War	138,865,000	64,533,000
1775	Peace	128,584,00	10,281,000
1783	American War	249,851,000	121,267,000
1793	Peace	244,118,000	-5,733,000
1816	Napoleonic Wars	885,000,000	640,882,00
1854	Peace	808,000,000	-82,000,000
1857	Crimean War	836,000,000	33,000,000
1899	Peace	635,000,000	-201,000,000
1903	Boer War	798,000,000	163,000,000
1914	Peace	706,000,000	-92,000,000
1919	War 1914-1918	7,481,000,000	6,775,000,000

was 145 billion USD whereas that of the Central Powers was 60.4 billion USD. The UK expenditure was the 30.2% of the total Allied expenditure whereas the US was the 25%. Thus one third of total allied war spending was coming from Britain (excluding the spending of the British Empire). If that is added then total British spending reaches the level of 49.6 billion USD which represents the 34.2% of total allied spending.

The data of Table 11 demonstrate that when the war broke the Bank of

England was the least prepared Central Bank to meet the task. Its reserves were just £40 million, as opposed to those of France or even Russia. The Bank of England had the lowest gold reserves among the belligerent states however as pointed out earlier the inflows / versus outflows of gold by December 1914 had resulted in minor gold reductions. Turning to the relative cost of the war, we have the following data (Table 12).

Table 12 provides the evolution of British debt during the 1689-1919 period and demonstrates how various conflicts increased the debt. It is obvious that conflicts with longer time duration like the Seven Years war or the Napoleonic Wars had a much smaller debt impact. Turning to Table 13 we provide a comparative assessment of the defence production of the states.

From the data of Table 13 we can see that the Entente produced 127,849 airplanes. From those the 55,093 were British (43% of total allied production). Total allied airplanes engines production was 176,018. The British production was 41,034 (23.3% of total allied production).

Total allied artillery production was 102,842 guns. From those the 25,031 were British (24.3% of total allied production). Turning to tanks total allied production was 8,188. The British production was 2,818 (34.4% of total allied production). Total allied machine guns production was 837,563. The British production was 240,500 (28.71% of total allied production). Turning to warship construction the Entente made 886 major warships. The British construction was 515 (58% of total allied production).

Turning to raw materials total Entente coal production was 3,109,930,000 tons. From those the 2,271,000,000 were British (or 73%). Total steel production was 120,950,000 tons. The British share was 45,000,000 (or 37.2%). Total Entente iron production was 190,369,000 tons. The British share was 73,213,000 tons (or 38.4%).

Britain was not ready for long war in 1914. The existing data portray a rather static efficient story. The country provided the 30% of total Entente war expenditure, the 73% of total allied coal production; the 37% of total ailed steel production and the 38% of total allied iron production. Turning to military hardware the country provided the 43% of airplanes, the 23% of airplane engines, the 24% of artillery guns, the 34% of tanks, the 28% of machine guns, the 58% of allied warships.

However compared to the available raw materials the British production was lower compared to that of France or Germany. Britain had more quantities of coal, steel and iron compared to France; however the country produced less tanks, artillery guns and shells, machine guns, airplane engines.

Comparing Britain and Germany the picture is different. Britain had more

Table 13: Industrial production among major states
(defence articles and raw materials)[44]*

	UK	France	Italy
Airplanes	55,093	52,146	12,021
Airplane engines	41,034	92,386	24,400
Artillery	25,031	49,190	11,789
Mortars	19,096		
Tanks	2,818	5,300	6
Machine-guns	240,500	312,000	31,030
Rifles	5,090,442	2,500,000+	24,230,000 (pistols included)
Grenades	100,102,719		7,300,000
Shells	217,000,000	244,884,380+	69,835,000
Armoured Vehicles	300+	333+	
Gun powder			
Explosives	783,600	75,500+	
Bullets	8,637,112 (in 000)		3,616,000 (in 000)
Battleships	13	3	3
Cruisers	59	-	2
Destroyers	329	6	28
Aircraft carriers	16	4	1
Submarines	98	25	71
Warships (total)	515	38	105
Coal m. tons	2,271	123.5	6.93
Steel m. tons	45	10	5.45
Iron (000)	73,213	17,260	4,016

(*)=maximum estimates

Russia (1914-17)	US (in 1918)	Germany	Austria-Hungary
4,500	4,089	47,931	4,338
1.873+	16,325	41,860	4,346
15,006 (14,319)	1,826	64,000	15,900 18,442+
542		34,744+	
	64	20	
27,476	226,557	405,278	38,900 (38,889)
3,579,000		6,705,000+	3,580,300
		300,000,000	
54,000,000 (59,986,000)		350,000,000	66,900,000 183,000,000
		37	
34,260 m.t		462,825	
		518,400	
148,200,000 +			
7	6	6	1
-		19	3
36	77	107	5
7		0	
40	55	359	17
90	138	491	26
129.1	579.4	1,254.8	175.2
16	44.5	70.6	13.5
26,180	69,700	105,406	1,413

coal than Germany but less iron and steel. However, Germany surpassed Britain in key land warfare systems (artillery guns and shells, machine guns, rifles, mortars, grenades). The German production was lower only in tanks and other armour vehicles, explosives and airplanes; whereas the airplane engines production in the two countries was almost equal. Britain numerical superiority on warships viz. a viz. Germany is limited however the emphasis in ship construction was different. The British gave priority to large surface ships whereas the Germans were concentrated mainly in submarines construction.

However even if the British war production was inefficient its volume and size were critical enough to tip the balance of power in favour of the Entente since it is obvious that the joint production of France, Russia, Italy and the US was slightly higher compared to the joint production of the Central Powers (Germany and Austria-Hungary).

Without Britain the other Entente powers were able to enjoy a narrow numerical production superiority over the Central Powers. The Entente superiority on armaments production was transformed from limited to critical only thanks to the British war effort. The British financial contribution was also critical. The British cash injection of £1,741,000,000 to the allies was of immense value. The increase of UK public debt from 40% to 127% of GDP between 1914-1918; although unavoidable was associated with lower interest rates and longer time repayments compared to other states.

4. Concluding remarks

The intellectual aspiration of the article was to re-examine the British economic and industrial mobilization during World War I. Starting with the economic aspect we can use the words of Nicholson (1917) who pointed vividly that: "In September 1914 Mr. Lloyd George, then Chancellor of the Exchequer stated that as in the Napoleonic War, we should win in the end by our financial strength. Germany might get the first hundred millions as easily as Britain, but Britain had far greater staying power. It is not (he said) the first hundred millions that count, but the last. In September 1917 –just three years later- Mr. Bonar Law, Chancellor of the Exchequer, stated in a public speech that without the aid of the United States the financial position of the Allies would today be very disastrous. Did Mr. Lloyd George mean that the British Empire could hold on until the intervention of the United States? Certainly not. Perhaps… Mr. Bonar Law exaggerated. Where…are the signs in this country of financial disaster or the need of American support?"[45]. The above quote encapsulates the first issue of the article that of economic-financial mobilisation. We have

demonstrated that the war financial needs were much higher compared to all previous conflicts and that British war finance has been one third of total Allied finance. This occurred in a country which entered a war with the minimum gold reserves as compared to all other participants. It was the British financial strength that kept the economies of France, Italy and Russia alive; however it was the US capital inflows which kept the British economy alive. Thus both British Chancellors of the Exchequer were correct in their assertion.

Turning to the industrial mobilisation effort we have demonstrated that although British military hardware production was lower compared to that of France or Germany (taking into consideration the available amount of raw materials) its size was critical enough to tip the balance of power in the battlefields. It was not only the Western Front. The Dardanelles campaign in 1915, the Egypt and Palestine as well as Mesopotamia and Africa campaigns had absorbed immense quantities of material as well as manpower (although many soldiers were from the Empire). Thus overall British contribution was pivotal to the Entente's war effort.

Notes

1. For the theoretical debate about total war in the period 1914-1945 see the volumes: 1) Boemecke & Chickering & Förster [(eds.), 1999], 2) Chickering & Förster [(eds.) 2005], 3) Chickering & Förster [(eds.) 2003], 4) Chickering & Förster & Greiner [(eds.) 2005].

2. See BBC historical documentary for the Great War produced in 1964.

3. See: Carver (1998, p. 29).

4. Sources for Table 1 see: Gray et al (Volume II p. 290, 291, 296, 297). (*)=During the period 1915-1917 a total of 118,486 rifles were made in Canada and during the period of 1916-1917 another 1,117,850 rifles were made in USA for the British Army. The above figures are included in the data. (**)=During the 1914-1917 period the US supplied to Britain 876,587 small arms ammunition. These are also included in the aggregate production number. Finally Britain produced 25,735 tons of chemical weapons and used the 14,000 tons in the war fronts. According to another source Britain produced 258,400,000 shells, 3,954,000 rifles, 240,000 machine-guns, 25,031 guns. In addition the factories repaired and converted 9,263 guns and between 7-8 million helmets. See: Dewar (1921, pages 7, 91 and 106). According to Harvey (1994, p. 276) production was as follows: 55,093 aeroplanes, 41,034 aeroplane engines, 2,374 heavy tanks, 245 light tanks, 20,971 artillery guns, 217,041,000 shells, 33,072 tons of chemical gas, 107,402 heavy machine guns, 133,104

light machine guns and sub-machine guns. According to Fesser (2000, p. 124) British production was 239,000 machine guns, 26,400 artillery guns, 2,800 tanks, 47,800 aeroplane, 87,000 vehicles. Turning to consumer goods Britain during the war produced 4 million pairs of shocks, 16 million books, 45 million hospital uniforms, 2 million pairs of baseball gloves, 12 million bandages, see: M. Gilbert: (1994, pages 130 and 138).

5. See: Dewar (1921, page 73).

6. See: Dewar (1921, pages 76-78).

7. See: Dewar (1921, page 81).

8. See: Dewar (1921, pages 83-85).

9. Sources for Table 2 see: 1) Steven Broadberry & Peter Howlett: "The United Kingdom During World War I: Business as Usual?", paper presented at Warwick University conference, UK, 8-19 July 2002, page 35, 2) Broadberry & Howlett (2005, pages 206-234), 3) Ellis & Cox(2001, pages 287-288), 3) Gilbert (1994, page 139), 4) Ferguson (1998, page 260), 5) Randal Gray et al (Volume I , page 289). (Numbers in brackets are from the above sources with slightly different data, except the case of explosives where the differences are quite big 783,000 tons as opposed to 409,000 tons), 6) Bilton (2003, page 69), for slightly different data.

10. See: Dewar (1921, pages 54 and 58).

11. See: Dewar (1921, page 61).

12. See: Dewar (1921, pages 91-92).

13. See: Trebilcock (1977, pages 52-152).

14. See: Dewar (1921, pages 98 and 104). The values are in pounds-shillings and pence.

15. See: Randal Gray et al (Volume I, pages 167, 193). In the munitions factories many times accidents occurred. To illustrate in the factory of Faversham in Kent an explosion (2-3-1916) resulted in the death of 106 workers. Another accident in the "Barnbow National Shell Filling" factory (5-11-1916) resulted in the death of 35 workers. Another accident in Ashton-under-Lyne factory (13-6-1917) resulted in the death of 41 workers. See: Randal Gray et al (Volume I, pages 197, 269 and in the Volume II page 59).

16. According to Carver (1998, p. 40) in August 1914 the monthly production was 6,000 rifles and 30,000 shells. In 1915 the monthly production was 2,000,000 shells.

17. See: Strachan (2001, pages 997 and 1,067-1,069).

18. See: Randal Gray et al: "Chronicle of the First World War", Volume I (1914-1916), page 145. In 1916 from an order of 1,000 mortars 800 have been delivered.

19. An ample discussion of the British shipping industry can be found in Winklareth (2000, pages 34-124).

20. See: Dye (2013, pages 67-68).

21. Source of Table 3 see: Ellis & Cox (2001, pages 275 and 288).

22. See: 1) Harvey (1994, pages 272-273) and 2) Winter (2003, page 95).

23. Sources of Table 4 see: 1) Gilbert (1994, page 140), 2) Randal Gray et al (Volume II, page 291). In addition 21 machine guns were given to Japan. To Greece Britain supplied 40 artillery guns and 83,908 shells. British aid to Portugal was 17 guns with 41,863 shells. Finally 2,000 shells were given to Serbia. According to Harvey (1994, p. 273) by the end of March 1916 Britain had sent to France 108,000 km of telephone wires!

24. See: Randal Gray et al (Volume II page 291).

25. See: Sonne (1915, page 70).

26. See: Kennedy (2001, page 260). The war credits were as follows: In 6-8-1914 £100 m. In 8-9-1914 the daily war cost was calculated at £5 m. In 16-11-1914 an additional war credit of £225 m. was allocated. In 22-12-1914 the weekly war cost was calculated at £14.5 m. In 10-11-1915 another £400 m. of war credits were allocated. On February 21st 1916 another £120 m. were granted and on May 23rd another £300 m. were used and the daily cost was calculated at £4.8 m. In June 1916 the daily cost was £6 m. As a result in July 1916 additional war credits of £450 m. were allocated and for the whole of the year total war credits reached the level of £1,420 m. For the period 1916-1917 war credits of £1.05 billion were used. Only the cost of shelters during August 1916 was £24.5 m. In February 12th 1917 war credits of £200 m. were allocated and the daily cost was calculated at £5.7 m. On May 9th 1917 additional credits of £500 m. were allocated and the daily cost was £7.5 m. The daily war cost during April-May 1917 was £7,884,000. On July 24th 1917 additional war credits of £650 m. were allocated and by September 30th 1917 the total cost was £5 billion. In October 30th 1917 additional war credits worth of £400 m. were allocated. These were followed in December 1917 with an additional sum of £550 million. In March 7th 1918 additional credits of £600 million were allocated and another £500 million were allocated in June 1918. On August 1st 1918 another sum of £700 million were allocated to the armed forces and another £700 in the final month of the war (November). See: Randal Gray et al: (Volume I, pages 17, 35, 61, 71, 125, 159, 185, 211, 219, 231, 235, 237), and in (Volume II pages 21, 47, 57, 71, 91, 103, 117, 141, 183, 199, 247).

27. See: Strachan (2001, page 864).

28. Sources for Table 5 see: 1) Broadberry & Howlett (2005, pages 206-234 see page 216), 2) Randal Gray et al (Volume II, page 293). (Numbers in

brackets refer to different estimates) (*)=The level of government spending of 1917 was surpassed only in 1940.

29. Sources for Table 6 see: Broadberry & Howlett (2005, pages 206-234 see page 219).

30. See: Withers (1916, pages 46-47 and 168).

31. See: 1) Withers (1916, page 8), 2) Sonne (1915, pages 20-21).

32. Sources for Table 7 see: Broadberry & Howlett (2005, pages 206-234 see page 219).

33. See: 1) Randal Gray et al: "Chronicle of the First World War", Volume I (1914-1916), page 15, 2) Broadberry & Howlett paper presented at Warwick University conference, UK, 8-19 July 2002, pages 14-15.

34. See: Strachan (2001, page 1,071).

35. See: Randal Gray et al (Volume II pages 161 and 185).

36. Sources for Table 8 see: 1) Broadberry & Howlett (2005, pages 206-234 see page 212), 2) Ellis & Cox (2001, pages 285-286), 3) Randal Gray et al (Volume II, pages 294-295). Numbers in brackets reflect different data from the above sources.

37. Between July 1915-May 1916 a total of 2,155 factories became under state control whereas in the period August 1914-May 1915 only 345 factories were under state control. See: Randal Gray et al (Volume I, page 55).

38. Source for Table 9 see: Steven Broadberry & Peter HowlettQ "The United Kingdom During World War I: Business as Usual?" paper presented at Warwick University conference, UK, 8-19 July 2002, page 38.

39. To illustrate the exchange rate on 31-5-1916 was £1=$4.76. See: Randal Gray et al (Volume I, page 213).

40. See: Randal Gray et al (Volume 1, pages 41 and 57 and Volume 2 page 227).

41. Sources for Table 10 see: 1) Randal Gray et al (1991 Vol. 2, page 292), 2) Ferguson (1998, page 337). Different data, from different sources.

42. Source for Table 11 see: H.C. Sonne: "The City. Its Finance July 1914 to July 1915 and future", Effingham Wilson, London, 1915, page 94.

43. Source for Table 12 see: Kiernan M.A. (1921, page 39). The data are in current prices and not adjusted to inflation thus they may be treated with caution; however the argument is obvious the cost of World War I exceeded that of other previous conflicts.

44. Selected Sources for Table 13 see: 1) Ellis and Cox (2001) 2) Randal Gray et al [V. 2 (1991)]; 3) Strachan (2001: 993-1,113); 4) Brose (2001), 5) Ferguson (1998); 6) Feldman (1992); 7) Gall (2002, p. 46); 8) Hardach (1992: 57-88); 9) Tucker (1998); 10) Stone (1998); 11) Cawood & McKinnon-Bell,

(2001: 46); 12) Clarck ((1996: 186-188); 13) Galassi: "Hanging off the Windowsill: Italy at War 1915-1918", paper presented in Warwick, UK, 8-19 July 2002, p. 33 (Data refer to fiscal years 1 April-31 March); 14) Stone (2002), 15) Gatrell (2005), 16) Schulze (2005, p. 77-111), 16) Salavrakos (2014, pp: 1-34, 17) Salavrakos (2006, p. 345-361).

    45. See: Nicholson (1917, page vii).

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A THEORETICAL FRAMEWORK OF ARISTOTLE'S RHETORICAL TRIANGLE FOR A GREEK MEDICAL TOURISM PROVIDERS' WEB EVALUATION STRATEGY

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Abstract

The growing international demand for top medical services in combination with consumers' constant research for competitive prices in such services, has led to the growth of medical and health tourism in Greece, mainly because of the country's Mediterranean climate and its qualified health experts. In accordance with the above, the use of the Internet enables the Greek medical community to expand its marketing and advertising outside its borders. In this paper, the authors try to form a theoretical framework, by using the Aristotle's rhetorical triangle, for the website evaluation of the medical tourism websites in order to proceed in a successful marketing strategy implementation of the medical tourism providers.

JEL Classification: M30, Z33, Z38, I10

Keywords: Medical Tourism, ICTs in tourism, Web evaluation, Medical tourism marketing, Tourism distribution channels.

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1. Introduction

Medical tourism is an alternative form of tourism in which Greece can and has to invest given its climatic and geographical characteristics. However, medical tourism has been very recently prioritised in the political agenda; data on medical tourist flows are poor and the Greek medical tourist sector is unable to follow the rest of the well-established destinations in terms of ICTs integration (Sampaniotis, 2006).The aim of this paper is to propose a comprehensive evaluation framework for medical tourism websites. In order to make this study more comprehensible we have adapted Aristotle's rhetorical triangle as used in the hotel website evaluation framework of Panagopoulos et. al, 2008. We have modified this theory in order to correspond to a medical tourism website evaluation.

The rest of the article is organized as follows. First we discuss medical tourism in Greece, then we introduce the role of ICTs in medical tourism as well as the role of the e-medical tourism facilitators and providers. Then we present our proposed evaluation framework by evaluating the web sites of 107 medical tourism providers using as methodological tool, 29 criteria drawn from the international literature along with our findings, and in the final section we discuss concluding remarks and present future directions for further research.

2. Medical Tourism in Greece

According to Medical Tourism Association (2011), "medical tourism refers to people who live in one country and travel to another country in order to receive medical, dental and surgical care, while at the same time receiving equal to or greater care than they would have in their own country, and are traveling for medical care because of affordability, better access to care or a higher level of quality of care". As mentioned in Hall, 2011 and according to ESCAP (2009), the definition of medical travel is patients who are willing to travel to other countries, no matter the distance, in order to receive medical services which are not available to them in their own country, due to availability issues, high costs and even the non-existence of a specific medical service. Also, Hall (2011) defines medical tourism as a phenomenon of travellers who come from developed countries to combine tourism with various medical services. However, according to Balaban and Marano (2010) the generic definition of medical tourism is travelling in order to seek medical services, regardless the use of tourism services (Connell, 2006; Turner, 2007). Coupled with the above and according to Connell (2006) patients who are unable to

obtain health services in their own countries decide to become medical tourists. The reasons behind this are mainly long waiting lists, getting treatment from popular clinics abroad, not having an appropriate public or private insurance in their home countries and various religious and social issues (Horowitz et al., 2007). Since there is an often confusion between the terms "health tourism" and "medical tourism", Cook (2008) explains that the main difference between them is the way the body gets intervened. Health tourism improves a patient's health status with the use of spas or by providing alternative treatment methods, whereas medical tourism involves a diagnosis, various medical tests or even hospitalization and/or surgical operations (Connell,2006).

Although Greece offers natural advantages, tourist infrastructures and high expertise, it is also a fact that it is a rather atypical tourist destination facing keen competition with emerging tourist destinations of the wider area of Eastern Europe(Sampaniotis, 2006). Greek Medical tourism is also facing high competition from emerging markets in Asia, such as India, Malaysia, Singapore, Thailand, in Europe and Latin America which are some of the most attractive and low cost medical tourist destinations. A survey by Mckinsey & Company in Athens (2011) confirms that, "while Greece has to play an important role in the rapidly growing market of medical tourism, it is lacking a comprehensive national development strategy for the industry. Indicatively, only one medical unit is accredited by the Joint Commission International, an international certification body for health care organizations, compared with 43 in Turkey, 21 in Italy and 14 in Thailand. Greek hospitals haven't yet established official agreements with top international hospitals, which could enhance the international medical profile of the country" (Mckinsey & Company, 2011:59).

Greece has not developed yet a national growth strategy and/or the appropriate infrastructure in order to attract medical tourists. The main reason for this is the economical issues that have risen since the global economic crisis. For example, as mentioned in McKinsey (2011), there is only one healthcare facility which is accredited by the JCI (Joint Committee International), which is an international monitoring body, while there are 43 in Turkey, 21 in Italy and 14 in Thailand.

Greece's major weakness is the fact that it is not established yet as a popular medical tourism destination (McKinsey, 2011). The country is fundamentally appropriate to be one of the top medical tourism destinations as it offers competitive prices in healthcare services as well as medical professionals with excellent scientific knowledge (McKinsey, 2011). However, the country has not developed relationships with other international medical tourism providers, such as international medical tourism facilitators or medical tourism tour

operators, in order to increase its popularity and credibility (McKinsey, 2011). Also, there is a need to enhance auxiliary services for patients from abroad such as multilingual support, online contact with possible patients, assistance with logistics etc (McKinsey, 2011).

3. ICTs in Medical Tourism

As the investment in and adoption of Information and Communications Technology (ICT) has become an indispensable component of tourism and hospitality business, researchers increasingly seek to understand and communicate the significance of the new technologies, to investigate and interpret developments in ICTs, and to attempt to forecast the way ahead for both industry and technological development. Tourism is one of the biggest and developed industries worldwide, therefore it's only natural that it is strongly connected with other major industries as well. Also, due to its vast development the tourism product has been altered many times and keeps transforming depending on the products, businesses and competition (Buhalis & Law, 2008). Developments in Information and Communications Technology (ICT) have undoubtedly changed practices and strategies, as well as the industry's structures (Porter, 2001). Businesses which do not adapt to the above mentioned developments fail to manage their information-driven customers without risking their competitive advantage in the tourism industry (Law and Jogaratnam, 2005).

Tourists nowadays, use every advantage ICTs offer them. More specifically, the internet is the primary source of travel information and every future traveller uses this technology in order to plan his trips. ICTs have altered the way tourism businesses market their product as well as the interaction between them and their customers (Buhalis, 2003; Wang and Pizam, 2011).Therefore, new marketing techniques have been adapted by the travel industry in order to improve the online user experience of their customers (Buhalis and Law, 2008).

International medical tourism providers are fully aware of the benefits that ICTs provide and accordingly, are motivated to create greater awareness of their services with the goal of establishing mutually beneficial and interactive relationships with their patients. Having no geographical and physical barriers, the Internet is considered a competitive marketing channel in the hospitality and tourism industry (Doolin et al., 2002). Rather than actually going to a medical tourism agency or having to contact over the phone a clinic or a hospital, medical tourists increasingly prefer interacting with the tourism

and healthcare businesses online in order to conveniently obtain information on destinations, check offered healthcare services or medical package prices (Greenspan, 2004). Those industries understand that the Internet is a tool that allows potential customers to seek information about them and motivates patients to become medical tourists (Milović, 2012). Many medical tourism intermediaries that are not health specialists, but brokers between international patients and hospital networks" (Lunt et al, 2011; Connell, 2006: 1095), use ICTs and act as advisers in order to help the consumer/patient select, negotiate and access health care abroad (Crooks, et al. 2010; Cormany and Baloglu, 2011). Many medical tourism companies are also trying to attract news coverage by developing social media strategies that take advantage of free marketing opportunities provided by social media such as YouTube, Facebook, and Twitter (Turner, 2012).These e-medical tourism intermediaries can be specialized travel agencies, electronic medical tourism guides (e.g. treatmentabroad.net) and specialized e-journals (e.g. International Medical Travel Journal- imtjonline.com).

Due to the affluence of the information that visitors of a website can find, they have become more demanding while having high expectations as consumers (Tong, Duffy, Cross, Tsung, &Yen, 2005).Consequently, medical tourism providers need to evaluate their online image in order to improve, change, or adapt to the user's needs and desires. They should be able to deliver, along with an optimized marketing strategy, successful products and increase productivity and competitiveness through online platforms (De Marsico & Levialdi, 2004). By establishing a website, medical tourism providers can increase volumes of sales, enhance the brand images, and increase the overall effect of their marketing plans. Consequently, evaluating users' perception of information quality and the effect on sales is vital for medical tourism providers.In order to be competitive on an international level, medical tourism should add value and interactivity to their websites. They can provide features such as online booking platforms and booking modifications online in order to enhance the user experience of each patient which increases loyalty (Hamid, Cheng, & Akhir, 2011).

Medical tourism websites or other forms of presence on the Internet enable medical providers to easily get and stay in touch with potential customers. Also, Search Engine Optimization for medical tourism providers is of vital importance. Each potential customer uses search engines to obtain information about hospitals, destinations or CVs of medical professionals. Medical tourism providers need to focus on creating strategies that will help them increase their popularity amongst online search engines. It is crucial for medical tourism

websites to remain on the top results of each engine by using effective search engine optimization practices (Milović, 2012).

4. Use of Aristotle's rhetorical triangle for medical tourism web evaluation strategy

As the medical providers' internet appearance is crucial, their website performance becomes a very important aspect of their marketing strategy. Evaluation is considered the process through which website owners achieve the harmonization of the site to customers' needs and requirements (De Marsico & Levialdi, 2004). The website evaluation process is of critical importance as we can examine if the websites meet the users' expectations(Dragulanescu, 2002). Patients who visit the websites of medical tourism providers, are fonder of companies that utilize the Internet. A branded website with information regarding medical and tourism services becomes trustworthy and makes its services and facilities popular.

The focus of the present study is to provide a framework of website evaluation criteria that form a holistic view of the current Greek medical tourism websites. In order to make this study more comprehensible we have adapted Aristotle's rhetorical triangle as used in the hotel website evaluation framework of Panagopoulos et. al, 2011. We have modified this theory in order to correspond to a medical tourism website evaluation. More specifically, according to Sigalas, 1997 and De Marsico & Levialdi, 2004 approach to his theory, the 3 groups of criteria that Aristotle's theory represent are the following:

Pathos: represents the emotions that each website evokes to the user (eg. Photo Gallery, services specifically designed for medical tourists).

Ethos: represents the credibility of each website (eg. hospital credentials, patients' testimonials).

Logos: represents the way patients and medical tourism professionals communicate with each other (eg. FAQs, contact form, variety of languages).

The criteria used in this study are listed below as we can see in the following Figure 1:

We would like to point out that there are no subjective criteria involved in this research as this paper is based on criteria which are already set in the scientific literature. The specific criteria used have been gathered from different researchers from evaluations that examine different aspects of tourism (eg. hotels' website evaluations, destination website evaluations etc.). Specifically, the criteria used are the following as we see in Figure 2 below:

The criteria used in this study are listed below:

Figure 1: Classification of Greek Medical Tourism Websites according to Aristotle's Classification
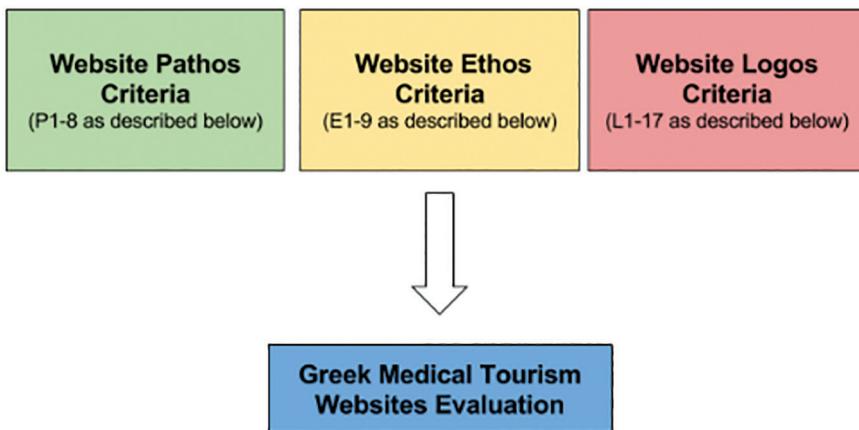
Criteria regarding Pathos - Emotion

P1. Photo Gallery (Giannopoulos and Mavragani 2011 p. 722). Photos taken by the provider regarding its facilities, services or even satisfied patients.

P2. Downloadable Material (Giannopoulos and Mavragani, 2011, p. 723). Material such as travel guides, useful articles, video files, informative leaflets.

P3. Maps (Tanrisevdi and Duran, 2011, p.727).For tourists that visit Greece for the first time or patients who wish to know the exact location of the facilities so they can make the appropriate arrangements.

P4. Weather information (Tanrisevdi and Duran, 2011, p.755).Information regarding the weather conditions so the patients can visit the country prepared.

P5. Logo (Sobo et al. 2011, p.125).The provider's own logo which makes visitors remember the website.

P6. Direct Booking (Panagopoulos et al., 2011, p.703).The website provides an application to book directly a hotel within its website. This way, the visitor doesn't have to visit another website to make his hotel booking.

P7. Post/PreCareServices (Gan and Frederick, 2011, p. 171).Information regarding pre medical care and post medical care services.

P8. Estimated cost (Cormany and Baloglu,2010 p.711).An estimated cost for each medical tourism service.

Figure 2: Specific Criteria for Logos, Ethos and Pathos Greek Medical Tourism Web Evalutation Technique

Website Logos Criteria - Communication:

L1. About us
L2. Frequently Asked Questions
L3. SiteMap
L4. Languages
L5. Air tickets
L6. Ground Transportation
L7. Hotel Booking
L8. Sightseeing
L9. International Mobile Phones
L10. Translation Services
L11. Visa
L12. Email
L13. Phone Number
L14. Postal Address
L15. Social Media Links
L16. Newsletter
L17. Info Request Form

Website Ethos Criteria - Credibility:

E1. External Links
E2. Last Updated Date
E3. Insurance
E4. Transfer of Medical Records
E5. Patients testimonials
E6. Hospital Names
E7. Hospitals' Credentials
E8. Medical Staff CVs
E9. Services Provided

Website Pathos Criteria - Emotion:

P1. Photo Gallery
P2. Downloadable Material
P3. Maps
P4. Weather information
P5. Logo
P6. Direct Booking
P7. Post/PreCareServices
P8. Estimated cost

Criteria regarding Ethos - Credibility

E1. External Links (Cormany and Baloglu,2010 p.711).Links that are relevant either with the provided services or with touristic information.

E2. Last Updated Date (Cormany and Baloglu,2010 p.711).The exact date when the website was last updated. If the website hasn't been updated for a long time, it might not be considered as trustworthy.

E3. Insurance (Mason and Wright 2011, p.171).Information regarding public and/or private insurance plans.

E4. Transfer of Medical Records (Cormany and Baloglu,2010 p.712).Information regarding the ways of transferring each patient's medical records.

E5. Patients testimonials (Cormany and Baloglu,2010 p.711).Comments from patients that have used the provider for an operation, check up or a medical service.

E6. Hospital Names (Gan and Frederick, 2011, p. 171).A list of all the hospital names the provider cooperates with.

E7. Hospitals' Credentials (Cormany and Baloglu,2010 p.711).The credentials of the hospitals that the provider cooperates with.

E8. Medical Staff CVs (Mason and Wright 2011, p.171).Detailed CVs of the medical staff.

E9. Services Provided (Cormany and Baloglu,2010 p.711).A list with all the medical services provided.

Criteria regarding Logos - Communication

L1. About us (Mason and Wright 2011, p.171).The purpose of the website, general information about the services provided.

L2. Frequently Asked Questions (Sobo et al. 2011, p.125) .Questions regarding common matters. This is a very useful tool as the patient can get quick answers to his questions without having to communicate with the provider.

L3. SiteMap (Sobo et al. 2011, p.125).A way for the website's visitor to take a glance at the website's content.

L4. Languages (Panagopoulos et al. 2011, p. 703).The languages each website supports.

L5. Air tickets (Cormany and Baloglu,2010 p.712).Information regarding issuing air tickets.

L6. Ground Transportation (Cormany and Baloglu,2010 p.712).Information regarding tourists transportation while in the country.

L7. Hotel Booking (Cormany and Baloglu,2010 p.712).Information regarding available hotels near the provider's facilities.

L8. Sightseeing (Cormany and Baloglu,2010 p.712).Information regarding sightseeing services.

L9. International Mobile Phones (Cormany and Baloglu,2010 p.712).Information regarding the use of international mobile phones.

L10. Translation Services (Cormany and Baloglu,2010 p.712).Information regarding the translation services provided from the health provider.

L11. Visa (Gan and Frederick, 2011, p. 171).Visa related issues information.

L12. Email (Cormany and Baloglu,2010 p.711).Existence of a valid email address.

L13. Phone Number (Cormany and Baloglu,2010 p.711).Contact number of the provider.

L14. Postal Address (Cormany and Baloglu,2010 p.711). Postal Address of the provide.

L15. Social Media Links (Cormany and Baloglu,2010 p.711). Links to the social media platforms of the provider

L16. Newsletter (Giannopoulos and Mavragani, 2011, p. 723). The ability to sign up for a newsletter.

L17. Info Request Form (Cormany and Baloglu,2010 p.711).The existence of a contact form so the visitors can request further information on the services provided.

The authors used a combination of content analysis methods to explore, compare and analyze the Greek medical tourism websites based in Greece. This study uses a Quantitative Research method which means that statistical tools have been used in order to extract results (Christou, 1999). It also means that the questionnaire that was set can only be answered with 'yes or no' replies from the researchers.

In the first step the authors identified all providers that are based in Greece and market medical tourism products and services to both domestic and international medical tourists. The identification process started from October 2015 until January 2016, by conducting repeated Internet searches to identify medical tourism providers with head offices or affiliate offices in Greece. The authors made a clear distinction between medical tourism services and health and wellness tourism services provided; the findings of the latter are discussed in another paper.

5. Results and Discussion

The following research has been conducted by searching online for the most popular medical tourism services in the major search engines as discussed by Lunt and Carrera (2010): Plastic Surgery, Dental Surgery, Cardiologic Surgery, Bariatric Surgery, Orthopedic Surgery, IVF, Transplantation, Ophthalmic Surgery and General Check ups. According to the above, we used the most common keywords which are medical tourism related and found the majority of Greek websites that want to attract medical tourists. Those

Table 1: Plastic Surgery

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	42	38,9	39,3	39,3
	No	65	60,2	60,7	100,0
	Total	107	99,1	100,0	
Missing	System	1	,9		
Total		108	100,0		

Table 2: Dental Surgery

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	44	40,7	41,1	41,1
	No	63	58,3	58,9	100,0
	Total	107	99,1	100,0	
Missing	System	1	,9		
Total		108	100,0		

Table 3: Cardiologic Surgery

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	21	19,4	19,6	19,6
	No	86	79,6	80,4	100,0
	Total	107	99,1	100,0	
Missing	System	1	,9		
Total		108	100,0		

Table 4: Bariatric Surgery

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	24	22,2	22,4	22,4
	No	83	76,9	77,6	100,0
	Total	107	99,1	100,0	
Missing	System	1	,9		
Total		108	100,0		

Table 5: Orthopedic surgery

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	27	25,0	25,2	25,2
	No	80	74,1	74,8	100,0
	Total	107	99,1	100,0	
Missing	System	1	0,9		
Total		108	100,0		

Table 6: IVF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	49	45,4	45,8	45,8
	No	58	53,7	54,2	100,0
	Total	107	99,1	100,0	
Missing	System	1	0,9		
Total		108	100,0		

Table 7: Transplantation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	21	19,4	19,6	19,6
	No	86	79,6	80,4	100,0
	Total	107	99,1	100,0	
Missing	System	1	0,9		
Total		108	100,0		

Table 8: Ophthalmic Surgery

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	22	20,4	20,6	20,6
	No	85	78,7	79,4	100,0
	Total	107	99,1	100,0	
Missing	System	1	0,9		
Total		108	100,0		

Table 9: Check up

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	24	22,2	22,4	22,4
	No	83	76,9	77,6	100,0
	Total	107	99,1	100,0	
Missing	System	1	0,9		
Total		108	100,0		

keywords are: "medical tourism Greece", "medical Greece", "plastic surgery Greece", "dental surgery Greece", "cardiac surgery Greece", "bariatric surgery Greece", "orthopedic surgery Greece", "IVF Greece", "organ transplantation Greece", "eye surgery Greece", "checkups Greece".

The exact services provided by medical tourism providers in the above mentioned research are displayed in the following Tables 1, 2, 3, 4, 5, 6, 7, 8 and 9:

In total 107 Greek medical tourism providers were identified and data of the identified medical tourism providers and their location in Greece were gathered. This led to the development of a database of Greek medical tourism providers for the first time. The research has shown that the owners of those websites vary. They are hospitals, doctors, medical tourism consolidators and doctors' associations. They are all seeking to attract patients outside Greece and most of them provide relevant information regarding their stay. The medical tourism providers that have been found throughout this research are displayed in Table 10.

The second stage of our research in the future is to examine and compare the above mentioned websites by using the above mentioned criteria according to Aristotle's classification in order to provide a systematic database for Greek medical tourism providers for the first time in the Greek scientific community.

Table 10: e-Medical Tourism Providers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Portal	10	9,3	9,3	9,3
	Medical Facilitator	11	10,2	10,3	19,6
	Cinic	60	55,6	56,1	75,7
	Private Doctor	26	24,1	24,3	100,0
	Total	107	99,1	100,0	
Missing	System	1	0,9		
Total		108	100,0		C

In this study, the researchers proposed a comprehensive evaluation framework for medical tourism providers' websites by using the Aristotle's rhetorical triangle, which is generic, open, and standardized as it can be applied for evaluating websites of various medical tourism providers' categories.

This information can be used to help website designers and managers to improve the corresponding website attributes taking into account customers' needs and preferences as pinpointed by Law & Bai (2006).

There are several limitations in our recent study, as we know is confined only to descriptive attributes. The authors aim to expand and modify the evaluation questionnaire (for example, by using Likert scaling) in order to be able to rate performance indicators and to analyze each given provider's website sample specific features.

Note

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AUTHORS GUIDELINES

The submitted papers must be original work without prior publication or currently being considered for publication, and will be approved by two specialists. The following conditions and procedures for the articles submission should be taken into consideration:

1. **Articles must be written in English and submitted in MS-Word (doc or docx).**
Their length should not exceed a maximum of 30 pages. A complete article should contain two files: the abstract file (maximum length: 120 words) and a main body text file.
2. **On the first page of the abstract file** the following information should be printed:
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