JOSEPH SCHUMPETER AND THE BUSINESS CYCLE: AN HISTORICAL SYNTHESIS.

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In this essay, Simon Mee examines the contribution of one of the 20th century's most underappreciated economists, Joseph Schumpeter. Through a mixture of humorous anecdotes from his eccentric life to a more sober analysis of his contribution to business cycle theory, a picture develops of a flawed man, both personally and academically. The author uses Keynes, Schumpeter's contemporary, throughout to demonstrate the futility and frustration that clearly haunted the man, but also shows a determination to give him his rightful place in the history of economic thought.

Introduction

"Capitalism is a form or method of economic change and, not only never is, but never can be, stationary."[1]

A telling anecdote occurred during a seminar in Harvard organised by Joseph Schumpeter's students in 1939. It was arranged with Schumpeter so they could discuss and debate his monumental two-volume work, *Business Cycles*, which had recently been published (McCraw, 2007). During the seminar, however, it quickly transpired that nobody had actually read the text. One of the students later recalled that 'in the discussion everyone talked about Keynes, whose *General Theory* had recently appeared, and not about Schumpeter's work'. Afterwards, several students said that they had never before seen Schumpeter as furious as he had been on that occasion. At the end of the seminar he said to them, 'whether you agree or disagree is up to you, but I wish you would have at least read it' (ibid.: 271).

This story serves as a useful analogy for the work of Schumpeter, a man still thought of as one of the greatest economists of the 20th century, commonly bracketed with such giants as Keynes, Hayek and Friedman (Skidelsky, 2007), but whose work has failed to gain the recognition it deserves. While he is best known for his theory of 'creative destruction' – the idea that the capitalist system progresses by constantly revolutionising its economic structure – Schumpeter was one of the most brilliant and original of the five Continental writers who originated nearly all of the basic ideas in modern business cycle theory (Hansen, 1951).

This paper will assess the viability of Schumpeter's business cycle theory. It will first offer a brief biography of the man and the formation of his thought. Secondly, this paper will offer a critical analysis of his theory and highlight the importance of history throughout his work. In conclusion, it will find that, while his seminal vision was never in doubt, its eventual failure came by means of the underlying gap that lay between this vision and the construction of his theory.

Joseph Schumpeter and history

'Read no history: nothing but biography, for that is life without theory.' – Benjamin Disraeli

Joseph Alois Schumpeter was a compelling character. Born in 1883, the year Karl Marx died, his family origins were solid Catholic bourgeoisie in Moravia, now part of the Czech Republic. In his student days, he cut a reputation as a brilliant *enfant terrible* of the Austrian school, and this spark never left him. In his later years, Schumpeter was a man who would often comment that his three youthful ambitions were to

[1] Joseph Schumpeter, quoted in (Schumpeter, 1987: 82).

become the greatest lover in Vienna, the greatest horseman in Austria, and the greatest economist in the world. Alas, he would then say, he had only achieved two of them.[2]

As McCraw (2007) observes, Schumpeter would reinvent himself over the years, thinking not of the past but how he might move forward. In this sense, he was well suited to grasp the mindset of the entrepreneur. Schumpeter realised that one's identity in a rapidly changing world might come more from innovation than inheritance; this is all the more evident when one looks at his eventful life. Though many years were dedicated to academic endeavour, there were forays into many other fields. Schumpeter practised law in Cairo, managed the finances of an Egyptian princess, briefly became Minister of Finance in Austria's first Republican government in 1919, and attempted a career in banking. Thereafter, he retired to academic life for good, and eventually settled at Harvard in 1932 (Samuelson, 1951). Skidelsky (2007) even argues that the theme of creative destruction appears against the background of Schumpeter's own family uprooting, the dissolution of the Austrian empire and the turmoil of the interwar years. These biographical details are important as they allow us to understand why, when faced with certain social and economic phenomena, Schumpeter's mind was more easily disposed to accept some hypotheses rather than others.

Schumpeter wanted to create an 'exact' economics. While he acknowledged that the 'childhood of every science is characterised by the prevalence of 'schools', bodies of men, that is, who swear by bodies of doctrine, which differ *toto cælo* from each other', Schumpeter hoped that economics could one day be 'confined within clear-cut questions of fact and analytic machinery, and capable of being settled by exact proof' (1927: 286). In all of his work, whether in books or articles, he took a fundamentally historical approach. For Schumpeter, economics was a unique process in historic time; in *History of Economic Analysis*, he would assert that of the three basic building blocks of economics - theory, statistics, and history – the last 'is by far the most important' (1981: 12-13).

Schumpeter was wont to observe that the whole of a man's intellectual work is usually foreshadowed by what he had done by the age of thirty (Haberler, 1951). So it was no surprise that his first major work, *The Theory of Economic Development*, was published in 1912 when Schumpeter was twenty-nine. It was a path-breaking study of the process of economic change - as opposed to standard economic analysis based on static assumptions. He longed for a dynamic analysis free from the straitjacket of comparative statistics. When Schumpeter observed the capitalist process, it was the speed of the transformation, and the extent of the ensuing dislocation, which led him to reject the static equilibrium models of British economics, derived from a society where economic change was evolutionary and institutions were rather stable (Skidelsky, 2007). With the above in consideration, it is now necessary to turn to Schumpeter's business cycle theory.

The business cycle

'Cycles are not, like tonsils, separable things that might be treated by themselves, but are, like the beat of a heart, of the essence of the organism that displays them.'[3]

The static and dynamic: giving credit where it is due

Schumpeter starts his analysis from a stable equilibrium, but his aim is to identify the economic factors emanating from within the economy that destroy this existing equilibrium and lead to evolution. These real economic processes can be divided into two different and in practise clearly discernable classes: static and dynamic. Schumpeter (1983: 145) presents these two processes as the distinction between the 'circular flow' and 'development'. The latter constitutes the pure economic evolution: those changes in the economy that arise from itself. From here on, it is perhaps best to view the circular flow condition as a special case of the dynamic movement. In the circular flow, Schumpeter (1912) believes that there is a constant tendency towards an equilibrium (an assumption Keynes would no doubt disagree with) which, under competitive capitalism, tends to keep available capital and labour in optimal allocation. Thus, equilibrium describes the *absorption* of change, while development accounts for the *nature* of change.

[2] Only the decline of the Austrian cavalry, he claimed, had thwarted the fulfilment of all three.
[3] Joseph Schumpeter, quoted in (Joseph Schumpeter, 1939: v).

The departure from the static economy is made possible by introducing a more complex concept of money, and in Schumpeter's theory this takes the form of credit. Schumpeter notes that 'money has, in the circular flow, no other role than that of facilitating the circulation of commodities' (1983: 53). Since credit supplied by banks depends crucially on entrepreneurial demand, Schumpeter regards the money supply not as an independent variable, but as one that varies endogenously in response to entrepreneurial action. The money borrowed from the banks provides the innovator with the funds to employ the factors of production required to set up his business. Given the initial assumption of full factor employment, these factors will have to be diverted away from old businesses. The economy thus becomes dynamic in that disequilibria and fluctuations are now possible.

The ebb and flow of innovation

In his interpretation of capitalism, it is the entrepreneur who innovates and applies new combinations of factors of production (Heertje, 2008). These innovations are usually introduced by new men rather than old and by new firms rather than by those who already occupied prominent niches in the circular flow. For Schumpeter, the entrepreneur is no ordinary businessman; rather, he seeks his profits outside the convention-bound circular flow by introducing new products and production techniques.[4] In order to innovate, the entrepreneur must 'raid' the circular flow and divert labour to his novel uses. Because resources are already optimally allocated in equilibrium, this 'raiding' of the circular flow by the entrepreneur also explains the instability of industrial capitalism. As a result, 'the history of capitalism is studded with violent bursts and catastrophes' (1939: 100-102).[5]

Schumpeter defines innovation as the setting up of a new production function, to denote the application of new ideas to the production process. The "perennial gale of creative destruction," whereby new products and processes displace old ones, is far more important than price competition among existing firms and products. Indeed, the problem was not "how capitalism administers existing structures," but how it "creates and destroys them" (ibid.). Interestingly, innovational activity tends to come in 'clusters' or 'bunches'. This is an endogenous process; the action of the first entrepreneur will be followed by a herd-like swarm of imitations. While Schumpeter may not refer to Keynes' 'animal spirits', he saw a dynamic society that was 'constantly being drawn away from neighbourhoods of equilibrium by reason of the pioneering activities of daring innovators whose lightning successes entice a swarm of imitators into a wild outpouring of new investment activity' (Hansen, 1951: 130).

Thus, business cycles are recurrent fluctuations in the rate at which innovations are introduced into the economy. However, this implies that the business cycle is a discontinuous process. Beneath the rate of innovation, the intensity of entrepreneurial endeavour, and the bunching of innovations, lays the *distribution* of entrepreneurial ability. This ability to dare and to initiate, to overcome obstacles to innovations is, like many other abilities, endowed to the pioneering few, suggesting that Schumpeter saw the discontinuous endogenous change erupting from the supply side, and not the demand side. Innovation wells up in a great tidal wave and then recedes. This 'wave-like movement' occurred because, as new processes are introduced, real time must elapse before they either reduce costs or generate new goods (ibid.: 131).

The cycles of economic life: the three-cycle schema

Schumpeter's theory of the business cycle comprises three successive approximations to reality. The first approximation - also known as the primary model - has two phases: prosperity, which is a movement away from, and recession, which is a movement towards, a new equilibrium. The second approximation - conditions under which entrepreneurial activity takes place in reality - are also be considered. Factors such as errors of forecast, speculative tendencies of individuals, peculiarities of economic institutions, are all likely to prolong and exaggerate a movement in the business cycle.

[4] Whereas the average businessman, who seeks his profits within the existing structure, will earn a profit as small as his risk.

[5] Schumpeter emphasised that the destructive part of creative destruction has always been quite real. Those whose interests are being destroyed will, understandably, fight hard to preserve their culture and status.

For our purposes, however, we are interested in the third approximation. Schumpeter uses a three-cycle schema in an attempt to synthesise his business cycle theory with the nature of history itself. In order to account for cycles that can be observed historically and statistically from the late 1700s onwards, Schumpeter distinguishes three types of cycles: long waves of about fifty years in duration (Kondratieffs); intermediate waves of about nine to ten years in duration (Juglars); and short waves of about forty months in duration (Kitchins).[6] It is important to note that Schumpeter lays no theoretical claim for the third approximation; rather it serves primarily as a descriptive device, a method of interpreting an observed reality (1939: 174). Schumpeter writes, 'Each Kondratieff should contain an integral number of Juglars and each Juglar an integral number of Kitchins' (1939: 172).[7] The key to a Kondratieff is not a cyclical movement in the absolute level of aggregate output, but instead a large scale clustering or sequence of innovations, the appearance and absorption of which require half a century or more.

An historical synthesis

Having laid out Schumpeter's basic model of capitalist behaviour, it is now fitting to bring his theory together with an historical example. The core of *Business Cycles* is its copious detail about the flowering of business systems in Britain, Germany and especially the United States. While the Industrial Revolution might seem obvious, another prime example of innovation and the business cycle was the 'railroadization' of the United States, which thrived in the late 1800s (1939: 291-292). The more railroads that were built, the cheaper and faster transport became. A unified domestic market soon arose for an unprecedented variety of industrial products and consumer goods. In addition, as railroads cost huge sums of money and took lengthy periods of time to build, entrepreneurs of the railroad industry needed more capital than their own funds and revenues from their business could allow. Thus, construction was 'mainly financed by credit creation' (1939: 328-330). Meanwhile, the vast array of construction programs undertaken by railroads stimulated a host of other industries; railroads vastly increased the use of coal, steel, machinery and fuel. Across the country, railroads created new communities such as Chicago, Denver and thousands of other small towns (McCraw, 2007). For Schumpeter, the pattern of railroad finance exemplified for investors the tumultuous business cycles typical of capitalist economies. The ups and downs of railroading had made it clear that the process of 'liquidation, absorption, adaptation' was going to be 'an unusually long and painful affair' (ibid: 328-330). 'Railroadization,' then, was Schumpeter's 'standard example by which to illustrate the working of our model' (ibid: 303-304), and neatly demonstrates the ebb and flow of innovation.

All tidal waves recede: the gap between Schumpeter's vision and theory and the dawn of Keynesian economics

Business Cycles has outstanding merits as economic and business history, but judged by Schumpeter's aim of explaining complex cyclical patterns, the book was not a success, and its tepid reception disappointed him bitterly. There were several reasons for this turn of events. Throughout *Business Cycles*, it cannot be said that Schumpeter confined himself to 'clear-cut questions of fact and analytic machinery' (1927: 286). He took many liberties in constructing his cycles, such as adjusting his numerical data to reflect outside events. If a war or a natural disaster had interrupted a period's prosperity, he still counted that period as part of a prosperous cycle. As McCraw (2007) notes, this alteration, while logical, was a slippery slope leading away from exactitude. Schumpeter's inability to put his ideas about the development of economic life into a mathematical form further hindered his analysis, and as a consequence, his entrepreneurial insights have seldom been embraced by academic economists. Unlike the idea of equilibrium, the phenomenon of entrepreneurship is almost impossible to model through the use of equations yielding mathematical proof.

[6] Clement Juglar, Joseph Kitchin, and Nikolai Kondratieff were prominent business cycle theorists.

[7] Schumpeter dates the first long-wave Kondratieff from the 1780s to 1842, the second from 1842 to 1897, and the third from 1898 to the end of the 1930s. The first of these waves he associates with the Industrial Revolution, the second, with 'railroadization', the third, with a broader set of innovations in the chemical, electric power, and automobile industries.

Furthermore, Schumpeter's relation between the distribution of entrepreneurial ability and the bunching of innovations is tenuous. He merely asserted rather than explained the cumulative nature of innovation. What precisely is the necessary connection between scarcity at any given time of entrepreneurial talent and the bunching of innovations? Schumpeter failed to describe the succession of events insofar as he does not provide a detailed analysis of the mechanisms that link the scarcity of entrepreneurial talent to the 'swarm-like' appearance of imitators and to the diffusion of innovations at any given point in time (Kuznets, 1940).

There was another reason for the disappointing reception of Schumpeter's theory. *Business Cycles* happened to appear soon after Keynes's landmark *General Theory*, at a time when most economists' minds were focused on the more immediately relevant issues raised by the Great Depression. A capitalist to the last, Schumpeter often stressed that the long term material gain capitalism offered outweighed any short term cost of inequality and turbulence. After the 1930s, however, people were far more receptive to Keynes's oft-quoted dictum that 'in the long run, we're all dead'.[8] In contrast to *Business Cycles*, Keynes's *General Theory* offered a new explanation for the Great Depression and prescribed a way in which the world economy might be rescued. Furthermore, in Keynesian and other macroeconomic models, individual entrepreneurs, companies, and industries simply vanish from the scene. No mention of a single business firm can be found in the entire work of *General Theory*; instead, Keynes took a path directly opposite from Schumpeter's and proceeded from a top-down view based on government policies (McCraw, 2007). It is somewhat ironic that, writing in 1931, Keynes described himself as a Cassandra whose 'croakings could never influence the course of events in time' – a statement which Schumpeter could, more accurately, have made about himself at any time.[9]

Conclusion

Thus, it is here we must return to the seminar room in Harvard in 1939. Schumpeter's furious reaction is all the more understandable when placed in its context. Despite his seminal contribution to economics, the theorist of innovation and creative destruction failed to bridge the obvious gap between his theory and vision of the capitalist process. Instead, he found himself swimming against the tide of academic opinion at the dawn of the Keynesian age. Yearning for an 'exact' economics, Schumpeter instead found himself at the mercy of a profession still characterised by the prevalence of 'schools' of men, who swore by their bodies of doctrine. Ironically, for all the emphasis Schumpeter placed on historical analysis, it is somewhat poignant that his theory, flaws notwithstanding, should fall victim to the events of history itself.

Schumpeter's two greatest insights were that innovation was the driving force of not only capitalism but also of economic progress in general, and that entrepreneurs were the agents of innovation. Sometimes, as in *Business Cycles*, the combination did not work so well, where Schumpeter tried to embed his central message about the dynamics of capitalism within a plausible, though admittedly troubled, framework. However, he provided a tentative answer to the question of how to integrate innovation with the study of business cycles. In 1936, Keynes wrote, 'Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slave of some defunct economist.' While in 2009 there is no defunct economist more prominent than Keynes himself, this paper hopes the reader will consider the fragments of wisdom offered by Schumpeter, a Cassandra whose croakings could never influence the course of events in time.

[8] The American economist Robert L. Heilbroner recalls his days in the classroom as a Harvard student during the Great Depression: 'Schumpeter arrived in his famous riding habit and great cloak, of which he divested himself in a grand gesture. He greeted us in a typically Schumpeterian way: 'Gentlemen, a depression is for capitalism like a good, cold douche.' The remark shocked us for two reasons: First, was a depression a good thing? Second, few of us knew that a douche was the European term for 'shower.'' Quoted in (Heilbroner, 1996:46-49).

[9] Quoted in (Keynes, 1932: preface).

Bibliography

Haberler, G. 1951. 'Professor Joseph Schumpeter'. *The Review of Economics and Statistics* 33:2:89-90.

Hansen, A. 1951. 'Schumpeter's Contribution to Business Cycle Theory'. *The Review of Economics and Statistics* 33:2:129-132.

Heilbroner, R. 1996. 'The Embarrassment of Economics'. *Challenge* 39:6:46-49.

Heertje, A. 2008. 'Joseph Alois Schumpeter (1883–1950)'. *The New Palgrave Dictionary of Economics* (2nd ed.). New York: Palgrave Macmillan.

Keynes, J.M. 1931. *Essays in Persuasion*. London: Macmillan.

Kuznets, S. 1940. 'Schumpeter's Business Cycles'. *The American Economic Review* 30:2:257-271.

McCraw, T. 2007. *Prophet of Innovation: Joseph Schumpeter and Creative Destruction*. London: Harvard University Press.

Samuelson, P.A. 1951. 'Schumpeter as a Teacher and Economic Theorist'. *The Review of Economics and Statistics* 33:2:98-103.

Schumpeter, J. 1983. [1912]. *The Theory of Economic Development*. New York: Oxford University Press.

Schumpeter, J. 1927. 'The Explanation of the Business Cycle'. *Economica* 1:21:286-311.

Schumpeter, J. 1939. *Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*. London: McGraw-Hill.

Schumpeter, J. 1987. [1942]. *Capitalism, Socialism and Democracy*. London: Unwin Paperbacks.

Schumpeter, J. 1981. [1955]. *History of Economic Analysis*. Oxford: Allen & Unwin.

Skidelsky, R. 2007. 'Portrait: Joseph Schumpeter'. *Prospect* 143:54-56.

IBN KHALDUN: THE FORGOTTEN FATHER OF ECONOMICS?

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There is not much mention of fourteenth century Islamic thinkers in standard economic textbooks. Joe McCaffrey redresses that deficit here. Whilst caution should be taken in reading history backwards, an enlightening discussion emerges on the economic thought of Ibn Khaldun. His focus was wide-ranging: it incorporated theories of price and value, production, the role of government, taxation and the population cycle. These issues continue to preoccupy economists, and an engagement with Ibn Khaldun's arguments will surely place them in greater historical context.

Introduction

Had Wali ad-Din Abu Zaid 'Abd ar-Rahman (1332 – 1406) b. Muhammad Ibn Khaldun al-Hadrami al-Ishbili (Ibn Khaldun for short) been born on the northern coast of the Mediterranean Sea instead of Tunis, it is less likely that his work would have been overlooked. During his lifetime – Islam's golden age – Ibn Khaldun developed a sophisticated theory of price and value, a theory of production and a modern analysis of the role of government. In addition to this, he produced a pre-Malthusian theory on population. While primarily an historian and a sociologist, he sought to explain the world around him in clear and concise language. These statements then explained economic concepts, even though the main purpose of his writing was not economic.

Fortunately for the economic historian, there has been a twentieth-century revival in interest in Ibn Khaldun's writings. Arthur Laffer (2004) credited him as the first writer to spot the Laffer Curve. Ronald Reagan quoted him in a press conference in support of supply-side economics. Arnold Toynbee, the economic historian, described his book, *The Muqaddimah*, as 'undoubtedly the greatest work of its kind that has ever yet been created by any mind in any time or any place' (quoted by Rosenthal in Ibn Khaldun, 1967: xxxv). The aim of this essay is to describe, appraise and critique his economic writings as they compare both to his contemporaries and to later economists.

Price Theory

Ibn Khaldun offered a developed analysis of price theory in his work. He analysed the interaction of supply and demand in the quantity produced and the price of goods. Of course, he was a man of his time, and the main type of production he was concerned with was agrarian. However, his writings betray a more 'modern' understanding of the workings of the market. He divided goods into two categories: necessities and luxuries. In the case of necessities, they are in plentiful supply, since 'nobody would neglect [to provide for] his own food or that of his establishment for a month or a year' (Ibn Khaldun, 1967: 276); people will

therefore hoard the necessities and since food is in abundant quantity, the price will be low. On the other hand, luxury goods are not produced as widely because they are not needed by the public, and so there is a shortage of such goods. Prices are therefore set indirectly because of the goods' uses, but not intentionally. Grains and other foodstuffs are cheap because they are produced in great quantity, not just because they are necessities. While this is not as succinct as the analysis of the difference in price between water and diamonds, as expressed by John Law and later Adam Smith, it does utilise, like them, the interaction of supply and demand.

This argument applies not just to goods, but to labour as well. As he explained, 'profit is the value realised from labour' and 'this differs according to the [varying degrees of] need for [a particular kind of labour]' (ibid.: 308). Thus, while he believed that judges were important and noble members of society, he argued that they are not worthy of a large wage because their position is not a general concern to the people as a whole, but for specific concerns and disputes and the minority of the population who take a particular interest in their religion. As such, his analysis did not differentiate between labour and goods.

Production

> 'Human social organisation is something necessary. The philosophers expressed this fact by saying: 'Man is "political" by nature.' That is, he cannot do without the social organisation for which the philosophers use the technical term 'town' (*polis*).' (ibid.: 45)

In Ibn Khaldun's theory of production, social organisation is essential. Individuals must work together to organise their production, even in agriculture. One person cannot produce enough food for one day on his own, as that food 'could only be obtained only after much preparation such as grinding, kneading and baking' (ibid.). Moreover, agriculture cannot take place without tools made by blacksmiths, nor cooking without utensils made by a potter. Thus, man cannot survive alone, but needs the help of others: 'through co-operation, the needs of a number of persons, many times greater than their own number, can be satisfied' (ibid.).

However, in Ibn Khaldun's writings, this co-operation is more than a necessity. By subdividing the individual tasks and jobs in an economy, the work can be done more efficiently. Specialisation is necessary because the mind is not capable of learning more than one craft fully as 'habits are qualities of the soul' (ibid.: 318) and so once one craft has been imprinted on the soul, the soul is less prepared to master another. Subdivision of labour according to skills offers the most efficient route to production. Indeed, workers who come together will be able to produce a surplus on top of their sustenance, and the surplus can be traded for luxuries. Thus, prosperity arises through subdivision of labour and specialisation of skills. By comparison with his fellow Muslim judge, Ibn Taimiyah, Ibn Khaldun's analysis is highly developed. Ibn Taimiyah stated that:

> ‘Mankind’s welfare in this world or the Hereafter cannot be achieved without getting together and co-operating. So there should be co-operation and association to achieve good and alliance to remove injury. Thus it is said that man is by nature a social being.’ (quoted in Islahi, 1988: 248)

Unlike Ibn Khaldun, Ibn Taimiyah did not develop the idea any further, nor pay any attention to the economic implications of this fact. By comparison, Ibn Khaldun’s explanation covered the reasons why man must act in groups and considers the advantages of social organisation that benefit all. Where Ibn Taimiyah’s work was historical and sociological by nature, Ibn Khaldun’s had elements of economic thought.

Finally with regard to the theory of production, he argued that demand creates its own supply. Increased demand generates supply and improves the quality of goods. He disagreed that supply influences demand, as ‘man cannot afford to give away his labour for nothing’ (Ibn Khaldun, 1967: 316) and cannot take such risks. He added that the mechanism by which demand creates supply is through the marketplace of *ideas* in the town. When a good is very much in demand, then it is imported for sale. People within the town see that it earns a high price, and they become eager to learn the necessary crafts so that they too can produce the goods. Once this happens, the good is in plentiful supply. On the other hand, if a good is not in demand, people will not want to learn the craft and it will die out if it previously existed in the town.

Role of government

Government is necessary in Ibn Khaldun’s work to ensure property rights for all subjects, so that they will be able to pursue market decisions without fear. Protection for capitalists, either through rank or personal connections, is necessary to allow them to carry out business:

> ‘Attacks on people’s property remove the incentive to acquire and gain property... When attacks on (property) are extensive and general, affecting all means of making a livelihood, business inactivity, too, becomes general.’ (ibid.: 238)

Clearly, property rights are essential to a properly functioning state. In addition, Ibn Khaldun showed himself to be pre-Keynesian in his analysis of government expenditure. He argues that the ruler should always be careful with public expenditure, because so many of his subjects depend on that expenditure:

> ‘[When they stop spending], business slumps and commercial profits decline because of the shortage of capital. Revenues from the land tax decrease, because the land tax and taxation depend on cultural activity, commercial transactions, business prosperity, and the people’s demand for gain and profits. It is the dynasty that suffers from the situation, because under those circumstances the property of the ruler decreases in consequence of the decrease in revenues from the land tax. The dynasty is the greatest market, the mother and base of all trade, the substance of income and expenditure... Furthermore, money circulates between subjects and

> ruler, moving back and forth. Now if the ruler keeps it to himself, it is lost to the subjects.' (ibid.: 237-8)

This argument is reminiscent of Keynes' Theory of Aggregate Demand and the government expenditure multiplier. The government has the power to stimulate the economy or to cool it down through its fiscal policy, and it is very important that the economy is kept in a healthy state for the subjects and for the ruler. In addition, the circular flow of money demonstrates the trickle down effects of fiscal policy and the multiplier. Cuts in public spending result in decreased demand for goods and crafts, and hence decreases earnings from land, such that landowners lose even if they were not targeted.

Taxation

> 'It should be known that at the beginning of a dynasty, taxation yields a large revenue from small assessments. At the end of the dynasty, taxation yields a small revenue from large assessments.' (ibid.: 230)

The Muqaddimah also contains a sophisticated analysis of the impact of taxation on the economy. To express this, Ibn Khaldun took a sociological approach, explaining the reasons for different levels of taxation. As a state emerges from nomadic Bedouin culture, it initially is very basic and guided by religious law, which discourages heavy taxes. As the civilisation develops, the society becomes sophisticated and there is a greater demand for crafts; the leaders become monarchs and they exact taxation to pay for these crafts. As time passes, the civilisation becomes more sophisticated; its leaders continue to increase the burden of taxation on their subjects. Eventually, Ibn Khaldun argued, the civilisation taxes itself out of existence and the state collapses.

Ibn Khaldun's analysis is a predecessor to Arthur Laffer's 1981 discussion. Laffer argues that an increase in the tax wedge 'reduces the demand for, and the supply of, productive factors' (Laffer, 1981: 33). He argues that a change in the tax on labour will affect the quantity of labour supplied and demanded, which will in turn affect the quantity of capital employed and the price of capital. Thus, an increase in the tax wedge on labour will get the following responses:

> (1) more revenue will be collected per worker employed, thus tending to increase revenues;
>
> (2) less workers will be employed, thus lowering revenue;
>
> (3) less capital will be employed, thus lowering revenue (Laffer, 1981: 36).

As a result, an increase in taxation results in progressively decreasing increments in total revenues, until the point at which revenue is maximised. From that point on, further increases in taxation levels only serve to decrease the total revenue, as less production takes place. From this analysis, we have the Laffer Curve.

As K. V. Nagarajan notes, 'it is impossible to separate the effects of taxation and the position of the dynasty in its lifespan' (Nagarajan, 1982: 118). Ibn Khaldun stated that 'the ruler and his entourage are wealthy only in the middle period of the dynasty' (Ibn Khaldun, 1967: 235). After that period, however, as the dynasty's demand for luxuries increases with the development of civilisation, taxes increase until they become a heavy burden on the subjects. At this point, the ruler responds to decreasing revenues with even greater taxes, and the economy – and therefore the entire dynasty – collapses under the pressure. This is a clear exposition of the second half of the Laffer Curve. While it is reasonable to argue that Ibn Khaldun 'did not imply that reducing taxes will *reverse* the decline of the dynasties, since he held that high takes were an *effect* of the ruler's basking in luxury while maintaining an army' (Nagarajan, 1982: 118), the analysis is more than simply a sociological one. In other places in *The Muqaddimah*, Ibn Khaldun argued against the damage luxury goods do to people and to dynasties. In this section, he explained the downfall in economic terms, as the increases in taxation cripple the economy out of existence. It is for this that Laffer credited Ibn Khaldun with the first exposition of the phenomenon (Laffer, 2004).

Population

Production is determined by the population. A highly populated city can produce a greater surplus than a less populated one as already discussed through division of labour and specialisation. The greater the population, then, the more luxurious the surroundings will be, as surpluses can be traded for luxury goods. This then in turn fuels further population growth, due to, for example, rural migration. As a result, population growth leads to a virtuous circle of luxury and further population growth.

However, there is a physical limit to the size of cities, and at that point problems begin to arise. Urban pollution becomes a problem. Moreover, the sedentary lifestyle in cities does not prepare the body for the increased influx of infection. As a result, 'the incidence of illness is great in towns and cities' (Ibn Khaldun, 1967: 327). In addition, population growth increases the demand for food and other agricultural produce, while simultaneously decreasing the rural agricultural labour supply.

> 'If nothing is stored, people must expect famines. The price of grain rises. Indigent people are unable to buy any and perish. If for some years nothing is stored, hunger will be general.' (ibid.: 256)

Thus, the town comes to be at the whim of the weather, such that if the weather is not suitable for crops, famine sweeps across the town. A population cycle is thus evident, and this in turn determines the path of the economic cycle. This population cycle theory is somewhat similar to that of Malthus and his limits on the population growth of the world.

Conclusion

> 'He discovered the virtues and the necessity of a division of labor before Smith and the principle of labor value before Ricardo. He elaborated a theory of population before Malthus and insisted on the role of the state on the economy before Keynes. The economists who rediscovered mechanisms that he had already found are too many to be named.' (Boulakia, 1971: 1117)

Unlike many of his contemporaries Ibn Khaldun did not focus too much on religious doctrine.[1] While he believed in the correctness of Islam, he restricted himself to just a small number of praises for God. The work is primarily secular, the analysis economic and factual, and the argumentation fair and accurate. The result is a work to rival those of any of the classical 'fathers of economics'.

However, while his writings may be said to be more sophisticated than his contemporaries and many of his successors, to describe him as the Father of Economics would be inaccurate. Despite the existence of mechanisms to transmit the writings of the Islamic authors throughout Europe, very few of the ideas found their way into later economic writings, except through independent rediscovery.[2] This is to the detriment of the development of economic thought, as 'looked at from the classical Greek and Roman level of economic commentaries and insight, the works of the Muslim masters represent a quantitative and qualitative bench-mark' (Baeck, 1994: 118). However, it can be truly said that Ibn Khaldun is one of the great economists of pre-Smithian times.

[1] For example, Ibn Taimiyah wrote extensively on the theological and societal worthiness of Islam's ban on usury. See Islahi, 1988 for further information.

[2] Baeck (1994: 118-120) gives a description of the translation and transmission centres in Tarazona, Toledo, Catalonia and the Langue D'Oc regions.

Bibliography

Al-Azmeh, Aziz .1982. *Ibn Khaldun: An Essay in Reinterpretation*. London: Cass.

Baeck, Louis. 1994. *The Mediterranean Tradition in Economic Thought.* London: Routledge.

Boulakia, J.D.C. 1971. 'Ibn Khaldun: A Fourteenth-Century Economist.' *The Journal of Political Economy* 79:5:1105-1118.

Ghazanfar, S.M (ed.). 2003. *Medieval Islamic Economic Thought: Filling the "Great Gap" in European Economics.* London : Routledge Curzon.

Khaldun, I. 1967. [1958]. *The Muqaddimah: An Introduction to History*. Translated by F. Rosenthal and abridged by N.J. Dawood. London: Routledge and Kegan Paul.

Islahi, A. A. 1988. *Economic Concepts of Ibn Taimiyah*. Leicester: Islamic Foundation.

Laffer, A. B. 1981. 'Supply-side Economics.' *Financial Analysts Journal* 37:5:29-43.

Laffer, A.B. 2004. 'The Laffer Curve: Past, Present and Future'. Retrieved from The Heritage Foundation at: http://www.heritage.org/Research/Taxes/bg1765.cfm

Nagarajan, K.V. 1982. 'Ibn Khaldun and "supply-side economics": a note'. *Journal of Post Keynesian Economics* 5:1:117-119.

NICHOLAS BARBON: ANTICIPATING THE CLASSICS

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Senior Sophister

The classic recipe for yoghurt begins with the instruction to 'take some previous yoghurt…' - clearly, it is not always possible to create something original. Here, David Slattery applies this insight to Nicholas Barbon and classical economic theory. Slattery reveals that many key components of classical thought were predated in the work of Barbon, a late mercantilist, including a repudiation of the positive balance of trade theory, an insight into interest as the rent for capital, and an advocacy of free trade.

Introduction

When one begins to consider the emergence of classical economics, the general view is of a revolutionary era in economic thought sparked by Adam Smith and synthesised by the likes of David Ricardo and J.S. Mill. Smith (1776) was highly critical in his conception of pre-classical economics, with mercantilism being a particular target of his ire. He considered mercantilism as a system controlled by and for the benefit of the merchant class; it was a system that rested largely on the fallacious positive balance of trade theory. One of the main aims of this essay will be to demonstrate the influence of one particular late mercantilist economist, Nicholas Barbon, on the emergence and development of classical theory.

Barbon is, in our time, often considered a lesser light of the late mercantilist period. There are particular reasons for why Barbon is so frequently overlooked. He has suffered from assertions against his character and allegations of rent-seeking. Some of these assertions have elements of truth in them. Roger North (1887) notes that Barbon, in his profession as a builder, was famed for his poorly constructed buildings and for refusing to pay any of his creditors until ordered to do so by a court. These issues, however, should not impact on Barbon's reputation as an economist. The scope and profundity of his theorising should necessitate a far higher place in our esteem. It is time to restore Barbon's reputation as one of the great economic writers of the seventeenth century.

Barbon's theory of value and its applications:

1. Overturning the positive balance of trade

A great number of the contributions Barbon made to economic thought emanated from his theorising on the nature of value. In order to consider the importance of Barbon's work in this area, one should first consider the debt he owes to earlier 'pro-mercantilists' such as Mun and Misseldon, both of whom used a use/scarcity paradigm to analyse the nature of value. He was also influenced by certain 'anti-mercantilists' (so-called as their primary occupation was in overturning the mistakes of early mercantilists) such as Child. The basic assertion was that goods must have a

use in order to have a value and, having that use, their value is defined by their scarcity. Such work was perhaps most neatly defined by later writers, notably John Law, who used the water/diamonds analogy in order to analyse the paradox of value. This was later picked up on by classical writers, notably Smith, who used the same analogy in his own work.

Barbon inherited this theory and it became a focal point of his own work. However, unlike previous writers, Barbon used it to draw particular conclusions that had not as yet been touched on. The first of these conclusions was the overturning of the positive balance of trade theory. Early analysis centred on the discussion of a choice of policy for stopping the outflow of bullion from the country, which was a popular policy objective of the bullionist and pro-mercantilist writers.

> 'Barbon's treatment of the determination of value in exchange, in contrast to the earlier seventeenth-century writers cited, is a deliberate analysis. Mere acceptance or assumption, of the scarcity/utility and supply and demand theorems would have been inadequate to establish with sufficiency the relativity of all values in exchange, including those of the precious metals' (Bowley, 1973: 73).

Barbon built on the work of earlier writers but expanded on them also, in order to analyse precious metals and money in general. He realised that gold and silver are merely commodities like any other, and that there was nothing intrinsically special about such metals that made them useful as money. He argued that 'in trade and commerce there is no difference in commodities when their values are equal' (Barbon, 1696: 11). Such a statement foreshadowed Smith, who in *The Wealth of Nations* (1776) went to great lengths to demonstrate that a given value of one commodity is as valuable as another, even if one of the commodities is gold or silver. From such an assertion it logically follows that if money is merely a commodity like all others, then it is fruitless to aim for a positive inflow of money any more than a positive inflow of silk or tin etc.

Schumpeter (1954) noted the work of Sir Josiah Child as being of great value to Barbon on this point. Child wrote concerning the export of bullion and demonstrated how it could be exported to the national advantage. By the time Smith included in *The Wealth of Nations* lengthy tracts on the Midas fallacy, the overturning of the positive balance of trade theory and the nature of gold and silver as regular trading commodities, Barbon and others had delivered analogous arguments almost eight decades earlier.

2. Subjectivity of value and the benefits to liberality

The underpinnings of Barbon's analysis of value, while inspired largely by the 'pro-mercantilists', nevertheless display a significant independent streak. While early mercantilists also considered the price of commodities in terms of their scarcity and potential for use, Barbon specifically made this use subjective. It is likely that Barbon owes a debt here to Samuel Von Pufendorf, who wrote extensively on the subjective nature of value earlier in the seventeenth century. Barbon, in his work on this subject, writes that goods have the potential to satisfy two distinct uses: the needs of the body and the wants of the mind. Yet naturally the needs of the body are limited: 'If strictly

examined, nothing is absolutely necessary to support life, but food' (Barbon, 1690: 14).

Barbon clearly sets out how, in fact, the majority of wares sold satisfy only the wants of the mind and are not necessities. While the majority of writers at the time advocated frugality as a means to enrich the population, Barbon follows this point *ad absurdum* to demonstrate that if taken to extremes, ultimate frugality, or cutting out the consumption of luxuries, would lead to a situation where 'the great part of mankind go naked and lye in huts and caves' (ibid.), which surely could not be a constructive policy for the enrichment of a nation's people.

> 'The covetous man thinks he grows rich, he grows poor for not consuming the goods that are provided for mans use, there ariseth a dead stock called plenty, and the value of those goods fall, and the covetous mans estates, whether in land, or money, become less worth' (ibid.: 63).

Liberality and prodigality, things frequently condemned by other writers of the time, actually serve to stimulate trade. All of this clearly shows Barbon's conception of the economy (trade) as being demand driven. Demands, which stem from the mind's desires, help to stimulate trade, which in turn enriches the population. The parallels to this discussion of wants and their subjective nature would later be developed in the utility theory postulated by classical writers.

3. 'On the threshold of laissez-faire'

Barbon's conclusions foreshadowed other writers.. Such conclusions related to the destructive influence of prohibitions on trade. While free trade was becoming a more acceptable stance at the time, with Tory free-traders such as Davenant and also North advocating it, Barbon's advocacy of it as we have seen stemmed from stronger principles. Barbon was of the opinion that the prohibition of imports was counterproductive as it merely resulted in a commensurate decline in outputs. This developed into a theory of equilibrium in international exchange. Related to this was an awareness on Barbon's part of the potential for reciprocity in import restrictions. Tariffs against the commodities of particular nations have throughout history tended to result in the implementation of proportionate tariffs by the offended country against the offending one, the consequence being 'to ruine all foreign trade' (ibid.: 78).

Thus, we can see Barbon was not a typical mercantilist as Smith would have it, arguing for protection. He was, in Heckscher's words: 'On the threshold of laissez-faire' (Heckscher, 1994: 115). As a free trade advocate, Barbon also possessed a strong belief in the allocative efficiency of the free market: 'The market is the best judge of value… Things are worth so much, as they can be sold for' (Barbon, 1690: 20). It was thus misguided of later classical writers to consider mercantilists as a whole to be protectionist, for this would be to deny a range of work which could be considered to advocate free trade. Thus, the era of laissez-faire was not one arising from a 'Smithian revolution' alone; rather it was a much older line of thought with its origins in late, anti-mercantilist writings, particularly those of Nicholas Barbon.

4. Debate with Locke

A further application of Barbon's concept of value was seen during the coinage crisis of the 1690s; his debate on the issue with John Locke resulted in what Letwin

considered ‘Barbon’s finest exercise in economic reasoning’ (Letwin, 1963: 74). During the crisis the government turned to experts on the matter, notably Locke, who declared that the silver coins had an intrinsic value and the only viable solution was for all coins to be restored to their original standard at the mint. However, Barbon viewed gold and silver as merely commodities like all others. In his view, ‘money is a value made by a law; and the difference of its value is known by the stamp and size of the piece’ (Barbon, 1690: 20).

Thus, he advocated a fiat system of money. This position was set out in his second major economic work, *A Discourse Concerning Coining the New Mony Lighter: In Answer to Mr. Locke’s Considerations about Raising the Value of Mony* (1696). In this text, Barbon set out his own view in contrast to that held by Locke.

> ‘There is no intrinsic value in silver or any fixed or certain estimate that common consent has placed on it, but that it is a commodity that rises and falls as other commodities do. Money is the instrument and measure of commerce and not silver. It is the instrument of commerce from the authority of that government where it is coined, and that by the stamp and size of each piece the value is known’ (Barbon, 1696: vi).

Ultimately, the government took the advice of Locke on the matter and raised the money back to its original standard; in the process proving correct Barbon’s prediction of a severe deflation given this policy.

Barbon on the nature of interest and credit

1. Genesis of the cartelist position and proposals for a land bank

In a great deal of his work, Barbon was motivated by practical means. His concerns as a merchant doubtlessly led to his theorising on the importance of credit and emerging from this, his proposals for a land bank and his pioneering work on the nature of interest. The supply of credit had been a great preoccupation for many writers previous to Barbon. Yet pro-mercantilists largely considered it in terms of the positive balance of trade, advocating a positive inflow in order to stimulate the money supply.

> ‘Barbon’s analysis, however, on the nature of the precious metals as a mere trading commodity…. enabled him to argue that the supply of metallic money was irrelevant to the rate of interest. The supply of credit could, he considered, be adjusted to the requirements of the rate of interest through the establishment of appropriate banks’ (Bowley, 1973: 45).

As we have seen earlier, Barbon’s work in this area was essentially underpinned by his belief in the potential for a fiduciary monetary system. For this reason it has been noted that Barbon may have been the first ‘cartelist.’

This philosophy led Barbon to advocate a land bank project which proposed the use of land mortgages to extend credit. Land banks in general had been advocated long before Barbon. One of the earliest expositions on the theme was in the 1650s from William Potter and Samuel Hartlib, both of whom advocated the establishment of a

Bank of England, similar to the Bank of Amsterdam. Potter's *The Key of Wealth* (1650) recommends the foundation of a corporation of tradesmen, insured by a separate body, who would issue bills, to be secured by a variety of assets, such as land and buildings, which would circulate like legal tender. The essential idea behind such a scheme was that it would help to mobilise previously unproductive capital.

2. Real interest rate theory

Barbon's considerations on the nature of interest and credit also manifested itself in a more theoretical dimension. During the seventeenth century it was common to consider interest purely as a monetary phenomenon. The great majority of scholarship in the area would have echoed the opinion that interest was nothing more than the price of the use of money, a payment for the inconvenience caused to the lender. However Barbon's *Discourse of Trade* (1696) served to usher in a new era in interest rate theory, with the assertion that:

> 'Interest is commonly reckoned for money; because the money borrowed at interest, is to be repaid in money; but this is a mistake: for the interest is paid for stock: for the money borrowed, is laid out to buy goods, or pay for them before bought: no man takes up money at interest, to lay it by him, and lose the interest of it' (Barbon, 1690: 31-32).

This was, according to Schumpeter (1954: 329), 'a momentous statement'. It had no precedent in past theory. To say that interest is in fact the rent of capital, is analogous to modern long run interest theory, which would consider the interest rate to equal the marginal product of capital. Naturally it should seem clear that when money is borrowed, it is not borrowed simply to be looked at; it is wanted for the goods and services that can be bought with it. Later classical writers were to become the primary purveyors of Barbon's theory. This theory was picked up via Joseph Massie in his work *An Essay on the Governing Causes of the Natural Rate of Interest* (1750).

This was perhaps the first step taken in economics away from nominal reasoning, towards the type of 'real' analysis with which we are now familiar, under which money is seen as a veil: a variable with no long run impact on any real parameters. There can be little doubt that this is one of the most definitive innovations in monetary theory. This theory of interest rates, initially connected to Barbon, remained the standard line of thought on the subject until the Keynesian revolution following the publication of *The General Theory of Employment, Interest and Money* (1936).

Conclusion

The evidence of Barbon's quite extraordinary foresight is evident for all to see in his two primary economic works, *A Discourse of Trade* (1690) and *A Discourse Concerning Coining the New Money Lighter, in Answer to Mr. Locke's Considerations about Raising the Value of Money* (1696). Barbon has been accused of special pleading in his works, a common accusation against mercantilist writers. However, a more charitable assertion might be to say that Barbon was motivated in his work by practical ends. His experience as a merchant led directly to his concern with credit which resulted in his advocacy of a land bank and influenced his pioneering theory on interest. His second manuscript on coining the new money lighter emanated directly from his concern over the coinage crisis and his thoughts on

the nature of money as a commodity. Perhaps Hutchinson puts it best when he states that:

> 'The assessment of Barbon's economic theories and writings seems sometimes to have been unduly affected by his reputation as a wealthy and unscrupulous businessman who refused to pay his debts, and also by elements of special pleading at some points in his works. In the last analysis, however, such defects may seem irrelevant in view of the basic merits of his ideas and theories, which, at important points, were in advance of their time' (Hutchinson, 1988; 78).

Bibliography

Barbon, N. 1696. *A discourse concerning coining the new money lighter, in answer to Mr. Locke's considerations about raising the value of money.* London: printed for Richard Chiswell.

Barbon, N. 1690. *A discourse of trade*. London: printed for Tho. Milbourn.

Bowley, M. 1973. *Studies in the history of economic theory before 1870.* London: Macmillan.

Chamberlen, Dr. H. 1693. *Papers relating to bank of credit upon land security proposed to the Scottish parliament*. Edinburgh: printed by the heir of Andrew Anderson.

Heckscher, E. 1994. [1935]. *Mercantilism Volume 2*. Routledge: London.

Hutchinson, T. 1988. *Before Adam Smith: The emergence of political economy 1662 – 1776.* Oxford: Basil Blackwell Ltd.

Keynes, J.M. 1936. *The general theory of employment, interest and money.* London: Macmillan and Co. Ltd.

Law, J. 1994. [1704] *Essay on a land bank* (ed. A.E.Murphy). Dublin: Aeon Publishing.

Letwin, W. 1963. *The origins of scientific economics: English economic thought 1660 – 1776*. London: Shenval Press.

North, R. 1887. *Autobiography* (ed. J. Augustus). London: D. Nutt.

Massie, J. 1750. *An essay on the governing causes of the natural rate of interest; wherein the sentiments of Sir William Petty and Mr. Locke, on that head, are considered*. London: John Dawson.

Misseldon, E. 1623. *The circle of commerce; or the balance of trade in defence of free trade.* London.

Murphy, A. 1997. *John Law: Economic theorist and policy maker*. Oxford: Clarendon Press.

Potter, W. 1650. *The key of wealth, or a new way, for improving of trade*. London: R.A.

Schumpeter, J. 1954. *History of economic analysis*. New York: Oxford University Press.

Smith, Adam. 1976. [1776 Glasgow edition]. *An inquiry into the nature and causes of the wealth of nations*. Oxford: Clarendon Press.

WELCOMING ECONOMIC PSYCHOLOGY

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Senior Freshman

The social sciences, by definition, deal with human behaviour at an individual level and within society. None of them in isolation can fully explain such complex phenomena. Thus, Darragh McCashin calls for a greater integration of economics with psychology in order to produce more relevant and realistic results in both disciplines. His exploration of how the different professions approach the all-important concept of 'well-being' serves to illustrate this need, and to remind the reader of the very human objectives that underpin the study of economics.

Introduction

> 'Let me talk to you about my generation… we enjoy a thousand material advantages over any previous generation, and yet we suffer a depth of insecurity and spiritual doubt they never knew'[1].

The basis for major economic decisions 'amounts to little and sometimes nothing'; decisions 'can only be taken as a result of animal spirits – of a spontaneous urge to action rather than inaction'.[2] Does this sound like economics? These are the wise words of the famous economist John Maynard Keynes. Keynes never indulged in the systematic and scientific study of human thoughts, feelings and behaviour, i.e. the concepts that define psychology (Stantrock, 2005)**.** But it is clear to see psychological elements at the core of his hugely influential economic thought. Economics never merged with psychology in Keynes' day, despite their compatibility. But the apparent calling of this interdisciplinarity is evident in recent publications that seriously question economic assumptions, namely people's rationality. For example, Hartford (2006) identifies flaws when economists identify irrationality. Instead, he states that there are underlying emotions causing this apparent irrationality. Thus, this deems the rationality assumptions of economics to be seriously questionable.

In response to the perceptible weaknesses of economics, this essay will set out to show where economics needs psychological input, particularly with regard to social issues. Psychological input is also required not least because psychology is proving an effective tool for many powerful organisations (some of which are larger than several economies themselves); a consumer and marketing discussion will highlight this. This examination will show where psychology fits in as a practical application in reality, thereby justifying the encouragement of the study and application of

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[1] Tony Blair at the 1995 Labour Party Conference, cited in Kreitzman (1999: 17).

[2] Clinical psychologist Dr. Maureen Gaffney from the National Social and Economic Forum (NESF) quotes John Maynard Keynes in *The Irish Times* (24th January 2008).

economic psychology to the discipline of economics. Arguments will be discussed showing the unfortunate exclusion of economic psychology when it could be most beneficial i.e. in achieving greater results from economic and social policy objectives. This is the *raison d'être* of economic psychology; its usage will hopefully assist in explaining why, as countries in the western world have gotten richer the past fifty years, average happiness has not followed suit (Frank, 1999; Layard, 2005 and Argyle, 2001). The potential consequences of this finding are evident in the thoughts of the former British prime minister who introduced this essay.

What economics is missing: the use of psychology in business.

> 'Nike is leveraging the deep emotional connection that people have…. it adds a greater sense of purpose to the experience'.[3]

There is a fair chance that after reading the phrases 'The best built cars in the world' or 'Probably the best lager in the world', many people would have the names Toyota and Carlsberg springing to mind. An indirect cueing prompt (the advertisement catchphrase) is used to prompt these brand names - a technique discussed by Baddeley (1990) for assisting memory recall performance. These brand names will arguably spring to mind quicker than other indisputably more relevant items. These items could include, for the purposes of the economist: basic citizen tax rights, policy entitlements, wise pension planning and saving in a scarce environment (Parkin et al., 2005: 4). Considering public knowledge on these items is poor and improved knowledge could, for example, increase pension participation (Chan et al., 2003), the statement that these are more relevant to store in human memory than corporate advertisements will receive few opponents.

This everyday, somewhat simplistic example is the tip of the iceberg. Slovic et al. (2002) concretely showed, through scientific methodology (the essence of academic psychology), the link between emotion and cognition, which is related to all types of behaviour, including economic behaviour. Similarly, Tykocinski et al. (2004) researched economic psychology and, through experiments, showed how individuals who missed out on opportunities to enjoy a high gain may then decide to pass up a subsequent chance to enjoy a positive one. This is called retroactive pessimism. What would Keynes say? Could this be useful or indeed similar to the pessimism he referred to? Retroactive pessimism may be helpful in explaining stock market phenomena, according to the authors. Moreover, Kassarjian et al. (1991) confirm how marketing experts borrow freely from psychology (cognitive psychology, psychoanalytic theory and stimulus-response theory, to name but a few). Kassarjian et al. accept that mood states exert an important influence on consumer behaviour, judgment and recall. This relates to psychobiology, an exciting new branch of psychology. Psychobiology incorporates biological, neurological and physiological processes with psychological processes when defining and measuring mood to ascertain its influencing effects on behaviour. Surely such approaches can yield better knowledge about human behaviour than just economics?

These examples typify some of the many psychological strategies which business uses to successful effect. It may not appear obvious but media psychology is also having many controlling effects, as discussed in depth by Giles (2003). The sometimes strict usage of economic models and assumptions in evaluating behaviours is no longer commonplace. To some, this may not seem like

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[3] Scott Bedbury, former Nike director, quoted in Klein (2001: 20-21).

front-page news. But for some economists, however, this is hard to accept; this is due to the need to adhere to the economic traditions of rational economic assumptions.

Fashioning economic psychology

It is unashamedly useful to use a topical trend related to popular youth culture in our seemingly 'consumer society' (Campbell, 1995: 100) as an example of where economics is missing out by not embracing psychology. In any event, this is fitting for a student-oriented journal. Likewise, it is also fitting when one acknowledges arguments suggesting that corporations promoting consumption are believed to have created a global youth culture or a consumer society (Macionis and Plummer, 2005).

With regard to the fashion industry, Snyder et al. (1980) argue that consumers seem to have a need for uniqueness; they wish to be different yet not too different. Consumer behaviour expert Solomon (2007) states that economics only applies the supply and demand models when explaining the trends in this industry. With these points in mind, let us consider an Irish example. To begin with, ponder the now noticeable trend among young women in the population to consume hefty quantities of Ugg boots and fake-tan. If one had to choose between economics or psychology to explain the following trend, which discipline would be picked? Economics may adequately explain why this consumption is so high, through supply and demand models. On the other hand, that does not explain the root cause of the initial emergence of this demand, which led to this (at times baffling) trend. It is not difficult to envisage where psychology could uncover the possibly deep social class issues, group psychological needs, body-image irregularities related to social anxieties or comparisons (Englen-Maddox, 2005) and media or peer created wants which could underpin this trend. Moreover, these underpinnings would be well accompanied by the economist's analysis of the economic consequences of this trend, therefore resulting in a much more informative piece of research, as opposed to the separation of the two.

Happiness and well-being: which is the more dismal science?

As mentioned earlier, a key concern of economic psychology (and the social sciences as a whole) is happiness or subjective well-being, in light of findings such as Layard's (2005). In a recent publication by the Institute of Public Administration (2007), it was concluded that subjective well-being and national morale were high: living standards have risen, jobs are more abundant and of increased quality and people 'as far as we can tell from the rather patchy evidence' generally feel good about the lives they lead (Fahey et al., 2007: 10). Fahey also says that the questions about the goals which society should pursue cannot be addressed in this study. Similarly, economists Clinch et al. (2002: 164-177) state that it is beyond their expertise to address the issue of unhappiness with life in Ireland, namely those who are suicidal.[4] So surely the goal should be to gather workable evidence rather than bemoan the "patchy" evidence?

Fahey (2007) is sceptical about the pessimism of many commentators such as economic psychologists, sociologists and journalists regarding the issue of well-being within the Irish economic boom. In response to Layard (2005) and the 'static' nature of happiness in richer western

[4] This is particularly so for young men, where there has been a four-fold increase in the suicide rate in Ireland since 1990, making it the most common cause of death in young people. Taken from 'Suicide in Young People - A Global Perspective' (September 1997), as summarised by 'Aware': http://www.aware.ie//online%20books/suicide.html#trends.

world countries, Fahey questions what further increases beyond the present levels of happiness are attainable. Interestingly, this is only a question raised, as opposed to a thorough investigation of the question, even though valid comprehensive responses to this are significant for all.

Fahey validly points out a flaw in the pessimistic research. Psychologists Diener and Seligman (cited in Fahey: 21) identified the massive increase in the risk and experience of depression in the USA over time, yet Fahey says no effects on happiness levels are evident. This may be due to the better treatment of depression, such as chemical treatments. Thus, this does not necessarily follow the assertion that psychological well-being is in decline in booming economies. However, this suggests that just because treatments have emerged, the problem is no longer a problem as such. This would contradict the notion that prevention is better than cure. Fahey concludes by stating that the Celtic Tiger has helped to deliver a modest happiness goal. It is possible on paper and through statistics to conclude that the population's well-being is fine, but it is impossible to imagine similar conclusions on these issues, had psychological science been incorporated into the research. After all, mental illness in the younger generation is reported to be increasing in line with this economic prosperity.[5]

On the other side of these debates, there are strong opinions. Sociologists Keohane et al. (2004) believe that increased income levels in Ireland (viewed as a positive development by economists) lead to extravagant spending which does nothing but reveal the erosion of Irish values of family and community. They creatively reject any optimism from economists. Furthermore, it is fascinating to observe that there is no uniform explanation for the Celtic Tiger phenomenon. Sweeney (2008) outlines some of the explanatory factors (such as investment and European Union membership), but there is no definite or conclusive explanation available.

These different researchers all highlight the disagreements in this field. Also, they clearly demonstrate that there appears to be a certain narrow-mindedness to each of their analyses in that they acknowledge other disciplines - yet critique them as opposed to using each other's strengths to assist in answering these burning questions. Thus, economic psychology is being used, studied and applied on some levels, but this is far from being universally the case.

The future of economic psychology

The separation and conflict between the disciplines are evident when it comes to analysing the success of policy objectives. So what does this mean for the future? Despite the many stumbling blocks interdisciplinarity will undoubtedly encounter, economic psychology nonetheless has good reason to be hopeful and expectant for the future.

It is not unreasonable to assume the rationale for economic psychology will increase in an age where economic prosperity is higher than before, yet so many new types of social problems accompany it. The World Health Organization predicts that by 2020, depression will be the second most disabling illness for all ages and sexes.[6] It is relevant to outline an interesting finding by Whitley et al. (1999) about suicide. She examined the theory that economic downturns could increase suicide rates. By studying electoral constituencies in Britain, measuring social

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[5] According to Professor Michael Fitzgerald, chairman of the Irish Association of Suicidology (IAS), as reported by Marese McDonagh in *The Irish Times* (2nd December 2006).

[6] According to WHO's website: http://www.who.int/mental_health/management/depression/definition/en/

fragmentation and poverty levels, she identified a stronger link between suicide and social fragmentation rather than poverty. Suicide is without doubt a massive concern to society. Its relationship with poverty, an issue of great concern to economics and social policy, may not be of the degree of importance in explaining and preventing suicide as is usually assumed.

Thus, as more and more weaknesses become apparent from all corners, it would suggest that interdisciplinary work is the only way forward. Furthermore, Lucey and Delaney (2007) recently conducted the first psychological and attitudinal profile of the Irish economics profession. The results showed a picture of a group who believe their discipline to be relevant to society and policy, who perceive the discipline of economics to be somewhat stale and who desire a greater focus on interdisciplinary work. This is a clear sign of a shift taking place. One hopes that this desire will be sustained when it comes to decision-making.

Conclusion

This essay has shown where psychological input is beneficially taking place and where it is not yet being properly considered. Disagreements and conflicts within academia have been discussed with a view to showing how the use of economic psychology would surely yield more conclusive research outcomes. Finally, this essay suggests that these conflicts will no doubt continue and therefore will substantially increase the call for welcoming economic psychology by highlighting the clear weaknesses that are becoming increasingly obvious, due to the neglect of interdisciplinarity. The recent finding showing Irish economists' desire for interdisciplinary work is a positive indication that, at last, economic psychology is being welcomed at an influential level. Here is hoping this continues.

Bibliography

Allen, A. 2006. 'Psychology and the Economy of Ireland'. *Student Economic Review* 20: 13-20.

Argyle, M. 2001. *The Psychology of Happiness* (2nd ed.). London: Routeledge.

Baddeley, A. D. 1990. *Human Memory: theory and practice.* London: Erlbaum.

Barber, B. R. 2007. *Consumed: How Markets Corrupt Children, Infantilize Adults, and Swallow Citizens Whole.* New York: W.W. Norton.

Bohan, Fr. H. 2006. 'What is community?' in J. Mulholland (ed.) *The Soul of Ireland: issues in society, culture and identity.* Dublin: Liffey Press.

Campbell, C. 1995. 'The Sociology of Consumption' in D. Miller (ed.) *Acknowledging Consumption.* London: Routledge.

Case, K. E. & Fair, R. C. 2004. *Principles of Economics* (7th ed.). London: Pearson Prentice-Hall.

Chan, S. & Stevens, A. H. 2003. 'What you Don't Know Can't Help You: Pension Knowledge and Retirement Decision Making'. *National Bureau of Economic Research (NBER) Working Paper No. 10185*.

Clinch, P., Convery, F. & Walsh, B. 2002. *After the Celtic Tiger: Challenges Ahead*. Dublin: O'Brien Press.

De Graaf, J., Wann, D. & Naylor, T. H. 2005. *Affluenza: the all-consuming epidemic.* San Francisco: Berrett-Koehler.

Delaney, D. & Devlin, J. 2006. 'An Insight into Neuroeconomics'. *Student Economic Review* 20: 21-28.

Engeln-Maddox, Renee. 2005. 'Cognitive Responses to Idealized Media Images of Women: The Relationship of Social Comparison and Critical Processing to Body Image disturbance in College Women'. *Journal of Social and Clinical Psychology* 24: 8: 1114-1138.

Fahey, T., Russell, H. & Whelan, C.T. 2007. *Best of Times? The Social Impact of the Celtic Tiger.* Dublin: Institute of Public Administration.

Frank, R. H. 1999. *Luxury Fever: why money fails to satisfy in an era of success*. New York: Free Press.

Giles, D. 2003. *Media Psychology*. New Jersey: Lawrence Erlbaum Associates Publishers.

Glimcher, P. W. & Rustichini, A. 2004. 'Neuroeconomics: The Consilience of Brain and Decision'. *Science* 306: 5695: 447-452.

Hartford, T. 2006. *The Undercover Economist.* London: Little, Brown.

Hartford, T. 2008. *The Logic of Life: uncovering the new economics of everything.* London: Little, Brown.

James, O. 2007. *Affluenza: How to be Successful and Stay Sane.* London: Vermilion.

Keohane, K. & Kuhling, C. 2004. 'The 'Gift' Relation and Irish Consumerism' in M. Peillon & C. Corcoran (eds.) *Place and Non-Place: The Reconfiguration of Ireland.* Dublin: Institute of Public Administration.

Kassarjian, H.K. & Robertson, T.S. 1991. *Perspectives in Consumer Behavior.* New Jersey: Prentice Hall.

Klein, N. 2000. *No Logo.* London: Flamingo.

Kreitzman, L. 1999. *The 24 Hour Society.* London: Profile.

Layard, R. 2005. *Happiness: lessons from a new science.* London: Penguin Group.

Lucey, B. M. & Delaney, L. 2007. 'A psychological, attitudinal and professional profile of Irish economists'. *Journal of Socio-Economics* 36: 6: 841-855.

Macionis, J. & Plummer, K. 2005. *Sociology: A Global Introduction* (3rd ed.). London: Pearson Education Limited.

Parkin, M., Powell, M. & Matthews, K. 2005. *Economics* (6th ed.). Essex: Pearson Education Limited.

Putnam, R.D. 2000. *Bowling Alone: the collapse and revival of American community.* New York: Simon and Schuster.

Raaij, W. Fred Van, 1999. 'Economic Psychology Between Psychology and Economics: An Introduction'. *Applied Psychology: An International Review* 48:3:263-272.

Slovic, Finucane, Peters & MacGregor. 2002. 'The Affect Heuristic' in T. Gilovich, D.W.Griffin & D. Kahneman (eds.) *Heuristics and Biases: The psychology of intuitive judgment.* Cambridge: Cambridge University Press.

Solomon, M. R. 2007. *Consumer Behavior: Buying, Having and Being* (7th ed.) New Jersey: Pearson Prentice-Hall.

Stantrock, J. N. 2005. *Psychology* (7th ed.) New York: McGraw-Hill.

Stoker, G. 2006. *Why Politics Matters.* New York: Palgrave Macmillan.

Sweeney, P. 2008. *Ireland's Economic Success: Reasons and Lessons.* Dublin: New Island.

Synder, C.R. & Fromkin, H. L. 1980. *Uniqueness: The Human Pursuit of Difference.* New York: Plenum Press.

Tykocinski, O. E and Pittman, T. S. 2004. 'The Dark side of opportunity: Regret, Disappointment, and the Cost of Prospects' in I. Brocas & J.D. Carillo (eds.) *The Psychology of Economic Decisions: Volume II*. Oxford: Oxford University Press.

Whitley, E., Gunnell, D., Dorling, D. & Smith, G. D. 1999. 'Ecological study of social fragmentation, poverty, and suicide'. *British Medical Journal* 319:7216: 1034-1037.

WILL HOMO ECONOMICUS SURVIVE?

PHILIPP DOERRENBERG

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In this essay, Philipp Doerrenberg highlights recent experimental work that has proven the shaky foundations of the concept of the rational, utility-maximising 'economic man'. It has been proven that people take account of fairness in their decision-making and, as such, do not conform to standard theory. Like Lisa Keenan and Jason Somerville, he examines the theory behind different games, and similarly finds it lacking. Homo economicus *is a pervading concept in economics, but his essay suggests it needs to be substantially revised to accord with observed human behaviour.*

Introduction

Most economic theories are based upon the concept of a so-called *homo economicus* or economic man. This image of man assumes that individuals are self-interested and pursue selfish motives, maximise their utility, behave completely rationally and have full information on prices, demand and supply (Franz, 2004). The concept of *homo economicus* can be traced back to John Stuart Mill and Adam Smith and still is one of the most accepted concepts in economic theory (Irene, 2008). Theories like the classic Walrasian model are based upon the rational, self-interested economic actor and could not hold if one abstracted from this assumption (Bowles and Gintis, 2000).

Economic models are easier to construct if this image of man is assumed, but there remains doubt if it is realistic. Experimental and behavioural economics tackle this question and try to investigate experimentally if *homo economicus* provides an adequate assumption for economics.

This paper firstly presents several economic experiments and explains if their results are in accordance with assumptions of *homo economicus* or not. Secondly, it briefly pictures the first attempts of economists to construct theories which are more consistent with empirical results than standard economic theory.

Experimental Games

There are several experiments to be found in academic literature. Most of them come to the conclusion that standard predictions which are based upon *homo economicus* are not in accordance with the results of experiments.

Some of the most common experiments are the Ultimatum and Dictator Games. In an Ultimatum Game two players are given a certain amount of money. The so-called proposer offers a division of the amount of money to the so-called responder. The responder can either accept or reject the proposer's offer. If she rejects the money, both players will have a payoff of zero and if she accepts, she will receive the amount of money that was offered and the proposer is paid the rest. The Dictator Game only differs slightly. The responder has no choice in this game and has to accept whatever amount is offered by the proposer (Camerer and Thaler, 1995; Forsythe et al., 1994). The *homo economicus* assumed in classical theory does not allow for any kind of fairness and for him more money is always better than less money. Thus, for the Ultimatum Game, standard theory would predict that the proposer offers the smallest amount of money possible as she can be sure that the responder will accept the offer because to her a little money is better than no money. In an equilibrium condition, a small amount of money is offered and the responder accepts. For the Dictator Game, standard theories would predict that the proposer does not offer any money to the responder, because she is only interested in her own payoff and is not considerate of the responder's payoff.

Forsythe et al., (1994) carried out both games with undergraduate economics and MBA students at the University of Iowa. They observed that proposers in Dictator and Ultimatum Games offered more than the minimal amount predicted by standard theory in almost all experiments run. However, because proposers fear a rejection by responders, offers were usually higher in the Ultimatum than in the Dictator Game. In 71% of all cases in Ultimatum Games with a pie of $10, proposers offered $5, in 17% of all cases $4 were offered. In a Dictator Game with the same pie, proposers offered $3 in 29%, $2 in 13% and $5 in 21% of all cases. Thus, the outcomes observed by Forsythe et al. differ sharply from standard predictions. It seems that individuals – at least in Ultimatum and Dictator Games – behave differently than a *homo economicus* would.

Heinrich et al., (2001) tested whether the results of studies like Forsythe et al. are evidence of universal patterns of behaviour or whether the individual's economic and social environments play a role. They conducted Ultimatum Games in eighteen different countries or societies and found out that the outcome was different from standard economic predictions in every observed society and country .[1] However, they also found out that there is behavioural variability across different cultural societies. Although the proposers' offers were strictly positive and higher than assumed by

[1] They examined different societies in Peru, Tanzania, Bolivia, Ecuador, Mongolia, Chile, Papua New Guinea, Zimbabwe, Kenya, Paraguay and Indonesia.

classical theory, they differed among different societies. The highest mean offer in their cross-country study was 58% of the pie, the lowest was 26%.[2] The average across all societies was 39%. Roth et al. (1991) also conducted Ultimatum Games in different societies. In all four observed cities proposers offered more than the minimal amount of money and there were rejections as well.[3] As discovered by Heinrich et al., Roth et al. could also investigate differences among the different societies. Hence, observations that individuals behave fairly to some extent and do not only maximise their own profits seem to be robust and do not depend on culture or social environments.

Most of the above experiments are run with relatively small stakes, although it could be the case that classical assumptions become more adequate as the stakes grow. One could suppose that in Ultimatum Games responders would rather accept, say, 100 units of money in a game with a pie of 1000 than 1 unit in a game with a pie of 10 - even though, both proposers' offers represent 10% of the pie. Hoffman, McCabe and Smith, (1996) investigated this question and conducted Ultimatum Games with higher stakes. From a research fund they were able to run experimental games with stakes of $100. They used a game with stakes of $10 as a comparison and came to the result that the proportions offered by the proposers were not mentionable different in the high-stake than in the low-stake games. Hence, the authors concluded, low stakes do not bias the results of Ultimatum Games.

To test whether individuals tend – unlike *homo economicus* – to behave fairly, Fehr, Kirchsteiger and Riedl (1993) carried out a different game: some probands are given the role of firms and the rest are assigned to be the workers. In the first step, the firms offer a wage to the workers; afterwards the workers choose a level of effort. The firm's profit is positively related to the worker's effort level. By contrast, workers derive utility from their wage and their level of effort; a low effort provides higher utility than a high effort. For this game, classical theory would predict that workers choose the lowest possible level of effort after they are offered any wage by the firms. This – sometimes referred to as a Moral-Hazard Problem – is due to the fact that workers are paid their wage anyway and therefore can put less effort into their work without any loss of wage. Firms anticipate this and thus have no incentive to offer high wages. In a standard equilibrium firms offer the reservation wage and workers choose the lowest level of effort.[4] Unlike this prediction from classical theory, Fehr, Kirchsteiger and Riedl found in their experiments that wage and effort level are positively correlated. Workers work harder if they are offered high wages and thus firms have an incentive to pay higher and fairer wages. The authors interpret this result as an indicator that economic subjects indeed tend to behave more fairly than assumed by standard *homo economicus* theory.

Theory

Experiments like those described above suggest that individuals behave differently than assumed in standard theory. Hence, it seems necessary to construct theories that are able to describe economic behaviour somehow more realistically and in accordance with experimental observations. In the following section, two recently published theories will be briefly explained: Bolton and Ockenfels' 'Theory of Equity, Reciprocity and Competition' (2000) and Fehr and Schmidt's 'Theory of Fairness, Competition and Cooperation' (1999).[5] Both theories presume that the individual's utility or as called in Bolton and Ockenfels' model, *motivation functions*, do not only depend on the individual's own payoff, but also allow for fairness and thus are different from those in standard theories. However, the way these functions are constructed is different in both models.

Theory of Equity, Reciprocity and Competition (ERC)

Bolton and Ockenfels' ERC is based upon results of experiments which the authors consider to be robust. Among other experimental results, ERC can explain the results of Forsythe's Dictator and Ultimatum Games and Fehr's 'wage-offer' experiments.[6] The authors derive a utility or motivation function which is more in accordance with experimental results than standard utility functions. It is assumed that individuals do not only like a high monetary payoff for themselves, but also that they want their payoff to be as close as possible to the average payoff of all individuals:

$$v_i = v_i(y_i, \sigma_i)$$

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[2] In Indonesia and Peru respectively.

[3] Jerusalem, Ljubljana, Pittsburgh and Tokyo.

[4] This is the wage that workers would receive from an alternative such as unemployment benefit. Firms will have to pay at least this wage in order to convince the worker to work.

[5] These two theories have attracted a lot of economists' attention recently. For an older theory which allows for fairness and considers experimental results, see Rabin (1993).

[6] See previous section for a brief sketch of both experiments and their results.

where y_i is the individual i's pecuniary payoff and σ_i is i's share of the sum of all payoffs paid (relative payoff). Hence, $\sigma_i = \frac{y_i}{c}$ where $c = \sum_{j=1}^{n} y_j$ = sum of the payoffs paid to all of the n players (henceforth the pie). It is assumed that for a given share of the pie, individuals prefer a higher payoff for themselves to a lower payoff.[7] Furthermore, it is assumed that individuals have a sense of fairness and dislike inequalities. They like their payoff to be as close as possible to the equal share. For any given pecuniary payoff, an individual's motivation decreases as the share of the payoff diverges from the equal share of the pie. Individuals always suffer from unequal shares; regardless of whether the inequality is to their advantage or not. y_i being fixed, individuals maximize their utility, or motivation, if $\sigma_i = \frac{1}{n}$ = the equal share of the pie.

Bolton and Ockenfels give an example of a motivation function for a two-player game like the Ultimatum or Dictator Game:

$$v_i(y_i, \sigma_i) = a_i y_i - \frac{b_i}{2}(\sigma_i - \frac{1}{2})^2$$

The first term simply measures the utility gain from the players' own payoff, the component after the minus sign is the loss from a share of the pie that is different from the equal share $\frac{1}{2}$. a_i and b_i represent the weights individuals give the two objects own payoff y_i and relative payoff σ_i, respectively. They depend on the individual's preferences and thus it is allowed for heterogeneity in preferences, which was observed in all experiments.

A motivation function of this functional form can, among other things, explain experimentally observed outcomes of Dictator and Ultimatum Games. Proposers and responders do not only try to maximise their own pecuniary payoff, but are also interested in a fair division of the pie. In this two player case, both proposers and responders suffer from offers that do not equally share the pie. Although a proposer offering the minimal amount of money gains utility from a very high monetary payoff for herself, this gain can – depending on her preference for equality – not offset a loss in utility from a very unequal share of the pie. Thus, they usually offer more than a minimal amount – even in the Dictator Game where they do not have to fear a rejection by a responder.

ERC can explain that a responder would not accept an offer of, say, one unit of money if the pie was ten units, but would accept a one unit offer if the pie was two units - even though her own pecuniary payoff y_i would be one in both cases. A motivation function which allows for this kind of human behaviour is in accordance with experimental results and differs from *homo economicus'* motivation function. Of course, *homo economicus* would accept the one unit offer in both cases, because to him a little money is always better than no money. Using ERC's notation, standard theory assumes a motivation or utility function of the form: $v_i = v_i(y_i)$, where v_i is strictly increasing in the payoff y_i and does not consider fairness at all.

Theory of Fairness, Competition and, Cooperation (FCC)

Fehr and Schmidt's FCC is also based upon the observations that individuals seem to be inequality averse. As in ERC, Fehr and Schmidt construct a utility function which is different from standard economic utility functions. The authors assume that individuals dislike inequalities, which they experience if they are worse or better off in monetary terms than other individuals. However, in this case, it is also assumed that people find inequalities to their disadvantage to be worse than inequalities to their advantage. For a set of n players, an individual i's FCC utility function is of the form:

$$U_i(y) = y_i - \alpha_i \frac{1}{n-1} \sum_{j \neq i} \max[y_j - y_i, 0] - \beta_i \frac{1}{n-1} \sum_{j \neq i} \max[y_i - y_j, 0]$$

where y_i is i's pecuniary payoff, α and β represent the individual's preferences for disadvantageous and advantageous inequalities, respectively, and where $\beta_i \leq \alpha_i$ and $0 \leq \beta_i < 1$. The first term represents the utility gain

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[7] For a given relative payoff σ, i chooses (y^1, σ) over (y^2, σ) if $y^1 > y^2$

from an individual's monetary payoff, the second term measures the utility loss from disadvantageous inequality and the third term measures the loss from advantageous inequality. For a given payoff y_i, i maximizes her utility if y_i is equal to the payoffs of all other individuals. Hence - in contrast to ERC, which assumes that individuals want their payoff to be as close as possible to average payoff – FCC assumes that individuals dislike payoff differences to any other individual. In ERC individuals are indifferent between a situation where all receive the same and a situation where some are rich and some are poor as long as they receive the average payoff. Individuals in FCC prefer a situation where all receive the same payoff.[8]

Outcomes of experiments vary, because not all individuals have the same preferences for equality. FCC accounts for this fact by including preferences α_i and β_i. In an extreme case with $\alpha_i \neq \beta_i \neq 0$, an individual would not be inequality averse at all.[9] Nevertheless, as described in the previous section, experiments suggest that most individuals are inequality averse ($\alpha_i \neq \beta_i \neq 0$).

However, FCC is, among other experimental outcomes, also able to explain observed outcomes in Ultimatum and Dictator Games. For the case with two players i and j the utility function simplifies to:

$$U_i(y) = y_i - \alpha_i \max[y_j - y_i, 0] - \beta_i \max[y_i - y_j, 0]$$

Both, responders and proposers, thus, suffer (lose utility) if their payoff differs from the other player's payoff (if $y_i \neq y_j$). A responder will reject an unequal share of the pie if the utility gain from the pecuniary offer cannot offset the utility loss from the inequality. Formally, a responder will not accept an offer y_i if $y_i < \alpha_i \max[y_j - y_i, 0] + \beta_i \max[y_i - y_j, 0]$. Proposers do not only offer more than a minimal amount of money, because they fear a rejection by the responder, but also because they would loose utility from a very unequal division of the pie. Since $\beta_i \leq \alpha_i$, individuals suffer more from disadvantageous offers ($y_i < y_j$) than from advantageous offers ($y_i > y_j$). This implies that responders in Ultimatum Games might – for a given pecuniary payoff - rather reject a 40% than a 60% offer.

Of course, FCC's utility function is also different than standard utility functions because it does not only consider monetary, but also relative payoffs.

Conclusion

Experimental and behavioural economics clearly suggest that standard assumptions of *homo economicus* are not completely in accordance with observed human behaviour. Individuals seem to be fairer and less self-centred than assumed in almost all important economic theories and models. In order to meet experimental observations it is necessary to construct economic theories which consider an image of man different from *homo economicus*. ERC by Gary Bolton and Axel Ockenfels, and FCC by Ernst Fehr and Klaus Schmidt, allow for a different image of man to emerge and thus are very useful. Both theories can explain outcomes of experiments which cannot be explained by standard theories. However, although it is almost certain that more theories based on real human behaviour will be published in the future, it is very likely that *homo economicus* will not be banished from economic textbooks. Theories based upon a self-interested image of man are a lot easier to construct and understand. Especially for education purposes it remains useful to refer to standard theories. Economists have to and will keep working on incorporating a more realistic human image into their theories, but it is unlikely *homo economicus* will become extinct.

Bibliography

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[8] Engelmann and Strobel (2000) conducted an experiment to check whether ERC's or FCC's assumptions about inequality aversion are more precise. Their results are in favour of FCC.

[9] The Utility Function would in this uncommon case reduce to $U_i(y) = y_i$. In a game with two non-inequality averse players, the outcome would be as predicted by standard theory.

Bolton, G.E. & Ockenfels, A. 2000. 'ERC: A Theory of Equity, Reciprocity, and Competition'. *The American Economic Review* 90:1:166-93.

Bowles, S. & Gintis, H. 2000. 'Walrasian Economics in Retrospect'. *The Quarterly Journal of Economics* 115:4:1375-1409.

Camerer, C. & Thaler R.H. 1995. 'Anomalies: Ultimatums, Dictators and Manners'. *The Journal of Economic Perspectives* 9:2:209-19.

Engelmann, D. & Strobel, M. 2000. 'An Experimental Comparison of the Fairness Models by Bolton and Ockenfels and by Fehr and Schmidt'. *Econometric Society World Congress 2000 Contributed Papers 1229*.

Fehr, E. Kirchsteiger, G. & Riedl, A. 1993. 'Does Fairness Prevent Market Clearing? An Experimental Investigation'. *The Quarterly Journal of Economics* 108:2:437-59.

Fehr, E. & Schmidt, K.M. 1999. 'A Theory of Fairness, Competition, and Cooperation'. *The Quarterly Journal of Economics* 114:3:817-68.

Franz, S. 2004. 'Grundlagen des ökonomischen Ansatzes: Das Erklärungskonzept des Homo Oeconomicus'. *International Economics Working Paper 2004-02, University of Potsdam, Germany.*

Forsythe, R., Horowitz, J., Savin, N. E. & Sefton, M. 1994. 'Fairness in Simple Bargaining Experiments'. *Games and Economic Behavior* 6:3:347–69.

Heinrich, J., Bowles, S., Boyd, R., Camerer, C., Fehr, E., Gintis, H., & McElreath, R. 2001. 'In Search of Homo Economicus: Behavioral Experiments in 15 Small-Scale Societies.' *The American Economic Review* 91:2:73-78.

Hoffman, E., McCabe, K. & Smith, V. 1996. 'On Expectations and the Monetary Stakes in Ultimatum Games'. *International Journal of Game Theory* 25:3:289-301.

Irene, C. L. Ng. 2008. 'Learning to be Sociable. The Evolution of Homo Economicus'. *American Journal of Economics and Sociology* 67:2:265-86.

Rabin, M. 1993 'Incorporating Fairness into Game Theory and Economics'. *The American Economic Review* 83:5:1281-1302.

Roth, A.E., Prasnikar, V., Okuno-Fujiwara, M. & Zamir, S. 1991. 'Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study'. *The American Economic Review* 81:5:1068-95.

DECISION-MAKING AND THE RATIONAL ECONOMIC ACTOR: AN INTERDISCIPLINARY APPROACH

LISA KEENAN AND JASON SOMERVILLE

Senior Freshmen

In examining the area of economic decision-making, Lisa Keenan and Jason Somerville find that traditional economic methods fail to sufficiently explain many aspects of human behaviour. Factors like 'groupthink', overconfidence and – most importantly in this essay – the internal mechanisms of the brain can all help bridge this gap. It must be questioned whether the decision, the decision-making, or both, is the proper realm of the twenty-first century economist, particularly in light of the many 'irrational' decisions that people make. Neuroeconomics is one solution proposed for this dilemma.

Introduction

> 'Economics traditionally conceptualises a world populated by calculating, unemotional maximisers that have been dubbed *homo economicus*. In a sense, neo-classical economics has defined itself explicitly as 'anti-behavioural' by ignoring or ruling out all the behaviour studied by cognitive and social psychologists.'
>
> (Smiths, 2006: 196).

This conception of human beings, described in the above quote, has enabled economists to formulate explanations for human behaviour without being forced to delve deep into the heart and the head. But can people's behaviour simply be attributed to their rationality at work? Do emotions, the social environment and brain-chemistry not also have a role to play?

What will be examined in this article are the various ways in which economic theory can be complemented and supplemented by alternative disciplines in order to improve its ability to explain reality and in particular, the area of economic decision-making.

Irrational behaviour as the norm

Economics as a discipline has clung to William Jevons' insight that:

> 'We can no more know nor measure gravity in its own nature than we can measure a feeling; but, just as we measure gravity by its effects in the motion of a pendulum, so we may estimate the equality or inequality of feelings by the decisions of the human mind.'
>
> (Jevons, 1879: 12-13).

Jevons states that when confronted by the impossibility of an analysis of the factors behind decision-making, economics must take these factors as given and limit itself to the study of their effect (the decision). This statement circumscribes the sphere of economic analysis and it admits the limitations of this approach. But as the discipline progressed, this limitation was disregarded and a perception of man as *homo economicus*, that is, man as an entirely rational being became central to economic theory. However, as will be explored in this section, certain irrationalities (or what *economists* would see as being irrationalities) are evident in human behaviour, particularly in the realm of decision-making. Three levels have been identified at which these irrationalities can influence our behaviour: the external or societal level, the level of the individual and the internal level.

Firstly, it is important to note that no man is an island. Humans do not exist in a vacuum and social reality is an essential component of the decision-making process. Take for example, Asch's (1951) classic study on group conformity in which a group of individuals involved in the study ('confederates') colluded together in order to influence the responses of a lone participant. Participants were asked to compare the length of a series of lines. In the control group, where there was no pressure to conform; only one of the thirty-five participants gave the incorrect answer. In the experimental group, the confederates deliberately picked the wrong line in order to see if their choice would push the naïve participant into making a decision which he knew to be wrong. In successive tests, 75% of participants gave an incorrect answer to at least one question. Repeated testing has shown that the larger the group of confederates sharing an incorrect view, the more influence it has over the individual (Asch, 1956). Furthermore, the investigation into the

phenomenon known as 'groupthink' has shed light on the inherent irrationalities involved in group decision-making (Janis, 1972).

It is defined as:

> '…a mode of thinking in which the desire to reach unanimous agreement overrides the motivation to adopt proper rational decision-making procedures.'
>
> (Hogg and Vaughan, 2008: 337).

In other words, the desire to involve everyone in the decision-making process makes compromise necessary and cumulates in less-favourable outcomes. These two social psychologists, along with many others have highlighted the ways in which external factors (in this case social relations) can influence and even determine the individual's comportment.

Secondly, at the individual level, there are forces at play which come into direct conflict with the economist's assumption of rationality. Over-confidence is, for example, one personality trait which can have a disastrous impact on a trader's portfolio. John Allen Paulos (2003) describes his brief and ill-fated love-affair with WorldCom stocks.[1] This mathematician did not lose his shirt but had his sleeves shortened when he ignored the warning signs and continued to throw good money after bad, convinced that WorldCom still had a bright future ahead of it (Paulos, 2003). In addition, Gilovich, Vallone & Tversky (1985) found that having successfully scored a basket, basketball players became more confident that they could repeat this success despite the fact their abilities and the underlying probabilities were unchanged.

This same phenomenon can be explained with cognitive dissonance theory. Brehm (1956) asked a group of women to rate a sample of household appliances. They were then told that they could select one of two appliances for themselves. Following this, the women were asked to rate the same appliances again. Brehm found that the women systematically devalued the item they had forgone and increased their ratings of the one they had chosen. This is known as *post-decision dissonance*. Having chosen appliance A, a state of dissonance was invoked in that the opinion 'I value some aspects of appliance B' is inconsistent with the behaviour choosing A. The women rationalised their decision, as Paulos sought to rationalise his, in order to bring their behaviour (i.e. choosing A) in line with their cognitions.

A final level at which traditional economic theory fails to acknowledge other factors which directly conflict with the assumption of rationality is the internal one. It is important not to negate the role that internal mechanisms such as brain structure and complex biochemical interactions play in influencing behaviour. This idea is not alien to the general public. It is implicitly acknowledged when it is said, for example, that a drug addict is not 'thinking straight'. But this insight is rarely applied in the analysis of decision-making. One discipline, however, which does seek to address this limitation, is the field of neuroeconomics. This relatively new discipline seeks to complement existing economic theory with powerful insights from psychology and neuroscience.

Neuroeconomics: an example of interdisciplinary co-operation

Neuroeconomics attempts to build on the achievements of behavioural economics by placing neurological determinants centre-stage. The field places particular emphasis in the role of emotions in the decision-making process. The first big break-through for this new discipline came from a scientific explanation of some of the flaws highlighted by behaviourists in the rational economic man assumption.

Behavioural economists often cite the Ultimatum Game in order to illustrate a situation in which we generally behave irrationally. This is a game of two players in which Player 1 proposes the division of a sum of money which is offered to them by the experimenter. Player 2 must accept the offer if either is to get a penny. According to classical economic theory, the rational utility-maximiser would accept any offer of money that comes his way because he would necessarily be better-off than he was before. However, in experiments, people demonstrated a reluctance to accept what they saw as an unfair split and almost always rejected low offers in order to punish the other player (Gneezy, Haruvy & Roth, 2003). Neuroeconomists have explained this through the use of fMRIs, or 'active MRIs', which recorded the blood-flow in various regions of the brain as participants answered various economics-related questions such as those involved in the Ultimatum Game. They found that the rejection of a low offer by the player was strongly correlated with high levels of activity in the dorsal stratium (O'Doherty, 2004). This area of the brain is associated with reward and punishment decisions. The studies suggest that there is more at play in the game than a simple concern with maximising utility. Similarly, tentative links have been established between the activity in the anterior insula and feelings of disgust such as those elicited by the proposal of an unfair offer. The prefrontal cortex 'where people rationally weigh pros and

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[1] WorldCom operated a scheme whereby day-to-day expenditure was classified as capital expenditure and pushed into the future. The result was healthier-looking profits in the short-run, which disguised an unhealthy reality. Share-value plunged as a result of a restatement of earnings and the firm was eventually forced to file for bankruptcy (Partnoy, 2004: 367-74).

cons' (Coy, 2005) is in essence the decision-making centre of the human brain and it is fed with the emotional impulses of the insula. The link between the two implies that emotions are one of several factors in the decision-making process.

When it comes to accepting or rejecting an unfair offer, neuroeconomists have been able to isolate serotonin as a specific neurotransmitter which influences the outcome (Crockett et al., 2008). They have also been able to link the neurotransmitter oxytocin to generous offers (Zak, Stanton & Ahmadi, 2007). While this analysis of the Ultimatum Game clearly illustrates that various different chemicals and regions of the brain are active when the problem of an apparently unfair split is considered, it is important to point out that these conclusions are tentative. A mere correlation is suggested by fMRI studies, which does not imply causation. Furthermore, we can consider the implications of a larger sum than the commonly used $10. In this case, would the size of the sum or the proportion offered be a more important factor? (Varian, 2006). Would player 2 for instance reject the offer of $1,000 if it were merely 1% of the total sum? While these criticisms are valid, the union of neuroscience and economics has demonstrated the value of interdisciplinary co-operation through its successful identification of some mechanisms underlying economic thought processes.

Beyond the fallacy of strict disciplinary independence

Some of the problems which crop up when simplified economic models are applied have been discussed in depth in order to explain more complex realities. The example of decision-making has been used in order to illustrate the ways in which economic theory can be complemented by co-operation with other disciplines, or improved by their insights. However, one critique has been advanced by Gul & Pesendorfer (2008) who argue that the mechanisms influencing decision-making are irrelevant. According to them, the decision is the only thing that matters and not the method by which it was formulated. The brain is thus treated as a black box and the study of what goes on inside it has little merit in economic analysis. This criticism is refuted for two reasons.

Firstly, economists have extended their influence far beyond the realm of the purely economic. The models of the discipline are now applied such diverse areas as '…human development, psychology, history, voting, law and even esoteric discoveries such as why you can't buy a decent second-hand car'. (Harford, 2006: 3). The proliferation of popular economic books which claim to offer insights into the spread of STDs, the reform of the American legal system (Landsburg, 2007), why drug-dealers live with their mothers (Levitt Dubner, 2006), and the quest for love and money (Frank, 2008) attest to this. It is this expansion of the realm of influence of economics and economists which must give pause for thought. Because economic models tend to focus on the inherent rationality of the individual, they ignore the social and internal factors which are at play and thus the insights which social sciences as diverse as sociology, psychology and neuroscience have gleaned from their analyses. The economist's study of those realms not immediately within the economic domain is thus incomplete without participation from those who possess useful information.

Secondly, and related to the first point, is that the information that economists act upon is incomplete if they refuse to take into account that half of human nature which differentiates us from mere rational information processors (computers). The spread of the economic model of behaviour culminates in the release of a highly negative view of human nature into the public domain. This view (that people are inherently selfish and rational) is wrong or, rather, not the whole story. And because economics informs policy, there is a real danger that such policies will have unintended and even disastrous effects. The attempted reform of the US Military by Alan Enthoven was one such policy. In essence, Enthoven tried to replace patriotism as a motivation for a career in the military with a system of incentives which would appeal to rational economic man. Enthoven failed miserably because the people he sought to liberate by creating a system which freed them from the irrationality of patriotism, in his words 'hated it'. (Curtis, 2007). He tried a similar system, under Thatcher with his reform of the NHS. This resulted in the prioritisation of targets over patients, and the development of devious strategies to post favourable figures to disguise a grim reality (ibid.).

Conclusion

It has not been the intention of this essay to discredit the field of economics, nor to provide an unproductive criticism of classical economic theory alone. Rather, some shortcomings in traditional economic thought have been identified as well as possible means of overcoming them. Economic analysis has provided much insight into human behaviour and still has an important role to play. However, if it is to retain its position as a respected discipline as it spreads outside the realm of the strictly economic, it must co-operate with other fields in order to continue to produce models which accord with reality.

Bibliography

Asch, S. E. 1951. 'Effects of Group Pressure upon the Modification and Distortion of Judgment' in H. Guetzkow (ed.) *Groups, Leadership and Men*. Pittsburgh: Carnegie Press.

Asch, S. E. 1956. 'Studies of Independence and Conformity: A Minority of One Against a Unanimous Majority'. *Psychological Monographs* 70.

Brehm, J. 1956. 'Post-decision Changes in Desirability of Alternatives'. *Journal of Abnormal and Social Psychology* 52: 384-389.

Coy P., 2005. 'Why Logic Often Takes A Backseat: The Study of Neuroeconomics May Topple the Notion of Rational Decision-making' in *Business Week,* 28th March 2005.

Crockett, M. J., Clark L., Tabibnia G., Lieberman M. D. & Robbins, T. W. 2008. 'Serotonin Modulates Behavioral Reactions to Unfairness'. *Science* 320: 5884: 1739

Curtis, A. 2007. *The Trap – What Happened to our Dreams of Freedom*. First aired on BBC2, 11th March 2007.

Frank, R. H. 2008. *The Economic Naturalist: Why economics explains almost everything*. London: Virgin Books

Gilovich, T., Vallone, R., & Tversky, A. 1985. 'The Hot Hand in Basketball: On the Misperception of Random Sequences'. *Cognitive Psychology* 17: 3: 295-314.

Gneezy, U., Haruvy, E., & Roth, A. E. 2003. 'Bargaining Under a Deadline: Evidence from the Reverse Ultimatum Game'. *Games and Economic Behavior 45: 347*.

Gul, F. & Pesendorfer, W. 2008. 'The Case for Mindless Economics', in A. Caplin and A. Schotter (eds.), *The Foundations of Positive and Normative Economics*. Oxford: Oxford University Press.

Harford, T. 2006. *The Undercover Economist*. London: Little,Brown.

Janis, I. 1972. *Victims of Groupthink: A Psychological Study of Foreign Policy Decisions and Fiascoe*s. Boston: Houghton-Mifflin

Jevons, W. S. 1879. *The Theory of Political Economy*. London: Macmillan and Co.

Landsburg, S. E. 1995. *The Armchair Economist: Economics and Everyday Life*. New York: Free Press.

Landsburg, S. E. 2007. *More Sex is Safer Sex: The Unconventional Wisdom of Economics*. New York: Free Press.

Levitt, S. & Dubner, S. 2006. *Freakonomics: A Rogue Economist Explores the Hidden Side of Everything*. London: Penguin.

O'Doherty, J. P. 2004. 'Reward Representations and Reward-Related Learning in the Human Brain: Insights from Neuroimaging'. *Current Opinion in Neurobiology* 14: 6: 769-76.

Partnoy, F. 2003. *Infectious Greed: How Deceit and Risk Corrupted the Financial Markets*. London: Profile Books.

Paulos, J. A. 2003. *A Mathematician Plays the Market*. London: Penguin.

Smits, J. M. (ed.). 2006. *Elgar Encyclopedia of Comparative Law*. Cheltenham: Edward Elgar Publishing.

Varian H. R. 2006. *Intermediate Microeconomics: A Modern Approach* (7th ed). New York: W.W. Norton & Co.

Zak, P. J., Stanton, A. A. & Ahmadi, S. 2007. 'Oxytocin Increases Generosity in Humans'. *Public Library of Science ONE* 2:11: e1128.

WILL AN EYE FOR AN EYE MAKE THE WHOLE WORLD BLIND, AGAIN? AN ANALYSIS OF THE GLOBAL FINANCIAL CRISIS AND PROTECTIONISM

AOIFE CUNNINGHAM

Senior Sophister

In the current economic climate, many fear a return to the old days of protectionism. In this essay, Aoife Cunningham outlines the arguments for and against this economic (and political) policy; she examines the possibility of a trade war; and she discusses what the correct solution is considering today's context. Throughout, she makes use of both historical and contempory examples of protectionist actions; all examples highlight the need for a more long term and cooperative strategy by the world's governments.

Introduction

The global epidemic, dubbed the 'credit crunch', has caused widespread pandemonium as countries battle to save their economies. No longer is there speculation as to whether we will enter a recession; instead fears are mounting as to whether a depression will ensue. The similarities between the current Global Financial Crisis (GFC) and the Great Depression are undeniable. In both instances there was not a sudden total collapse of the system, but rather a gradual build-up, leading to a sequence of major financial catastrophes. Stock markets crashed; assets devalued; defaults rose; liquidity diminished; credit dried up; and consumer spending plunged.

Yet, unlike the Great Depression of the 1930s, the GFC need not be a prolonged decade of suffering and economic loss. History has taught us the widespread implications of letting banks fail and world leaders today have aggressively pursued policies to prevent a repeat of our mistakes. However, after the infamous Smoot-Hawley Act in 1930, we have also learnt that protectionism can trigger a domino effect that causes retaliation and counter-retaliation responses among trading partners. And yet recently this lesson appears to have been forgotten. Will an eye for an eye make the whole world blind, again?

This paper examines the age-old argument for protectionism in the wake of the recent 'Buy American' clause put forth by the US government's stimulus package (McGrogan, 2009). Section one provides a background of the basic economic arguments for protectionism, giving an overview of the learning curve and the infant industry argument. Section two examines protectionism's fundamental flaw –retaliation - and gives a historical overview of past protectionist policies in global economic downturns. Section three investigates retaliation further, exploring the reason why trade wars can occur using a prisoner's dilemma. Finally, section four conceptualises some of the current protectionist measures countries are undertaking and concludes that cooperation, not protectionism, will aid global economic recovery.

Tariffs, Infant Industries, and the Theory of Protectionism

The basic economic rationale for protectionism is the Infant Industry Argument (IIA). The IIA asserts that protectionism is necessary to allow higher priced domestic producers time to learn by

doing, so as to achieve the economies of scale of production necessary in order to lower unit costs and prices (Smith & Todaro, 2009). The learning curve, first introduced by Wright (1936), demonstrates that labour inputs decrease with a cumulative increase in output (Argote et al., 1990).

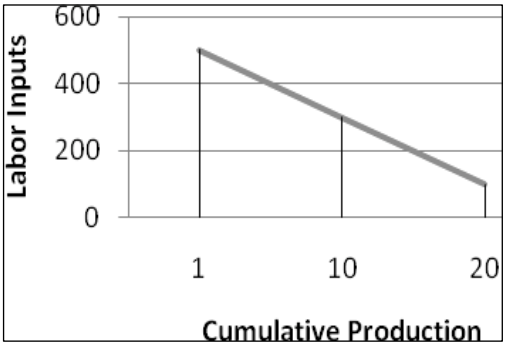
y = ax-b

y = input cost for the x^{th} unit

x = cumulative number of units produced

a = input cost for the first unit

b = progress rate



FiFigure 1: the learning curve

Additionally, protectionist policies artificially alter the demand and supply in the market through tariffs (taxes on imports) or quotas (limits on the quantity of imports), creating barriers to entry and altering the price clearing condition of the market. The objective of such protectionism is to incentivise a nationalistic move to buy goods made in the domestic country, thus creating employment for its citizens and fuelling economic growth (Chang, 2002). Advocators of the IIA believe that, given time, the industry will grow up, barriers to entry can be removed, and it will be able to compete globally.

The counter to this is that in practice this form of protectionism is largely unsuccessful. Through protective tariffs, an industry is not subject to competitive pressures; therefore some industries remain inefficient and costly to operate (Smith & Todaro, 2009). Moreover, by protecting infant industries, countries are not allocating resources in the short run based on comparative advantage. Based on the Ricardian and Heckscher-Ohlin models of trade it could be argued that resources are allocated most efficiently if countries produce those goods in which the before-trade prices are lower than in the rest of the world (Kenen, 2000). Furthermore, domestic producers and their employees benefit at the expense of domestic consumers. Without protectionism, consumers can benefit from the low price of imports and the greater quantity of imports purchased, whereas tariffs equate to higher prices and reduced demand. Effectively consumers are penalised as a result of subsidising the infant industry.

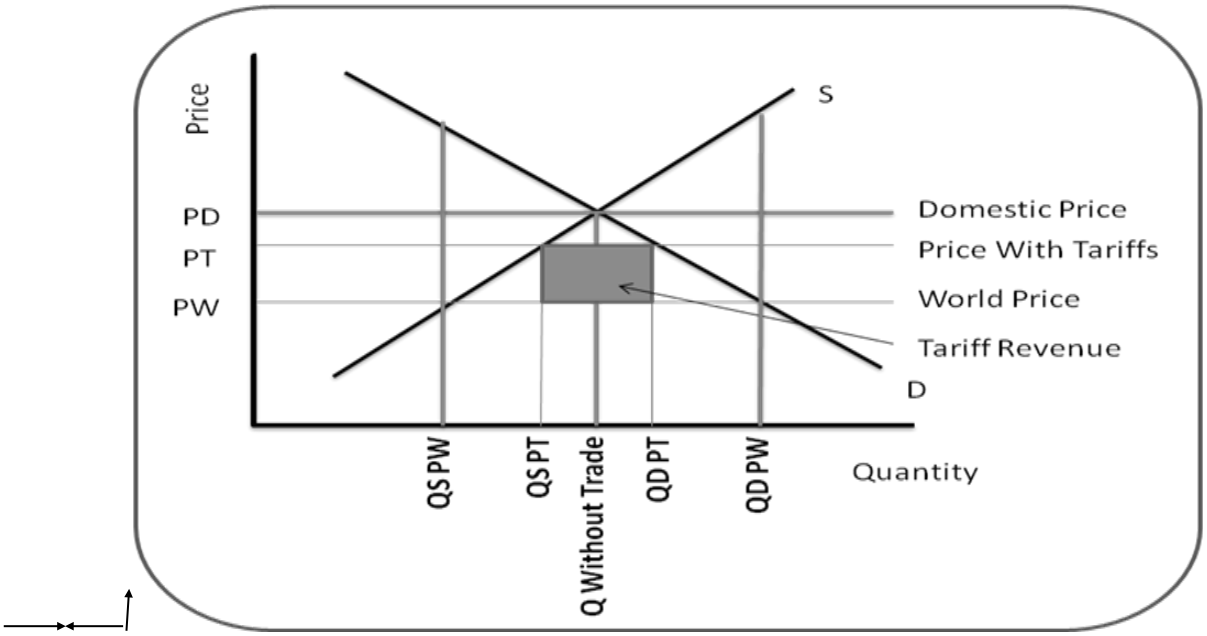


Figure 2: the operation of tariffs in the market

Protectionism's fundamental flaw

The IIA is generally applied to industries within the developing world that need a grace period before being subjected to the rigorous competition of developed countries. It is arguably an effective way of raising government revenue and useful if a domestic industry is in a nascent state and would otherwise be overrun by superior industrial goods from more developed countries (Smith & Todaro, 2009). However in the current GFC it is not developing countries but developed countries, the crusaders of free trade, which are turning protectionist. Though protectionism can benefit them as it would developing countries, there is one fundamental flaw to this approach. It can make economic sense for a country to impose these measures - but not if other countries retaliate by imposing protective tariffs themselves. As Mahatma Gandhi said, 'an eye for an eye can make the whole world blind' (Melik, 2009).

International trade is a driver of economic growth. It expands market access for producers and helps control price inflation for consumers. In times of economic uncertainty, however, the enthusiasm for free trade can dampen (Erixon & Sally, 2009). This worries advocates of free trade, because historically protectionism has done more harm than good. The 'beggar-thy-neighbour' attitude in the U.S. after the Wall Street Crash of 1929 resulted in the implementation of the Smoot-Hawley Act in 1930 (Melik, 2009). The idea was to boost the domestic growth rate; but imposing tariffs, devaluing the currency, controlling outward flows of capital, and subsidising exports were all at the expense of the other world economies (Drezner, 2008). Other leading economies retaliated, imposing tariffs of their own. This period was catastrophic for economic growth. U.S. imports from Europe decreased from $1.33 billion USD in 1929 to $330 million USD in 1932; U.S. exports to Europe declined from $2.34 billion USD to $784 million USD in the same period (Vaidya, 2005). It seems the meltdown of the international monetary system triggered the epidemic and though some economists like Paul Krugman postulate that the high tariffs had no effect on the decrease in world trade during this period (Elliot, 2009), many scholars believe that they played an integral role in the decline in world trade. (Melik, 2009; Vaidya, 2005; Kindleberger, 1987).

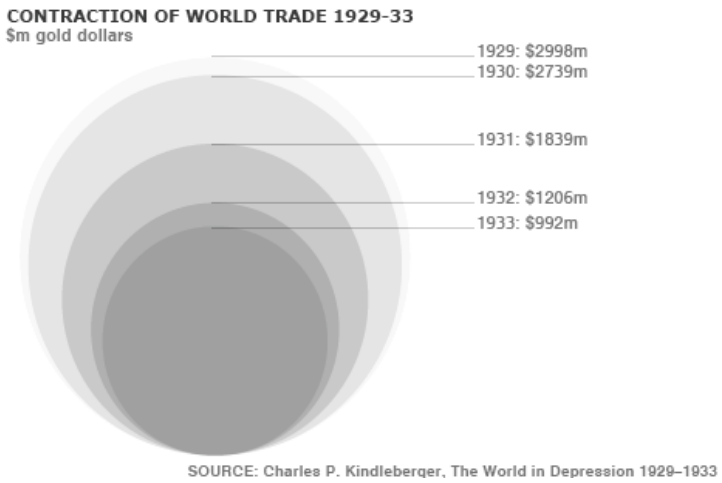


Figure 3: The decline in world trade after the Great Depression

The protectionism of this period may have contributed to the rise in national hostilities that would eventually lead to World War Two. As noted twentieth century economist Ludwig von Mises famously said 'what generates war is the economic philosophy of nationalism: embargoes, trade and foreign exchange controls, monetary devaluation etc., the philosophy of protectionism is a philosophy of war' (Miller & Elwood, 1988). The years after the war ushered in a new era of free trade and in 1947 the General Agreement on Tariffs and Trade (GATT) was established with the purpose of reducing tariff barriers and prohibiting other forms of trade discrimination.

Unfortunately two major events at the beginning of the 1970s contributed to the destruction of this golden age and the re-emergence of protectionism. Firstly, the international monetary system of fixed exchange rates collapsed. The international gold standard was replaced with a system whereby currencies could be freely exchanged on the market, and the U.S. dollar devalued greatly due to the large deficit America accrued in the 1960s (Vaidya, 2005). Secondly, in 1973, OPEC curbed oil supply, causing prices to shoot up considerably from $10 USD per barrel to $36 USD per barrel (Zycher, 2008). Combined, these shocks led to another economic slowdown in both the U.S. and in Europe (whereas Japan flourished in this period).

Industries, waning under the decrease in consumer spending and increased competition from Japan, called for government subsidies to protect them from foreign competition. This shepherded in a new era: an era of 'new protectionism'. Many companies in this period were nationalised or bailed out by their home nations. The automotive industry for instance, then as now, faced bankruptcy. In 1979 the U.S. Congress bailed out Chrysler and shortly thereafter the British and French governments bailed out Rolls Royce and Renault respectively (Erixon & Sally, 2009). Subsidies to domestic firms were implemented in conjunction with quota restrictions limiting the number of Japanese cars that could be exported to the U.S. and Europe. This essentially created a protectionist backlash against Japan in the 1980s and government intervention only served to 'exacerbate economic stress and prolong the period of stagnation'(Erixon & Sally, 2009: 30).

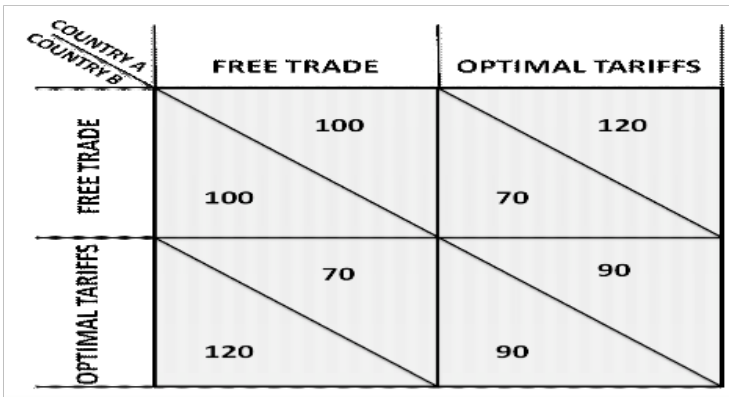
Trade Wars?

The current GFC has the world again reeling from an economic slowdown. Once more, governments are being pressurised to return to an era of economic nationalism. President Obama proposed a $787 billion USD stimulus package with a 'Buy American' clause which stipulated that the projects financed by the bailout should favour American iron and steel. This provision has caused major controversy with some people speculating that it could mandate an American preference for all manufacturing goods.

Opinions are clearly divided over Obama's massive economic stimulus package. The President of the United Steelworkers Union, Leo Gerard, says 'it's about putting stimulus cash, American taxpayers' dollars, towards American jobs' (Thomas, 2009). He is not alone; it appears that this clause has strong backing in Congress from Democrats who represent the big steel states such as Ohio, Pennsylvania, and Indiana. Ohio Democrat, Tim Ryan, has even estimated that this clause will yield an additional 77,000 jobs across America (ibid.). However opposition against this protectionism is mounting, especially amongst self-interested American companies like General Electric, Boeing, and Caterpillar Incorporated. Caterpillar Inc., the world's largest mining and construction equipment manufacturer, is justifiably concerned, as 60% of its 2007 revenue came from foreign sales and it fears these provisions will devastate the company's bottom line (Lee, 2009).

The opposition's concern stems from apprehension that this type of protectionist signalling will trigger a trade war. A drop in demand due to protectionist policies in one country causes a reduction in production from foreign companies and hence a decline in their profits (Kenen, 2000). Thus a tariff can reduce world welfare through increased prices, declining aggregate demand and increased unemployment. Facing potential losses after protectionism incentivises all those affected to rally behind trade restrictions in their own countries, as it is seen as an effective way to mitigate the loss in national welfare.

Hillman (2003) gives a simple example of this using game theory whereby two countries, CA and CB, make up the world economy. CA imports goods (1,2,3) from CB, and CB imports goods (4,5,6) from CA. Both countries can choose between free trade and optimal tariffs for their nation. If they both choose free trade (FT), then each derives 100 units of welfare and world welfare (WW) will be 200; if CA chooses FT but CB chooses tariffs (OT) then CA receives 70 units CB receives 120 units, and WW is 190; and if they both choose to implement OT then each receives 90 units and WW will be 180.



- CA(FT) + CB(FT) = 200 WW
- CA(FT) + CB(OT) = 190 WW
- CA(OT) + CB(FT) = 190 WW
- CA(OT) + CB(OT) = 180 WW

If CA and CB can cooperate with each other, then the world's welfare is maximised at 200; however, if we assume CA and CB are both interested in maximising their nation's welfare then they will be incentivised to erect barriers. If CA erects barriers on the goods of CB, then CB will naturally retaliate by erecting trade barriers against the goods of CA, as 90 > 70. This non-cooperative play results in a Nash Equilibrium which is an inferior outcome, with each player's welfare reduced by 10 units and world welfare reduced by 20 units. Therefore in non-cooperative play, all parties lose and this prisoner's dilemma demonstrates that a trade war will ensue.

Conclusion: Current Climate

Gordon Brown, the Prime Minister of Britain, has pledged to create 'British jobs for British workers' (Helm, 2007). Russia's Prime Minister, Vladimir Putin, has erected import tariffs on dozens of products. The EU have resumed subsidising dairy exports, imposed high tariffs on Chinese screws and bolts, and quota restrictions on American chicken and beef. America has restricted bidding on projects with its 'Buy American' provision. It has also lashed back at the EU by imposing tariffs on French cheese and Italian water and levied new tariffs on Chinese goods it believes are being dumped onto the American market. Egypt has increased tariffs on sugar imports. The list continues to grow (Miller, 2009). Tensions within the EU are also growing. The EU's enlargement into Eastern and Central Europe has made it the world's largest integrated economic bloc accounting for 30% of global economic output and 17% of world trade (Almunia & Rehn, 2009); however many fear that the pressure of the GFC will force a renewed east-west divide as the 'old' partners can afford to subsidise failing industries whereas the 'new' smaller partners cannot.

It appears that the 'olive' is once more gaining precedence over Thomas Friedman's infamous 'lexus' (Friedman, 1999). However, as Pascal Lamy, Director of the World Trade Organisation, recently said, 'we need joint actions in resisting isolationism. This is the collective responsibility of all countries, big or small, strong or weak. Maintaining an open, fair and transparent global trading environment is vital for the economic recovery' (Lamy, 2009).

Bibliography

Almunia, J. & Rehn, O. 2009. 'EU Commission Hails Enlargement'. Retrieved from BBC News at: http://news.bbc.co.uk/1/hi/world/europe/7902579.stm

Argote, L., Beckman, S., & Epple, D. 1990. 'The Persistance and Transfer of Learning in Industrial Settings'. *Management Science* 36:2:140-154.

Chang, H. 2002. *Kicking Away The Ladder: Development Strategy in Historical Perspective.* London: Anthem.

Drezner, D. 2008. 'Beggar Thy Neighbor, Take One'. Retrieved from Foreign Policy at: http://drezner.foreignpolicy.com/category/wordpress_tag/beggar_thy_neighbor

Elliot, L. 2009. ‘Protectionism: Is Free Trade The Best Way To Beat A Recession?’ in *The Guardian*, 4th February 2009.

Erixon, F. & Sally, R. 2009. ‘Fighting The Urge For Protectionism’. *Far Eastern Economic Review* 172: 1: 28-31.

Helm, T. 2007. ‘Gordon Brown Pledges Jobs for British Workers’ in *The Daily Telegraph,* 11th September 2007.

Hillman, A.L. 2003. *Public Finance and Public Policy: Responsibilities and Limitations of Government.* Cambridge: Cambridge University Press.

Kenen, P. 2000. *The International Economy* (4th ed.). Cambridge: Cambridge University Press.

Kindleberger, C. 1987. *The World In Depression, 1929-1939* (revised ed.). Harmondsworth: Penguin.

Lamy, P. 2009, February 23. ‘Keeping trade open: Resisting isolationism’. Retrieved from the World Trade Organisation at: http://www.wto.org/english/news_e/sppl_e/sppl115_e.htm

Lee, C. 2009. ‘Obama Back Off “Buy American”’. Retrieved from Politico at: http://www.politico.com/news/stories/0209/18809.html

McGrogan, D. 2009. ‘“Buy American” and the WTO’. Retrieved from the International Law Observer at: http://internationallawobserver.eu/2009/02/17/buy-american-and-the-wto/

Melik, J. 2009. ‘The Dangers Of Trade Protectionism’. Retrieved from BBC News at: http://news.bbc.co.uk/1/hi/business/7866930.stm

Miller, J.W. 2009. ‘Nations Rush To Establish New Barriers To Trade’. Retrieved from the Wall Street Journal at: http://online.wsj.com/article/SB123388103125654861.html

Miller, V. & Elwood, J. 1988. ‘Free Trade or Protectionism? The Case Against Trade Restrictions’. Retrieved from the International Society For Individual Liberty at: http://www.isil.org/resources/lit/free-trade-protectionism.html

Smith, S. & Todaro, M. 2009. *Economic Development* (10th ed.). Essex: Pearson Education Limited.

Thomas, P. 2009. ‘Will U.S. Stimulus Package Trigger a Trade War?’. Retrieved from BBC News, Washington at: http://news.bbc.co.uk/1/hi/world/americas/7868631.stm

Vaidya, A. 2005. *Globalization: Encyclopedia of Trade, Labor, and Politics.* New York: ABC-CLIO.

Zycher, B. 2008. ‘The Concise Encyclopedia of Economics: OPEC’. Retrieved from the Library of Economics and Liberty at: http://www.econlib.org/library/Enc/OPEC.html

THE IMPACT OF LENDING ACTIVITY AND MONETARY POLICY IN THE IRISH HOUSING MARKET

CONOR SULLIVAN

Junior Sophister

Irish banks and consumers currently face both a global credit crunch and a very weak Irish property market. Although the bursting of the property bubble is not the cause of the current financial crisis, it has accentuated its effects in Ireland. In this essay, Conor Sullivan examines the role that bank lending and monetary policy played in driving house prices up over the past twenty years. His conclusion, that lending activity played a significant role, serves to highlight the need for proper regulation and oversight in the banking sector in the future.

Introduction

In the period 1987-2007 real Irish house prices tripled in value, and have since fallen by 10%.[1] This volatility in house prices is a subject of great concern, as it is now clear that the rise was due to a speculative bubble that drove prices beyond their true value, and that the subsequent fall is generating negative repercussions for the Irish economy. This study seeks to analyse the rise in Irish house prices with respect to two related factors: the activity of financial institutions and prevailing monetary policy. It evaluates their impact on prices, and draws conclusions for regulatory and monetary policy. The following section reviews recent developments in the Irish market and theoretical models of housing markets. Section two presents the data, model specification, and empirical approach and section three then discusses and analyses the results. The final section suggests extensions to the analysis and discusses the policy implications of the model presented.

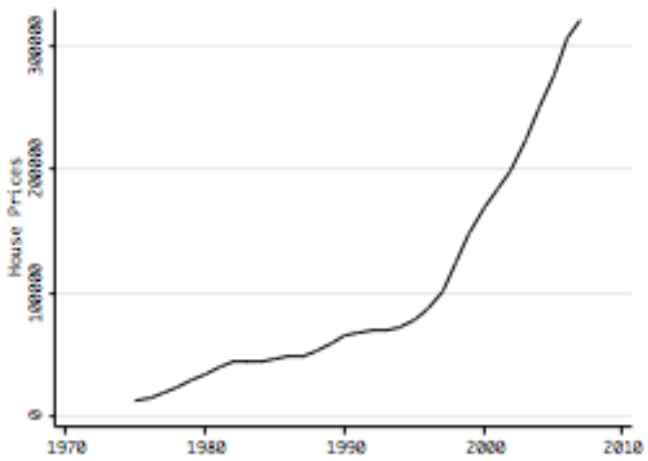


Figure 1: price of new houses in Ireland, 1975-2007 (priced in euro)
Source: Department of the Environment.

[1] Permanent TSB/ESRI House Price Index, 2009

Housing Markets

For much of the last two decades Irish house prices appeared to be on an inexorable upward trend, at some points growing by as much as 28% year on year, and showing quarterly increases 80% of the time between 1975 and 2008 (see Figure 1). Prices peaked in February 2007, remained stagnant for the rest of that year and then began to fall through 2008, with prices in January 2009 having fallen by 1.4% month-on-month and 9.8% year-on-year. This paper seeks to explain the enormous appreciation in the Irish housing market using annual time series for 1975-2008, and, in particular, to explore the impact of monetary policy and lending activity by financial institutions on this rise.

House prices are an important economic variable both in general and in an Irish context. A house is an essential asset, and possibly the single biggest one most people will ever own. Therefore, housing affordability is important from a welfare perspective. At the same time, since housing is such an important good, and because its value typically exceeds disposable income by large multiples, mortgage lending represents a large part of the aggregate portfolio of many financial intermediaries. As such, house prices are important when assessing their profitability and the soundness of these institutions (Tsatsaronis and Zhu, 2004). Thirdly, changes in the price of housing can have large wealth effects and this influences consumption in the economy. This arises from traditional life-cycle theory, which states that present consumption is determined by future income. Intuitively, people 'feel' richer if their house is worth more, and so their consumption is higher.

An important consideration for the way in which the wealth effect exerts itself on consumption is the 'credit channel'. Liberal credit markets mean that higher house prices do not depress consumption amongst those purchasing a house, as the need to save for a deposit is not as great and collateral constraints on owners are relaxed (Muellbauer and Murphy, 2008). This was certainly the case in Ireland and it can therefore be said that house prices have a positive impact on consumption.

Theoretical models of house prices are based on several inefficiencies that create the potential for volatility. Prices are typically modelled as the sum of a fundamental and non-fundamental component:

$$hp = hpf + hpnf$$

There are several factors that cause house prices to deviate from their 'true' or fundamental value. The determinants of the fundamental value of housing are the present value of all future housing services provided to the owner, which can be approximated by rental rates in a market, along with various structural factors such as fiscal provisions or population growth (Crainer and Wei, 2004). If the housing market was efficient, that is to say if the above equation did not hold, then a price higher than that implied by the fundamental value would be indicative of excess demand; this would encourage more housing to be supplied and prices would fall again to their fundamental level. However there are forces in a market that cause inefficiencies to develop. Speculation and asset-price bubbles could be considered one example, where

houses are used as investment vehicles in order to accumulate capital gains; price increases have a positive impact on demand in this scenario.

Since supply is very inelastic in the short run, changes in demand can have a large influence on price. And since purchase is usually considerably leveraged, prices are dependent on liquid credit markets, and on interest rates which move cyclically. This causes inefficiencies in the market pricing mechanism (CBFSAI Financial Stability Report, 2004). It is fairly clear now that Ireland saw a deviation of house prices from their fundamental value, and that what is presently occurring in the market is a correction of that. At least three sources of pricing inefficiencies could be observed in the Irish market; large persistent price rises, supply constraints and cyclically low interest rates were all present to some extent and empirical evidence of this was found as far back as 2000 (Roche, 2001).

Our membership of the Eurozone has caused concern over the appropriateness of the ECB interest rate for the Irish economy. Essentially the question is whether interest rates set for the wider Eurozone (in which Ireland is a small player) are suitable here. In particular, Eurozone interest rates were set very low at a time when the Irish economy was experiencing high levels of economic growth and inflation. Another concern that relates to Irish policy is the extent of mortgage lending, which increased dramatically in real terms in the last fifteen years. This both reflects loose regulatory controls and an increased willingness to expand credit by financial institutions. The model estimated here is an attempt to determine the influence of both these factors on house prices in Ireland, and their deviation from their fundamental value.

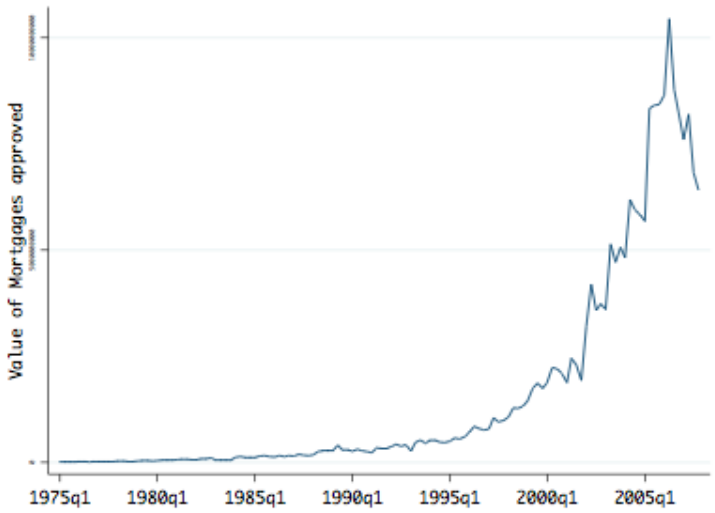


Figure 2: Value of mortgage lending by Irish banks and building societies, priced in euro and adjusted for inflation.
Source: Department of the Environment.

Empirical Approach

The relationship was specified using a regression equation, which was then estimated using Ordinary Least Squares. An inverted demand function specification was chosen,

with house prices as the dependent variable. This was regressed on: population, GNP, housing stock, mortgage lending, interest rates and inflation. This specification draws on that used by the ESRI in their HERMES macroeconomic model of the Irish economy.[2] Regressors measuring mortgage lending and interest rates were included in the model in order to determine the significance, if any, of their influence (as explained in the preceding section).

Population was included as the number of individuals in an economy is a determinant of the demand for housing, and can be expected to have a positive correlation with house prices. Incomes are equally expected to have a positive correlation and GNP is thus included. Supply constraints are modelled using data for annual house completions, and are expected to correlate negatively. Data for the total value of mortgage lending in the economy were used to measure lending, and interest rate effects were estimated using statistics for the average mortgage rate of interest for banks and building societies. The Consumer Price Index was included to control for the effects of inflation.

Preliminary plots of variables suggested the presence of a unit root. A Dickey-Fuller test was performed on the independent variable and failed to reject the null of a unit root at the 1% level. The specification was altered into first-difference form and the model became:

$$\Delta hp=\beta_0 + \beta_1\Delta pop_{t-2} + \beta_2\Delta gnp + \beta_3\Delta mort\_val + \beta_4\Delta rate_{t-4} + \beta 5\Delta comp + u_t$$

The test was repeated and this time did reject the null of a unit root. The specification was examined at different lags since it can be expected that prices may be slow to adjust. Policy lags with respect to interest rate changes, for example, are well documented and were incorporated into the model above. Population was also lagged by two periods as this produced a significant result and lagged effects of population increases are to be expected. Since quarterly data were used, dummy variables were at first incorporated to detect seasonal effects in price changes. They were highly insignificant however, most likely since house completions showed clear seasonal variation (house construction activity was much lower in winter).

[2] This model is used in the ESRI Medium Term Review, 2008-2015, p.168.

Variable	Dickey Fuller statistic	1% Critical Level	5% Critical Level
hp	4.29	-3.58	-2.57
Δhp	-11.08	-3.50	-2.88

Variable	Observations	Mean	Standard Deviation	Min	Max
House Prices	132	107063	97443	11887	359468
Population	132	3629210	275192	3177270	4300900
GNP	132	4.15E+10	4.70E+10	6.61E+08	1.65E+11
Mortgage Lending	132	1.50E+09	2.17E+09	3.68E+07	9.09E+09
Rate of Interest	132	9	4	-4	3
House Completions	132	9267	5421	3591	26949
CPI	132	71	28	17	123
ΔHouse Prices	131	2509	4864	-12665	22068
ΔPopulation	131	3629210	275192	-10360	79680
ΔGNP	131	1.23E+09	2.02E+09	-3.00E+09	8.00E+09
ΔMortgage Lending	131	3.96E+07	3.89E+08	-1.53E+09	2.32E+09
ΔRate of Interest$_{t-4}$	127	-0	1	-4	3
ΔHouse Completions	131	101	1861	-6931	7476
ΔCPI	131	1	1	-1	3

Table 1: Summary statistics and Dickey-Fuller test statistics

Empirical Results

```
      Source |       SS       df       MS              Number of obs =     127
-------------+------------------------------           F(  6,   120) =   47.58
       Model |  2.1562e+09     6  359365587             Prob > F      =  0.0000
    Residual |   906273443   120  7552278.69           R-squared     =  0.7041
-------------+------------------------------           Adj R-squared =  0.6893
       Total |  3.0625e+09   126  24305293.4           Root MSE      =  2748.1

------------------------------------------------------------------------------
    D.hp_lvl |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     pop_lvl |
         L2D. |  -.0396745    .013761    -2.88   0.005    -.0669283   -.0124207
    dgnp_lvl |
          D1. |   1.30e-06   1.27e-07    10.22   0.000     1.05e-06    1.55e-06
    mort_val |
          D1. |   5.50e-06   7.15e-07     7.70   0.000     4.09e-06    6.92e-06
    rate_lvl |
          L4D. |  -46.99335   295.8512    -0.16   0.874    -632.7581    538.7714
completion~l |
          D1. |   .5578027   .1383449     4.03   0.000     .2838894    .8317159
     cpi_lvl |
          D1. |   932.1089   377.7388     2.47   0.015     184.2124    1680.005
        _cons |   225.7137   427.0255     0.53   0.598    -619.767     1071.194
------------------------------------------------------------------------------

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of D.hp_lvl

         chi2(1)      =     5.26
         Prob > chi2  =   0.0218


Durbin-Watson d-statistic(  7,   127) =  1.823009
```

Table 2: Regression results with heteroscedasticity and autocorrelation test results

The model overall is significant, with an adjusted R-squared of 69.83% and, visually, the model appears to fit the data well, as can be seen in Figure 4. A scatterplot of the

residuals indicated a small increase in variance over time. A Breusch-Godfrey test was carried out for possible heteroscedastic error terms, and this failed to reject the null of constant error variance. Although autocorrelation is to be expected for time series data, the fact that the first difference had been taken reduced the possibility of this being an issue. A Durbin-Watson test statistic was obtained, the critical upper and lower bounds in this case are (1.651, 1.817), and accordingly failed to reject the null of no serial correlation as d=1.823>1.817.

All regressors except the interest rate and the constant term were found to be significant at the 1% level - except for inflation, which was significant at the 5% level. They indicate that, after controlling for the effects of rising incomes, population, inflation and supply changes, increased lending activity by banks and building societies did indeed have a positive effect on house prices. On average the model predicts that an increase in the rate at which lending was taking place of €1,000,000 over two successive quarters would add €550 to the increase in house prices over two successive quarters. In 2002:Q2 for example, mortgage lending was €890,000,000 higher than in the previous quarter, and so this model predicts that this added €5,000 to the price of the average house in the space of three months.

The result for the impact of the changes in housing stock is interesting. It implies that an increase in house completion by 1,000 units in two adjacent periods increases the difference in prices between those two periods by €557 on average. Given that the average quarterly increase in completions was 256 houses in the 2000-2007 period; this analysis implies that €4,562 was added to the price of a house in real terms in this period. In the last quarter of 2004, for example, 4,561 more homes were completed than in the previous quarter, implying that this activity generated an increase in prices of €2,540 over the previous period (compared to those increases which would have happened anyway). This counterintuitive result almost certainly lends credence to the implication of irrational behaviour in the market since increased supply, after controlling for population increases, does not usually lead to large price increases.

The monetary policy variable, on the other hand, was found to be highly insignificant. This can be explained by probable multicollinearity with mortgage lending and inflation, since the rate of interest is known to impact on both. The ECB states that it adjusts interest rates to keep inflation low, and low interest rates are likely to increase the demand for mortgage credit. A more sophisticated model that allows for endogeneity of some of the variables would be useful in identifying the impact of the interest rate environment on prices.

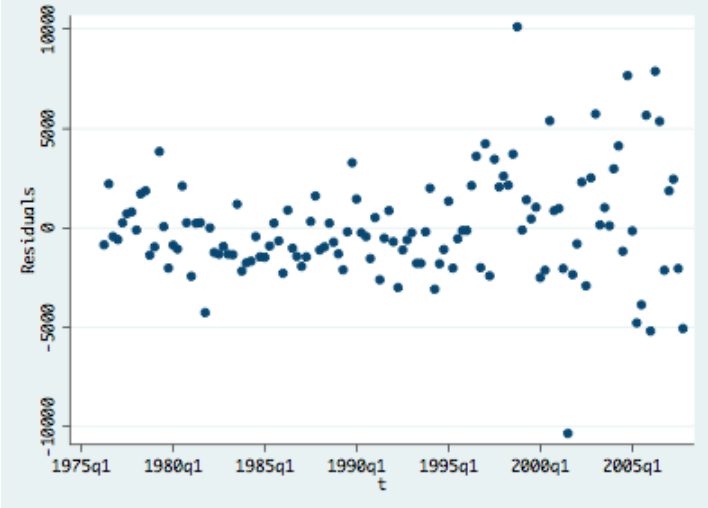


Figure 3: Scatter plot of residuals ordered over time

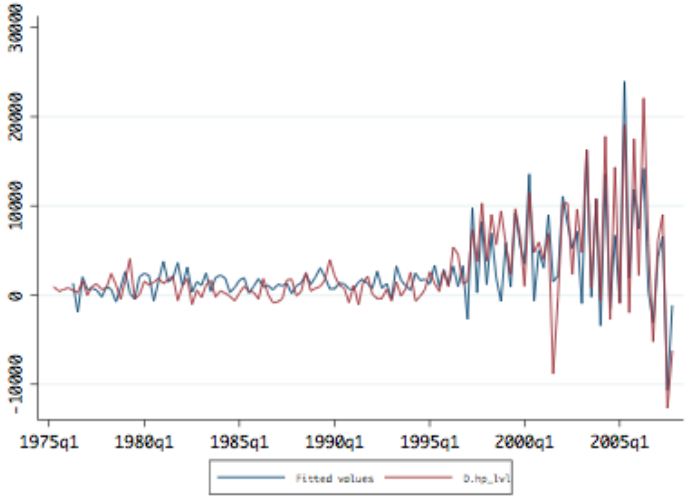


Figure 4: plot of predicted values and the dependent value over time

Conclusion

A lot of recent policy debate and public concern has centred on the lending activity of financial institutions in Ireland. This concern, according to this study, is justified as exceptional growth in mortgage lending in Ireland has played a part in driving prices beyond their fundamental levels. It is clear that the subsequent correction has had a damaging effect - through the creation of negative equity and by negatively influencing consumption. This highlights the importance of regulatory controls for financial institutions and proper oversight in preventing recurrence of such unsustainable levels of lending. More broadly, government intervention could have helped moderate price increases by taxing property owners to disincentivise speculation or by placing stricter constraints on mortgage credit.

While the monetary policy variable was found to be insignificant in this analysis, the behaviour of interest rates still holds lessons. Cyclically low interest rates, indirectly, almost certainly had an effect on mortgage lending, and these had a strong influence

on house prices by making mortgage credit unusually cheap. This is one example of a potential mismatch between economic conditions in Ireland and the wider Eurozone, which ensured an inappropriate monetary policy for this country. This, however, must be set against the clear benefits of membership of the euro, which have become even more apparent with recent economic events.

Bibliography

Baum, C. 2006. *An Introduction to Modern Econometrics Using Stata*. USA: Stata Press.

Central Bank and Financial Services Authority of Ireland. 2004. 'The Irish Housing Market: Fundamental and Non-Fundamental Influences'. *Financial Stability Report 2004.*

Fitzgerald, J. et al. 2008. 'Medium Term Review 2008-2015, No.11'. Economic and Social Research Institute.

Krainer, J. & Wei, C. 2004. 'House Prices and Fundamental Value'. Retrieved from the Federal Reserve Bank of San Francisco at: http://www.frbsf.org/publications/economics/letter/2004/el2004-27.html.

Muellbauer, J. & Murphy, A. 2008. 'Housing Markets and the Economy: The Assessment'. *Oxford Review of Economic Policy* 24:1:1-33.

Murphy, A. 2005, 'Explaining Irish House Prices: A Review and Some New Results'. Retrieved from Nuffield College at: http://www.nuffield.ox.ac.uk/users/murphya

Permanent TSB/ESRI. 2009. 'Irish House Price Index'. Economic and Social Research Institute.

Quinn, K. 2004. 'A Model of the Irish Housing Sector'. Central Bank and Financial Services Authority of Ireland.

Roche, M. 2000. 'The Rise in House Prices in Dublin: Bubble, Fad or Just Fundamentals'. *Economic Modelling* 18:281-95.

Tsatsaronis, K. & Zhu, H. 2004. 'What Drives Housing Price Dynamics: Cross-Country Evidence'. *BIS Quarterly Review, March 2004.* Bank of International Settlements.

Data Sources

Central Statistics Office.
Series for interest rates, house prices, mortgage lending and house completions.
Database direct accessed at:
http://www.cso.ie/px/pxeirestat/database/eirestat/eirestat.asp.

International Monetary Fund.

Series for population, GNP, inflation, and GNP deflator.
International Financial Statistics accessed at:
www.imfstatistics.org/ifs.

INFLATON TARGETING WITH REFERENCE TO THE CURRENT ECONOMIC DOWNTURN

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Senior Sophister

Monetary policy is one of the most fundamental aspects of economic planning. For many years now, it has been the practice of central banks to set inflation targets to enhance stability in the economy. Here, Shane Murphy evaluates this practice, paying particular attention to the US Federal Reserve and the Bank of England. He argues that the policy of inflation targeting may be redundant today as many countries face the opposite challenge: deflation. However, he believes that this is only a temporary deviation, and that inflation targeting will remain an important monetary policy objective into the future.

Introduction

'Inflation targeting is a framework for monetary policy characterised by the public announcement of official quantitative targets (or target ranges) for the inflation rate over one or more time horizons, and by explicit acknowledgement that low, stable inflation is monetary policy's primary long-term goal. Among other important features of inflation targeting are vigorous efforts to communicate with the public about the plans and objectives of monetary authorities, and in many cases mechanisms that strengthen the central bank's accountability for attaining those objectives' (Bernanke et al., 1999: 4).

What is inflation targeting?

Inflation targeting is the process of announcing a target level of inflation and using monetary policy to adjust the economy to that level. When inflation is too high, the central bank attempts to cool the economy to this rate of price level growth (Bernanke and Woodford, 2005). It has been credited with achieving low, stable inflation and reforming monetary policy in countries such as New Zealand (ibid.). There are different types of inflation targeting regimes: those which are bound by law to a target; those which have an implicit price stability target; and those which have a target but do not have the credibility to hit the target (Carare and Stone, 2006).

Recent and future events

Recent economic troubles have meant that inflation targeting countries have departed from standard practice and this could be a reason to believe inflation targeting will not persevere. In the USA the target nominal interest rate has been completely missed, with the effective rate differing by as much as eighty-five basis points. Also the 'vigorous attempts to communicate to the public' mentioned by Bernanke et al. above have been damaged as, for example, the Bank of England surprised the market with cuts in interest rates late last year.

There is a real danger in many countries of deflation, therefore completely undershooting the target. Near-zero inflation rates bring about a number of problems, including downward pressure on nominal wages and upward pressure on the real cost of borrowing.

Why is inflation targeting so popular and will it survive the current economic downturn? This essay will consider the advantages of inflation targeting. It will examine recent events in the context of inflation targeting, the risks of very low inflation and what can be done to keep deflation at bay.

Why Inflation Target?

Role of inflation targeting:

Inflation targeting as defined above is a framework used in monetary policy to control the economy. The role of an inflation target can be summarised as follows:

> '(1) to provide an anchor for monetary policy and inflation and hence serve as a coordination device for those involved in the price and wage setting process in financial markets; and (2) to provide a transparent guide to monetary policy, whose commitment, discipline and accountability would be judged on the basis of whether policy actions were taken to ensure achievement of the target' (Leiderman and Svensson, 1995: 2).

Most countries have adopted inflation targeting for two reasons - either monetary aggregates became less effective in controlling inflation, or an existing monetary anchor was removed (Fisher, 1995). Financial innovation in Canada meant that M1, which had been used as a monetary target, became less linked to nominal spending, and subsequently the Bank of Canada searched for an alternative (Freedman, 1995). Britain adopted inflation targeting after a rather disastrous attempt with a previous monetary anchor, the Exchange Rate Mechanism. Norman Lamont is quoted as proposing inflation targeting 'to replace that hitherto provided by the ERM' (Bowen, 1995: 53).

What has been achieved:

Inflation targeting has achieved considerable results in a number of areas. Mervin King (2005) points out that inflation has been consistently below 4% since the establishment of inflation targeting in the Britain, compared with the preceding two decades of high inflation. One of the main successes that economists point to is that public inflation expectations have been brought down to the target rate (ibid.).

One of the most lauded aspects of inflation targeting is that it is transparent and thus more predictable. When changes in interest rates were announced, by a determined policy of more openness, 'they would already be incorporated in private sector decisions' (Bain and Howells, 2003: 344).[1]

The move to inflation targeting is credited with the economic turnaround experienced in New Zealand (Fisher, 1995). King (2005) compares inflation targeting and monetary stability to a sustainable way of living healthily; the 'boom and bust' cycles of before are akin to crash dieting. Better and more consistent monetary policy has been attributed to the movement toward inflation targeting. Charles Freedman (2005: 19) puts it clearly: 'By fostering confidence in the value of money, monetary policy makes its contribution to the ultimate objective of public policy – a well functioning economy'.

[1] One example of this determination occurs when inflation targets are missed: the head of the Monetary Policy Committee must write to the Chancellor of the Exchequer outlining when inflation will be brought back into the target range.

Who inflation targets:
Carare and Stone (2006:1298) classify countries with a floating exchange regime into three categories of inflation targeting. The first are *full-fledged inflation targeting* (FFIT) countries, which are a mix of industrialised and emerging market countries with some sort of legally binding inflation target. New Zealand and the Britain are examples of this group. *Implicit price stability anchor* (IPSA) countries are countries with 'so much credibility that they maintain low and stable inflation' without an inflation target *per se*. The European Central Bank and the Federal Reserve are examples of central banks that are in the IPSA category. The last category is *inflation targeting light* (ITL). These are countries with a 'broad inflation objective' but have low credibility and thus are unable to maintain inflation as the foremost policy objective.

While the US Federal Reserve is not traditionally seen as an inflation-targeting bank, it nonetheless strongly resembles one. Since 1979 the US has had a disinflationary policy, starting with a switch to non-borrowed reserve targeting; and Federal Reserve officials have consistently reiterated their commitment to low inflation (Goodfriend, 1995). In fact, the Federal Reserve has been consistent in keeping inflation at 3- 4% for many years now (ibid.). The Federal Open Market Committee (FOMC) publishes a statement, usually including the Committee's assessment of the risks to the attainment of its long-run goals of price stability; and the current governor is a proponent of inflation targeting, having written a book on the subject. However it does not have an implicit inflation target set out in law. It can thus be argued the Federal Reserve 'inflation targets' (Goodfriend, 2005:321).

The ECB can also be defined as an inflation-targeting regime. The Maastricht Treaty mandated price stability as the primary objective of the European Central Bank (Bernanke et al., 1999). Inflation targeting banks can have other objectives, and in fact 'flexible' inflation targeting regimes are the norm in practice (Bernanke and Woodford, 2005: 1).

In assessing the future inflation target it is important to look at the IPSA category to see what they do, as they are not mandated to follow a policy of inflation targeting in the same way as the other FFIT countries are, and are thus most likely to move away from it. If the ECB or the Fed abandon their inflation-targeting regimes it is likely that the FFIT group will follow. Many of the actions by central banks recently in the IPSA and FFIT categories show a movement away from the standard practice of inflation targeting.

Recent pressures on Inflation Targeting

Target rate deviations:
When considering inflation targeting with reference to the current economic climate it is important to look at what inflation-targeting countries have been doing in the last year, under increased pressure. Central banks only control short-run rates indirectly. They do not set rates but, for example, do manipulate the federal funds market in the USA. By buying and selling reserves in the market, they move the interest rate to the target. But recently in the US, which is in the IPSA category, the announced interest rate and the effective rate diverged by a considerable amount. On the 5th of December 2008 the announced rate stood at 1% but the effective rate was 0.12% (Federal Reserve Bank of New York, 2008). Either one of two things had happened: the Fed had lost the ability to manage rates, or it purposely undershot the target.

If the Fed loses the ability to manage short-run rates, then the concept of inflation targeting must be abandoned. The Federal funds rate was lowered to a range of 0.00% - 0.25% on the 16th of December 2008. This movement could be seen as just the Fed moving to keep the pretence of controlling rates. There is no reason to believe that the central bank could target inflation if it could not manage interest rates in the future. Therefore, under this assumption inflation targeting will not last long. However, if the Fed was undershooting the target on purpose, the credibility of the Bank is damaged. Investors will soon lose faith in the bank's aim of inflation targeting. Inflation targeting requires that the central bank takes a disciplined stance and a marked deviation from the target rate is not in keeping with this. But the fact that the subsequent rate change occurred so quickly could be seen as the bank being unwilling to allow long periods where the target rate and effective rate were out of sync. After all, there is a tradition of not changing the rates outside of FOMC meetings (Meyer, 2004). If this is the case inflation targeting may still be used in the future.

A return to locked room monetary policy:
As previously stated, transparency is important to inflation targeting. The ability of investors to factor in changes in interest rates before they occur is critical. Recently, this ability has been curtailed. The Bank of England's 1.5% cut in its interest rate on the 6th of November 2008 was largely unexpected by markets and economists (Cohen, 2008a). This cut brought the rate to its lowest level in over fifty years. Bain and Howells (2003) explain that the private sector learns how the Monetary Policy Committee of the Bank of England make interest decisions based on current and future economic conditions, and are thus able to predict them. If markets cannot make rational forecasts due to uncertainty over the interest rate, investment decisions will be affected. But why did the private sector fail to predict what would happen?

Was it a case of the Bank changing its normally hawkish practice in relation to inflation? This movement was predicated on the fact that 'in recent weeks [before the cut], the risks to inflation have shifted decisively to the downside' (Bank of England, 2008). It can be argued that financial markets did not have time to react to this news and thus did not price it in. But it must be asked why financial markets could not move as fast.

In today's uncertain climate, financial markets may be unable to predict movements in interest rates, thus inflation targeting loses its effectiveness, as changes in rates can no longer be accounted for. This will bring uncertainty to the market, raising risk premia and diminishing inflation targeting's ability to work by raising long-term interest rates. However, this crisis brings another risk to inflation targeting into play: deflation.

Risks in the Future

Since inflation targeting has been established, it has been rare to see countries undershooting their target levels, but this has not been the case recently. The likelihood of deflation is very high at the moment and can be seen as central banks move their rates to zero in hopes of avoiding it. If near-zero inflation (or deflation) occurs, a number of problems may arise.

Problems with near-zero inflation:
Low interest rates work well in periods of constant growth. This was the case in Britain from 1992, the year it adopted inflation targeting, onward (King, 2005). However, current events are leading developed countries to rethink inflation targeting policies. The

aim has previously been to slow price level growth, allowing central banks to meet the inflation target. Now they must *increase* inflation so as not to undershoot the targeted inflation level. There are several risks if the rate is undershot.

When an economy undergoes negative shocks, there is downward pressure on real wages. When inflation is high, these cuts can be achieved through maintaining the nominal wage; but if inflation is very low or close to zero, then the only way of achieving a fall in real wages is by a decline in the nominal wage (Sorensen and Whitta-Jacobsen, 2005).

At extremely low inflation rates, the real cost of borrowing increases. In periods of normal inflation the principal that has to be paid back in real terms falls. But in a period when there is deflation and when the zero bound in nominal interest rates has been reached, the real interest rate will remain positive. As the real interest rate is just the nominal rate (zero) less the inflation rate (which is negative), real interest rates are positive. One of the worst consequences of deflation is that the amount borrowed will actually go up in real terms.

How could central banks stop deflation?

The first move would be to lower nominal interest rates, which is what many countries are doing today, but the zero bound may still eventually be reached. Indeed there is an expectation in the financial press that this will occur in Britain (Cohen, 2008b; Goff, 2009). The steps to be taken after the zero bound has been reached have been discussed by many economists, most notably Ben Bernanke.

Bernanke (2002) spoke about what could be done by a central bank faced with the possibility of deflation when the policy rate had already been driven down to zero. His argument focused on the fact that having a fiat currency meant that a central bank could just print money, generating 'higher spending and hence positive inflation'. He also outlined the method he would prefer to take if deflation happened. The Fed should begin by announcing explicit ceilings for yields on longer maturity Treasury debt; to make this happen the Fed must then commit to make unlimited purchases of securities up to two years from maturity. This would also make long-term yield fall, as the term structure of long-run interest rates would incorporate these falls.

If this policy were to fail, however, Bernanke still believes that lending directly to banks would work, using the discount window with commercial paper as collateral. This would reduce the risk and liquidity premia, thus lowering the cost of capital and encouraging positive inflation through greater spending.

Charles Bean (2002), Deputy Governor at the Bank of England, also spoke on the matter saying that once the zero bound had been reached, the central bank should attempt to drive down long-run rates by committing to zero short rates for a protracted period, or by purchases of longer-term government securities. Bean also recommended following Keynes' advice, i.e. increase fiscal spending.

Bernanke (2002) does note that Japan's deflation problem is partially due to massive financial problems in the banking and corporate sectors and a large overhang of government debt. Considering the current financial system and the fact that many of the world's economies will be embarking on very large public spending programs, this is a highly relevant observation.

Conclusion

'Inflation targeting' has brought advantages to the countries that have adopted it. It has encouraged more effective monetary policy in countries where previous monetary targets lost effectiveness or which had abandoned previous monetary anchors. Inflation-targeting countries are generally characterised by well-functioning economies and low, stable inflation. Flexible inflation-targeting regimes have become the norm.

Unfortunately, due to recent events, inflation-targeting regimes have not maintained a disciplined stance.. In the United States a divergence between the effective rate and target rates has damaged the credibility of inflation targeting. But quick moves to bring the target and effective rates back together can be seen as a commitment to the process. In Britain, the actions by the Bank of England could be viewed as a move to a much less transparent monetary policy. Alternatively, the speed at which the economy is deteriorating could mean that markets were unable to keep up with the Bank of England. This has problems for inflation targeting, but on the whole these are small deviations compared with other potential risks, notably deflation.

Long-run yields are also coming down (US Department of the Treasury, 2008) which is what central bankers want in order to avoid deflation. There are two components to long run yields: the sum of expectations of short-run yield and a risk premium. If investors think that inflation targeting will be abandoned then the future of monetary policy is unknown. If this were an accurate description of expectations, it would be assumed that the risk premium would go up, which does not seem to be the case in today's markets.

Will inflation targeting last after the economic difficulties being experienced now? This essay would conclude with an optimistic 'yes'. In the current climate, central bankers have to do whatever is possible to keep from falling under the target and it is believed that the current deviations from the policy are only temporary.

References

Bain, K. & Howells, P. 2003. *Monetary Economics: Policy and Its Theoretical Basis.* Hampshire: Palgrave MacMillan.

Bank of England. 2008. 'Bank of England Reduces Bank Rate by 1.5 Percentage Points to 3%'. Retrieved from the Bank of England at: http://www.bankofengland.co.uk/publications/news/2008/076.htm

Bean, Charles. 2002. 'The MPC and the UK Economy: Should we fear the D-words?'. Speech presented at *The Emmanuel Society,* London. Retrieved from the Bank of England at: http://www.bankofengland.co.uk/publications/speeches/2002/speech182.pdf

Bernanke, B., Laubach, T., Mishkin. F.S., & Posen, A. 1999. *Inflation Targeting: Lessons from the International Experience.* Princeton: Princeton University Press.

Bernanke, B. 2002. 'Deflation: Making Sure 'It' Doesn't Happen Here'. Speech presented at *National Economists Club*, Washington, D.C. Retrieved from the Federal Reserve Board at: http://www.federalreserve.gov/boardDocs/speeches/2002/20021121/default.htm

Bernanke, B. & Woodford, M. 2005. *The Inflation-Targeting Debate.* Chicago: The University of Chicago Press.

Bowen, A. 1995. 'British experience with Inflation Targetry' in L. Leiderman & L.E.O. Svensson (eds.) *Inflation Targets.* London: Centre for Economic Policy Research.

Carare, A. & Stone, M.R. 2006. 'Inflation targeting regimes'. *European Economic Review* 50:5:1297-1315.

Cohen, N. 2008a. 'Grim outlook for UK spurs steep rate cut' in *The Financial Times,* 7th November 2008.

Cohen, N. 2008b. 'UK rates on uncharted course to rock bottom' in *The Financial Times,* 5th December 2008.

Federal Reserve Bank of New York. 2008. 'Federal Funds Data'. Retrieved from the Federal Reserve Bank of New York at: http://www.newyorkFedorg/markets/omo/dmm/fedfundsdata.cfm

Fisher, A. 1995. 'New Zealand's Experience with Inflation Targets' in L. Leiderman & L.E.O. Svensson (eds.) *Inflation Targets.* London: Centre for Economic Policy Research.

Freedman, C. 1995. 'The Canadian Experience with Targets for Reducing and Controlling Inflation' in L. Leiderman & L.E.O. Svensson (eds.) *Inflation Targets.* London: Centre for Economic Policy Research.

Goff, S. 2009. 'Prepare for an era of zero tolerance' in *The Financial Times,* 3rd January 2009.

Goodfriend, M. 1995. 'Acquiring and Maintaining Credibility for Low Inflation: The US Experience' in L. Leiderman & L.E.O. Svensson (eds.) *Inflation Targets.* London: Centre for Economic Policy Research.

Goodfriend, M. 2005. 'Inflation Targeting in the United States' in B. Bernanke & M. Woodford (eds.) *The Inflation-Targeting Debate.* Chicago: The University of Chicago Press.

King, M. 2005. 'What Has Inflation Target Achieved?' in B. Bernanke & M. Woodford (eds.) *The Inflation-Targeting Debate.* Chicago: The University of Chicago Press.

Leiderman, L. & Svenson, L.E.O (Eds.). 2005. *Inflation Targets.* London: Centre for Economic Policy Research.

Meyer, L. 2004. *A Term at the Fed* New York: Harper Collins.

Sorenson, P.B. & Whitta-Jacobsen, H.J. 2005. *Introducing Advanced Macroeconomics: Growth & Business Cycles.* Berkshire: McGraw-Hill Education.

US Department of the Treasury. 2008. ‘Daily Treasury Yield Curve Rates’. Retrieved from the US Department of the Treasury at: http://www.ustreas.gov/offices/domestic-finance/debt-management/interest-rate/yield_historical.shtml

RECONSIDERING THE ECONOMIC THOUGHT OF KARL POLANYI IN 2009

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Economists and their theories, like governments, come and go. But during times of change, in particular, people are wont to look to the past to shed light on current challenges. In this essay, Adam Larragy examines Karl Polanyi's critique of market liberalism in general and the self-regulating market in particular. Polanyi's advocacy of a democratic socially planned economy flies in the face of the last twenty years' experience, but - along with the ever-changing relationship between political ideology and the market – this is worth reassessing in light of recent global events.

Introduction

> 'Our thesis is that the idea of a self-adjusting market implied a stark utopia. Such an institution could not exist for any length of time without annihilating the human and natural substance of society; it would have physically destroyed man and transformed his surroundings into a wilderness.'
>
> (Polanyi, 2001: 3).

The above statement, an extract from Karl Polanyi's *The Great Transformation*, would have sounded discordant and out of sync with what J.K Galbraith called the 'conventional wisdom' if it had been quoted only one year ago.

Since the mid-1980s, most Western countries experienced 'a substantial decline in macroeconomic volatility' (Bernanke, 2004), as unemployment, economic growth and inflation seemed to become more stable, in marked contrast to the turbulent 1970s. The electoral victories of Margaret Thatcher and Ronald Reagan in the 1980s signalled the end of the post-war economic consensus in Britain and of the New Deal in the United States as laissez-faire economic thought guided, or at least legitimised, the economic policies of both governments. The end of the Communist experiment in the Soviet Union in 1991 supposedly signalled the 'end of history', leaving no alternative to a liberal capitalist economic and social structure that had proved itself as more successful than any other social and economic system or ideology (Fukuyama, 1993). By the 1990s, even the largest labour and socialist parties in Europe, which were brought into existence to protect workers from the depredations of the market economy, had accepted the idea that market relations and the market economy had to be extended and often proved more zealous advocates of privatisation and market liberalisation than their predecessors.

However, the 'Great Moderation' only applied to Western economies, as industrialising nations experienced 'exchange rate, stock market, and interest rate volatility' due to 'the

volatility of ever-growing private capital flows' unleashed by financial liberalisation both within developing and developed countries (Wade, 2006:122).[1] Even within Western economies, the experience was one of stagnating real wages and greater inequalities in both wealth and income (Dumenil et al., 2004). However, it is the current crisis that has created the opportunity to raise fundamental questions about the desirability and scope of free-market policies, the assumptions behind such policies and the limitations of neo-classical economic theory. In this context, the work of Karl Polanyi, an ardent critic of his contemporaries, Ludwig von Mises and Friedrich von Hayek, should be reconsidered and his critique of market liberalism and classical economics re-examined.

Karl Polanyi: activist and economist

Karl Polanyi, economic historian and anthropologist, was born in Budapest in 1886 and grew up among a radical bourgeois Jewish intellectual milieu in which he played an active role. Polanyi moved to Vienna in the 1920s and it was here that he was introduced to the ideas of Mises and Hayek, who were engaged in a project to rehabilitate market liberalism (Polanyi, 2001: xx). Polanyi formulated his critique of market liberalism in response to their ideas, and advocated a democratically planned socialist economy on the grounds of 'social and moral superiority' rather than efficiency (Humphreys, 1969: 169). With the ascent of the Nazis in 1933, Polanyi's Judaism and socialism made his position in Vienna untenable and he was forced to resign from the newspaper *Der Osterreichische Volkswirt*. He immigrated to England where, like many socialists of his generation, he became involved in adult education, lecturing with the Workers' Educational Association. In the 1940s, he was a visiting scholar to Bennington College in Vermont, where he wrote *The Great Transformation*. He was appointed visiting Professor of Economics at Columbia University in 1947 where he taught General Economic History, characteristically redefining it as 'the place occupied by economic life in society' (Polanyi, 1971: v). At Columbia, he studied the economic aspects of institutional growth, producing *Trade and Market in Early Empires* (1957).

Polanyi is usually placed within the institutional school of economic theory, and his former students have made a strong case for Polanyi to be considered one of the key contributors to the 'old institutional' school (Stanfield, 1980; Fusfeld, 1988). The key concern of institutionalism is the impact of human institutions on economic behaviour. However, it must be noted there is a dividing line between the 'new institutionalism' of Douglass North and Ronald Coase and the 'old institutionalism' of Polanyi and Thorstein Weblan; for example, North emphasised that the market economy requires certain preconditions that can only be provided by the state, private property rights and constitutional protection of markets while Polanyi believed there was 'an impossible separation between markets and politics' made by market liberals (Davis, 2008: 1102).

The critique of neo-classical economics by the old institutionalists centres around what they see as the key mistake of separating man from his surrounding institutions, whether it is the state or any other social institutions created by man. Though such an analysis

[1] Notably, China still controls capital flows.

would usually be classed as political economy, many of the old institutionalists would have viewed this approach as the only way to analyse economics. Commenting favourably on Schumpeter's *Capitalism, Socialism, and Democracy*, noted institutionalist Warren J. Samuels asserts 'the inseparability of economy and politics, that is, the reality of a legal-economic nexus' (Samuels, 1985: 67). In terms of Polanyi's economic thought, *The Great Transformation* is his formulation of this critique, and constitutes his response to Hayek and Mises and what he saw as their fatal conceit, the belief in the self-regulating market.

The Great Transformation

The Great Transformation was published in 1944 in the same year as Friedreich van Hayek's *Road to Serfdom*, though characteristically of our age, rather more has been heard of Hayek's work of political economy in recent years. Polanyi's argument constitutes both history and theory, as he and his central European contemporaries (including Hayek) would have seen any attempt to construct theory without history as impossible. The book is divided into three parts; the first an account of the 'international system' resulting from the 'Great Transformation' of the nineteenth-century in which the market economy came to dominate Western societies and, through imperialist conquest, the world. The second part constitutes a historical narrative of the 'rise and fall of the market economy' (drawing on his historical research into English economic and social life while teaching in the 1930s). The third is a commentary on 'transformation in progress' in reference to current and future processes, from his contemporary viewpoint, such as the rise of fascism and possibly of socialism.

Though structured in part as a historical narrative, *The Great Transformation* is best examined in terms of its broader themes: the critique of the classical concept of 'economic man'; the moral and intellectual fallacy of treating as commodities land, labour and money; the impossibility and fatal effects of 'disembedding' economic life from social life, and the related phenomenon of the 'double movement'; and the importance of understanding the historical processes of social and economic change.

Economic Man

As previously noted, the key to classical and neo-classical economic theory is the idea of 'economic man': a being whose utility-maximising behaviour enables the market mechanism to function by responding to price changes rationally, thus allowing the co-ordination of supply and demand. The historical origins of the concept can be traced further back than Adam Smith (usually Mandeville's *Fable of the Bees*) but his observation that man's nature is to 'truck, barter and exchange' is its most famous expression (cited in Polanyi, 2001: 45). This concept was based on ideas of how man would behave in a state of nature (in a curious parallel to Rousseau, though with the opposite implications) and as such could be examined in historical terms. Polanyi, who had an interest in early economies, opposed the concept by claiming that 'economic motives spring from social life' (ibid.: 49).

He contended that empirical evidence showed that early societies tended to organise their economic life around four principles: reciprocity, redistribution, householding (using Aristotle's definition of *oeconomica* as 'production for use') and barter whose corresponding patterns were symmetry, centricity, autarky and the market pattern respectively (ibid.: 55). Polanyi reversed the classical view that man's 'propensity to barter' leads to local markets, the division of labour, foreign trade and eventually long-distance trade. Even in the case of long-distance trade, barter was embedded in relations bounded and regulated by custom, magic and religion whereas 'national markets' were a creation of the powerful centralising monarchies of Western Europe in the 15th and 16th centuries, driven by the imperatives of war and the need to unify their kingdoms.

The industrial revolution of the 19th century, with the introduction of the factory system into a commercial society, may have enabled the development of the vision of 'economic man', but everywhere this was contradicted by the mutualism of rural areas, of the new trade union and Chartist movements (ibid.: 78). Polanyi located the modern conception of 'economic man' in Joseph Townsend's *Dissertation on the Poor Laws* (1786), in which Townsend infamously claimed men were beasts and subject to the same laws of Nature; in Smith's formulation there was never any question that moral law and political life were excluded from the self-interested butcher's life (ibid.: 117). Malthus, Ricardo, Burke and Bentham all believed that 'economic society was subject to the laws of nature' (ibid.: 130). Polanyi's entire historical narrative implicitly affirms the contingency of human behaviour on history, that is, the contingency of human behaviour on the social, cultural, political and economic institutions that give rise to social life. 'The behaviour of man both in his primitive state and right through the course of history has been almost the opposite implied in this view [that of the existence of an ahistorical rational man]' (ibid.: 258).

The Fictitious Commodities: Land, Labour and Money

'Laissez faire was planned, planning was not'; Polanyi used this phrase to describe the 'birth of the liberal creed' in the 1820s, the decade in which it was to take on its full meaning. Labour must find its price on the market; money should be subject to an automatic mechanism (the gold standard); and the removal of impediments to the international free flow of capital and goods should occur (encapsulated in the political slogan 'free trade') (ibid.: 140-144). Central to economic liberalism was the conceit that land, labour and money were commodities, much the same as any other good or service produced for exchange. This presented both an intellectual and in the case of land and labour, a moral problem; the commodity labour is of course work provided by human beings, who by their very nature (which does not correlate historically with that of rational optimising man) cannot be expected to behave as a commodity. Land is the natural substance of the world and the basis for man's existence rather than a commodity.

European economic life in regard to land and labour was embedded in social life until the 19th century; feudal relations or older custom rights were prevalent on the land and land was often held in common. In England, elaborate social legislation under the Elizabethan

Poor Laws, the Statute of Artificers and the 1662 Act of Settlement regulated economic life. Legitimised by Malthus' Law of Population, Ricardo's 'iron law of wages' and Benthamite utilitarianism (which provides what amounts to the 'moral philosophy' element within classical economics) the creation of a labour market was accomplished by means of the 1834 New Poor Law, which 'for the sake of industry' removed any succour for those deemed capable of working (ibid.: 150). Rational man would react to the threat of starvation and hunger would drive him into the factories and work-houses of the liberal society (ibid.: 120).

The Gold Standard was the medium by which the market liberals thought to extend the self-regulating market throughout the world (with the addition of international free trade). Each nation's currency being backed by gold, a deficit in the balance of payments of a country would lead to gold flowing out of that nation leading to a contraction in the money supply, rise in interest rates, fall in prices and wages and thus a rise in exports. At least that was the theory. By the 1850s the four institutions of the 19th century could be fully discerned: a balance of power between nations, the liberal state, the gold standard, and the self-regulating market. Polanyi emphasised that 'budgets and armaments, foreign trade and raw material supplies, national independence and sovereignty were now the function of currency and credit' (ibid.: 18).

The 'double movement'

However, Polanyi asserted that as soon as the economy was 'disembedded' from economic life, a counter movement emerged which had diverse origins. The decade of the introduction of the New Poor Law saw the rise of the first working-class political movements, the Chartists. In the 1830s industrialist Robert Owen experimented with new co-operative organisations and in this decade the formation of the modern trade union movement, which arose to protect working-class people, is discernable. Market liberals such as von Mises and 'social Darwinist' and liberal Herbert Spencer identified the decades of the 1870s and the 1880s as those in which the counter-movement became discernible, and they termed them the 'collectivist' decades. The introduction of social insurance in Germany was a response to the rise of the Social Democratic party and trade unions and recognition of the need to protect labour. In Britain, following the defeat of the Chartists the trade union movement was less political than their continental counterpart, but it still achieved official recognition.

Across Europe, from Hapsburg Austria to Republican France, governments and legislative bodies intervened in economic life, to place tariffs on agricultural and industrial goods, and to mitigate the effects of the gold standard (ibid.: 150). The gold standard had proved too difficult for nations to bear - the adjustments to balance of payments were too severe, as wages and prices would suddenly fall. Polanyi also argued that the new imperialist urge came from the needs of businesses to get around the self-regulating market and gold standard; this need created imperial zones protected by tariffs. Elaborate legislation in France, Germany and Britain (and in Ireland) was introduced to protect peasants from losing their land as a result of destitution, or to protect them from eviction. However, this movement, which arose to protect man and nature, also

disintegrated the four institutions of the 19th century (ibid.: 257).

Polanyi contested that the forces of countermovement arose from the mistaken treatment of land, labour and money as commodities and the attempted creation of a self-regulating market and the integration of said 'fictitious commodities' into that market. He identified the 'conservative 1920s' as an era in which governments attempted to return to the pre-war world of the gold standard and free trade. This placed such a strain on society that the counter-movement took the form of fascism, which 'emerged as an alternative solution to the problem of industrial society' (ibid.:250).

Polanyi believed that socialism was the only moral response to the failure of the self-regulating market, and possibly saw the New Deal continuing after the Second World War, providing a basis for a new society. He identified socialism as simply 'the tendency inherent in an industrial civilisation to transcend the self-regulating market by consciously subordinating it to a democratic society' (ibid.: 242). The post-war world in the West was indeed constructed on the basis of a controlled currency system (Bretton Woods), and widespread control of the labour market by means of nationalisation of industry and the creation of the welfare state - though it fell somewhat short of Polanyi's vision.

Conclusion

It is important to remember, given the current crisis, that Polanyi - a refugee fleeing fascism - recognised fascism as offering an alternative to liberal capitalism, but one that rejected 'the postulate of freedom… and of the oneness of mankind' (a tradition he ascribes to Christianity) while '[glorifying] power which is the reality of society' (ibid.: 268). It is worth quoting the final lines of *The Great Transformation*, which could be said to offer a prescient rejoinder to Hayek's *Road to Serfdom* and guidance for today's economic policymakers and politicians:

> 'Uncomplaining acceptance of the reality of society gives man indomitable courage and strength to remove all removable injustice and unfreedom. As long as he is true to his task of creating more abundant freedom for all, he need not fear that either power or planning will turn against him and destroy the freedom he is building by their instrumentality. This is the meaning of freedom in a complex society; it gives us all the certainty that we need.'
>
> (Polanyi, 2001:268).

Bibliography

Bernanke, B. 2004. 'The Great Moderation'. Retrieved from The Federal Reserve Board: http://www.federalreserve.gov/BOARDDOCS/SPEECHES/2004/20040220/default.htm

Davis, A. 2008. 'Endogenous Institutions and the Politics of Property: Comparing and Contrasting Douglass North and Karl Polanyi in the Case of Finance'. *Journal of Economic Issues* 42:4:1101-1122.

Dumenil, G. & Levy, D. 2004. 'Neo-liberal Income Trends: Wealth, Class and Ownership in the USA'. *New Left Review* 30:105-133.

Fukuyama, F. 1992. *The End of History and the Last Man.* London: Hamish Hamilton.

Fusfield, D. R. 1988. 'The Economic Thought of Karl Polanyi'. *Journal of Economic Issues* 22:1:264-268.

Humphreys, S.C. 1969. 'History, Economics and Anthropology: The Work of Karl Polanyi'. *History and Theory* 8:2:165-212.

Polanyi, K. 2001. [1944]. *The Great Transformation: the Political and Economic Origins of our Time*. Boston: Beacon Press.

Polanyi, K., Arensberg, C.M., & Pearson, H.W. (eds.). 1971. [1957]. *Trade and Market in the Early Empires: Economies in History and Theory.* Chicago: Regnery.

Rodrigues, J. 2004. 'Endogenous Preferences and Embeddedness: A Reappraisal of Karl Polanyi'. *Journal of Economic Issues* 38:1:189-200.

Samuels, W.J. 1985. 'A Critique of Capitalism, Socialism and Democracy' in R.D. Coe & C.K. Wilber (eds.) *Capitalism and Democracy: Schumpeter Revisited.* Indiana: University of Notre Dame Press.

Sánchez-Andrés, A. & March-Poquet, J.M. 2002. 'The Construction of Market Institutions in Russia: A View from the Institutionalism of Polanyi'. *Journal of Economic Issues* 36:3:707-722.

Schaniel, W.C. 1993.'The Legacy of Karl Polanyi: Market, State and Society at the end of the Twentieth Century (Book Review)'. *Journal of Economic Issues* 27:3:981-985.

Smith, A. 1999. [1776]. *The Wealth of Nations.* London: Everyman's Library.

Stanfield, R.J. 1980. 'The Institutional Economics of Karl Polanyi'. *Journal of Economic Issues* 14:3:593-614.

Wade, R. 2006. ‘Choking the South’. *New Left Review* 38:115-127.

Wade, R. 2008. ‘Financial Regime Change?’. *New Left Review* 53:5-21.

ALLIED REPARATIONS POLICY, 1918-1923: THE DISPARITY BETWEEN TRADE AND REASON

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'Economics inevitably takes place in a political context'. This observation from Nobel Laureate Paul Krugman is an apt summation of Simon Mee's account of Allied actions after the First World War. Mee analyses their reparations policy toward defeated Germany and finds that it allowed politics to trump economics. The consequences of inhibiting free trade are clearly evident in the case of 1920s Germany. This example has never been timelier than today, when the global economy is once again suffering from a great shock that is leading many to abandon economic reasoning for political reasoning.

Introduction

The Rise and Fall of the City of Mahagonny was a political-satirical musical written by Bertolt Brecht. Premiering in Germany in March 1930, German audiences were treated to a selection of rag-time, jazz and formal counterpoint, most notably in the 'Alabama Song':

> Oh, show us the way to the next little dollar,
> Oh, don't ask why, don't ask why,
> For if we do not find the next little dollar,
> I tell you we must die, I tell you we must die.[1]
>
> (Brecht 1979: 6)

After the First World War, Germany was obliged to pay 132 billion gold marks in war reparations.[2] She was to pay compensation not merely for the war damage that she herself had directly caused, but also for the costs of the war as a whole (Feldman 1993: 310). Since payments were to be made largely with foreign exchange, the only feasible means of paying was through a sustained drive of German exports in traditional and world export markets. The Allies were reluctant, however, to give such ground to German exporters after the war. It is in this sober context that the 'Alabama Song' can best be understood: it serves as an analogy for the economic struggle between the German Republic and the Allies during the early 1920s.[3]

This paper will propose the hypothesis that the economic consequences of German reparations were intricately linked to the disparity between Allied trade and reparations policy during the years 1918-23. The exogenous shock of the First World War on the European economy is central to this paper's argument. The war fundamentally changed - and constrained - the political and economic environment through which trade operated. At the same time, however, the inherited assumptions and traditions of the pre-1914 economic environment still played a key role in the formation of Allied reparations policy. These assumptions and traditions only gradually gave way to the new economic realities of the post-war period. Thus, in the immediate short run, a disparity arose in post-war Allied policy. This in turn gave rise to a key paradox; while demanding from Germany exorbitant sums of foreign exchange, the Allies actively discriminated against the only viable means through which Germany could pay: exports.

The economic legacy of the First World War

[1] Extract cited in Ferguson (1997).

[2] For the sake of clarity, all German figures in this paper are quoted in 'gold marks' (GM), the pre-war currency of Germany, i.e. 1913 marks (4.2GM=$1).

[3] Altogether some twenty-eight countries were involved with war debts and reparations during the 1920s. For most countries these amounts were relatively small, however, this paper will focus on by far the most important participants: Germany, the United States, the United Kingdom, France and Belgium. See Aldcroft (1977: 79)

The years 1890-1914 were a prosperous period as a whole for Europe, with an average annual growth rate of 2.2%. During this time, Germany had risen to the rank of an industrial power both at home and as a member of the economic world community. Indeed, in the period 1890-1914 the German Reich experienced a period of relatively good economic performance, with an average annual growth of 2.8% and an annual inflation rate of 1% (Ferguson 1997: 261). However, the First World War brought the golden years of the late nineteenth century liberal economic order to an end, 'changing the nature of domestic and international politics, as well as structures of individual economies' (Findlay and O'Rourke 2007: 435; 429). According to Aldcroft, the direct cost of the war, in constant pre-war prices, was the equivalent of five times the world-wide national debt in 1914 (1977: 30).

During the war, governments across Europe came to intervene significantly in the organisation of economic activity. In Germany, public spending had accounted for only 18% of net national income in 1914. By 1917, however, it had reached a peak of 59% of gross domestic product. This left an overhang of government interference in the economy in the 1920s, a trend that was broadly similar for all European belligerents. There occurred a momentous shift in the patterns of production and consumption across Europe, most notably in the effort made to increase the productive capacity in war-related industries, such as iron, steel and shipbuilding. Much of this capacity became 'superfluous' when the conflict ended, as peacetime production failed to swiftly change in accordance with the sudden decline in demand (Feinstein et al., 1997: 22). These concerns created an argument for trade protection after the war, and many Allied industries succeeded in securing such protection.[4]

The fact that the Treaty of Versailles added to Germany's hardship is in no doubt. The principle of national self-determination was held firmly above economic considerations throughout the Paris Peace Conference. Economic relationships established during the last half century were smashed by the creation of new nation states and the redrawing of almost all borders (Aldcroft, 1977). Each new nation created its own currency, put up tariffs to protect domestic industry, and pursued independent fiscal and monetary policies (Feinstein et al., 1997). Trading constraints were evident from the start, in particular for Germany, as new patterns of trade had to be 'created in a climate of old rivalries and resentments' (Van der See & Boyst, 1989: 241). European powers now faced new competition in traditional export markets, as Latin American and Asian markets were increasingly taken over by the United States and Japan during and after the war. All these factors contributed to poor trading conditions in the post-war period, with Germany's share in particular falling from 13.1% to 7.1% (Robinson, 1944: 620).

German reparations

Reparations were just one aspect of the international financial dislocation which followed the end of the First World War. However, they were 'arguably the most political issue of the period' (Webb, 1989: 103). According to the Treaty of Versailles, the size of the reparations bill was dependent on Germany's 'capacity to pay'. After much deliberation, in May 1921, the Allies set the reparations bill at 132 billion gold marks ($33 billion) bearing 5% interest plus 1% principal repayment per annum.[5] While recent historiography has made much of the fact that the 132 billion was divided into two tranches, this debate has missed much of the point.[6] A debtor's real burden is determined not by the overall size of his or her debt, but by the method of payment.

The London Schedule set up a payment plan in which the Germans were to pay two billion gold marks in annuities in addition to roughly another billion yearly in the form of 26% of the value of their exports (Feldman, 1993: 309-310). As German net national product was 40 to 42 billion gold marks in 1921-22

[4] For example, post-war lobbying in Britain gave rise to such legislation as the Key Industries Act of 1919 and the Safeguarding of Industries Act of 1921.

[5] As reparations payments were fixed in pre-war gold marks, any future German inflation would not reduce their value.

[6] The first 50 billion gold marks were designated 'A' and 'B' bonds, to be serviced forthwith. The remaining 82 billion gold marks, however – the 'C' bonds – carried no interest, and required no payment until the 'A' and 'B' bonds were amortised in the latter half of the century. As such, recent Francophile historiography has argued that Germany's immediate burden was substantially less than first thought. Also, see Feldman (1993: 309-314).

(Webb, 1989: 76), simple arithmetic suggests that reparations demands of 3 billion per year plus an extra 1 billion in non-reparation payments (i.e. occupation costs) to the Allies brought total demands to around 10% of national product. While this was not an impossible sum to pay, it was large enough to cause severe problems with German finances.

The question of German 'capacity to pay' dominates the historiography of reparations because it stresses the transfer problem, an issue that 'bulks large in the literature of international trade theory' (Johnson, 1956: 212).[7] The transfer approach at the conference was considered the most sophisticated method to the question of German capacity, and it held the most prestige among Allied experts (Trachtenberg, 1980: 74). However, the annuities imposed were deemed by the Germans to be completely unfeasible, requiring an external surplus equivalent to 80% of 1921-22 exports (Eichengreen, 1992: 133). Was it possible to transfer such a huge sum without disrupting trade relations and exchange rates?

Allied reparations policy

In the lead up to the war, Germany ran an average annual deficit of roughly 0.7 billion gold marks (Ferguson 1998: 429). To have turned this into an average annual surplus of 3 billion gold marks would have required either a severe reduction in German consumption - which would have threatened social upheaval - or a huge increase in German exports - which would have implied an acute international conflict on interests. In a speech before the Supreme Allied Council in 1922, the German foreign minister Walter Rathenau acknowledged this, 'One possible remedy [that could allow Germany to pay] would be a reduction in consumption. But this is hardly feasible, since the middle classes and the workers live already far below their pre-war standards' (Rathenau, 1924: 362-364). The only realistic way of paying reparations, he argued, was the 'raising of output and an increase in exports. But such an increase is difficult, because other nations are opposed to the increase of imports from Germany'. Indeed, as recent Nobel Laureate Paul Krugman (2008: 10) observes, 'Economics inevitably takes place in a political context', and buoyed by nationalist fervour - the very sentiment that led to the outbreak of war in 1914 - the defenders of the London Schedule sought to justify exorbitant amounts.[8] They rationalised their demands using classical trade theory and pre-1914 economic reasoning.

The classicists contended that, provided the German government sought to defend a fixed exchange rate (they had the gold standard in mind), the very act of getting foreign exchange to pay reparations transfers would tend to raise German interest rates, causing domestic deflation and falling German prices in relation to import prices (Balderston, 2002: 27). This would tend to deflect German demand from foreign to home goods and also reduce Germany's demand for all goods by reducing money income relative to the prices of imports. German exports would increase; goods traditionally sold abroad would sell in larger quantities, and goods previously unprofitable to export would also be sold abroad. Trachtenberg notes, however, that exactly the opposite process applies to the creation of the necessary trade deficit in the creditor nations (1980: 79). The Germans could then buy the needed foreign currencies required without a continuing fall in the mark (ibid.: 64). Assuming this process worked – and it presupposed no discrimination against German exports – it would accomplish just what the advocates of reparations intended: a partial transfer of the Germans' earned purchasing power and national income to foreigners. The defenders of the London Schedule also turned toward pre-1914 economic reasoning for their argument. Among other examples, they referred to the case of Britain, which, for reasons of profit and empire, transferred a sizable 8% of national income in capital exports in the period 1911-13. The Allies argued that the balance of payments adjustment mechanism absorbed the transfer and minimised the impact on British industry and on the balance of payments (Eichengreen, 1992: 132). As a result, there was no serious impact on British living standards.

In this light, reparations annuities constituting 10% of German national income seemed reasonable. However, as Eichengreen (1992) counters, British capital exports abroad before the war had returned to London as

[7] This paper defines the transfer problem as the maximum value of goods and services that might be transferred from Germany to other nations without upsetting trade relations and exchange rates. See Pollard (1973: 259).

[8] The British 'Khaki election' of 1918 is a just one example. Lloyd George's war-time coalition government exploited the patriotic sentiment arising in the aftermath of the First World War, and secured a large victory. Also, the French position hardened following the victory of the right-wing Bloc National in the 1919 election.

foreign deposits and some in the form of export demands. It was actually these mechanisms that minimised the impact on British living standards. Neither mechanism could operate as strongly to recycle German reparations.[9] Furthermore, the British had invested abroad voluntarily 'with the option of devoting those resources to future consumption' (ibid.: 132-133). However, the war had changed the economic landscape completely, and undermined the potential trajectory of any future German trade surplus. A young John Maynard Keynes led a heterogeneous group of economists and intellectuals opposing the London Schedule. Emphasising the intractability of the transfer problem, Keynes (1971) contended that a large trade surplus was impossible. Expanding exports by 80% required a further increase in imported inputs, which actually multiplied the gross increase in exports necessary to effect the transfer (Eichengreen, 1992: 132). Keynes noted that, due to Germany's narrow tax base, even if the Germans successfully raised the amounts to pay reparations through taxation, it was unable to purchase the gold or foreign currencies needed to pay the Allies without the collapse of the mark in the money markets. Was it sensible to cripple Germany economically when so much of Europe's pre-1914 welfare had depended on German growth?

Allied trade policy

> 'Germany can only pay such huge sums by taking an even greater share of the world market than was the case before the war. Is that in our interest? Would it not be better to earn this money ourselves on these markets, instead of encouraging Germany to take them from us?'
>
> (Trachtenberg, 1980: 75)

With these words, President Wilson spoke for many in the Paris Peace Conference on 26 March 1919. They were a far cry from his previous call in the Fourteen Points for the 'removal, as far as possible, of all economic barriers and the establishment of an equality of trade conditions among all nations consenting to the peace and associating with its maintenance'. Wilsonian idealism had come to a crashing halt at the Paris Peace Conference with the art of realpolitik rapidly taking over.

It is often overlooked that, a large element of the battle over reparations was 'a struggle to assure an advantageous starting point in the post-war economic competition' (Maier, 1979: 60). In the lead up to the war, German exports were heavily concentrated in the products of industries already characterised by intense competition. These exports included iron, steel, textiles and coal. Allied delegations at the Paris Peace Conference were certainly aware of the dangers posed by German competition. As Keynes eloquently put it, he 'did not expect to see Mr Lloyd George fighting a general election on the issue of maintaining an Army to compel Germany at the point of bayonet to undercut British manufactures' (1971: 207). He argued that trade barriers were inevitable as there was no viable way of transferring the payments demanded of Germany without permitting a level of exports that would become unbearable to the recipients.

Indeed, the Allies actively discriminated against German exports and with it her only feasible means of payment. Under Articles 265-269 of the Versailles treaty, Germany was required to grant the Allies unilateral and unconditional most-favoured-nation treatment for five years, without any reciprocation by the Allies. Special transitional arrangements were prescribed for duty-free trade between Alsace-Lorraine and the now Polish districts of eastern and the new Germany (Keynes, 1971: 93-96). Belgium put extra duties on German goods, while Britain and the United States forbade the import of German dye-stuffs. A direct connection between reparations and the rise in protection can be found in the Reparation Recovery Acts, passed by the United Kingdom and France in 1921; in conjunction with the London Schedule, the legislation levied special duties of 26% on German exports with revenues credited to the German reparation account (Webb, 1989: 113). Protectionist legislation such as the Reparation Recovery Acts meant that an extra burden of the transfer would fall on Allied consumers as well as German producers. A better option would have been a surtax of 26% on imports; however, this measure would have hurt Allied export industries. Instead of offering the invisible hand, Allied governments gave a helping hand to vested interests while 'the interest of the consumer was almost constantly sacrificed to the producer' (Smith, 1995: 196).

[9] 'The basis for conjecturing that neither mechanism would operate as powerfully in the case of German reparations is that Germany was in no position to expand her exports, in response to any increase in foreign demands, beyond the expansion required to effect the initial transfer' (Eichengreen, 1992: 132).

A disparity of consequence

The barriers against German exports increased the real value of goods that Germany had to sell to get foreign exchange and increased the likelihood that it would be impossible to make the transfer. However, even as the Allies effectively took efforts to 'shackle her industrial might', they complained that Germany's effort to meet its reparations obligation was inadequate (Eichengreen, 1992: 133; 125). Thus, a disparity arose. The exogenous shock of the war had changed economic and political conditions irrevocably, encouraging the Allies to adopt autarkic and protectionist policies for trade. But by discriminating against German goods, the Allies essentially nullified their argument of classical trade theory. Since tariffs and protection distorted prices in the international market, the theoretical question of the transfer problem - what changes in prices would be needed to clear international markets in the presence of reparations - became irrelevant (ibid.: 134). In this light, the reasoning for Allied reparations policy was glaringly out of sync.

The resulting disparity in Allied trade and reason was not without consequence. A direct link can be traced to the rise in Allied protectionism and German social tension in the immediate aftermath of the war.[10] In addition, the annuities constituted a tremendous burden for German finances. Whether to finance government deficits, to buy foreign currency, or to pay deliveries in kind, paying reparations meant printing paper marks. In this sense, Keynes was right; reparations added to the inflation already existent in the German economy. There is much evidence to suggest that German inflation would have been lower in the absence of reparations and thus revenue would have been higher in real terms (ibid.: 141). This in turn would suggest that reparations had a direct role to play in the mark's depreciation and, consequently, the disastrous hyperinflation of 1922-23.[11]

Conclusion

It is here we recall Bertolt Brecht and *The Rise and Fall of the City of Mahagonny*. Beneath the rag-time and jazz, we have seen that the desperate hunt for that 'next little dollar' was a result of the disparity in post-war Allied policy. While complaining that Germany's effort to meet its reparations obligation was inadequate, the Allies effectively took efforts to 'shackle her industrial might'. In this light, the 'Alabama Song' holds further a parallel; the contrast between the upbeat rag-time and the sober message of poverty is in some ways similar to the contradiction that lay in Allied reason and trade; optimistic calculations of Germany's 'capacity to pay' stood in sharp contrast to the harsh realpolitik of Allied trade policy.

Economics inevitably takes place in a political context, especially in a 'climate of old rivalries and resentments' such as the post-war period. When one considers the London Schedule, it is evident that political considerations were held at all times over economic reasoning. By relying on classical trade theory and pre-1914 historical examples, the defenders managed to paint a thin veneer of feasibility over the London Schedule. Yet prices were intentionally distorted in the interests of Allied trade merchants, while the interests of Allied consumers and German exporters were sacrificed. Perhaps Brecht even had Adam Smith in mind when he famously quipped, 'No one can be good for long if goodness is not in demand'. Germany could not be expected to pay in good faith while the Allies actively discriminated against her exports.

Ninety years ago, in the aftermath of a global economic shock, it was Keynes who warned against economic nationalism and protection. Yet policy makers at the Paris Peace Conference discarded his argument in favour of short-term political opportunism. The consequences were disastrous. This contingency of politics upon economics is apposite given our present financial crisis. Today, we are at another crossroads in history where policy makers around the world are struggling to cope with enormous shock to the global economy. Will they succumb to political pressure and revert back to economic protectionism? Or will they now listen to Keynes? The question remains.

[10] For example, the right-wing Kapp Putsch of 1920.

[11] However, the problem is how to quantify that role, and how to evaluate it alongside other factors such as German domestic policy (i.e. money supply) and political tensions.

Bibliography

Aldcroft, D. 1977. *From Versailles to Wall Street, 1919-1929*. London: Allen Lane.

Balderston, T. 2002. *Economics and Politics in the Weimar Republic*. Cambridge: Cambridge University Press.

Braun, H. J. 1990. *The German Economy in the Twentieth Century*. London: Routledge.

Brecht, B. 1979 [1927]. 'The Rise and Fall of the City of Mahagonny' in J. Willet & R. Manheim (eds.) *Bertolt Brecht*: *Collected Plays, Volume Two, Part Three*. Suffolk: The Chaucer Press.

Eichengreen, B. 1992. *Golden fetters: The Gold Standard and the Great Depression, 1919-1939*. New York: Oxford University Press.

Feinstein, C. H. Temin P. & Toniolo G. 1997. *The European Economy between The Wars*. Oxford: Oxford University Press.

Feldman, G. 1993. *The Great Disorder*. Oxford: Oxford University Press.

Ferguson, N. 1997. 'The German Inter-War Economy: Political Choice Versus Economic Determinism' in M. Fulbrook (ed.) *German History Since 1800*. London: Arnold.

Ferguson, N. 1998. 'The Balance of Payments Question: Versailles and After' in F. Boemeke, G.D. Feldman & E.Glaser (eds.) *The Treaty of Versailles: A Reassessment After 75 Years*. Cambridge: Cambridge University Press.

Findlay, R. & O'Rourke, K. 2007. *Power and Plenty: Trade, War, and the World Economy in the Second Millennium*. Princeton: Princeton University Press.

Johnson, H. 1956. 'The Transfer Problem and Exchange Stability'. *The Journal of Political Economy* 64:3:212-225.

Keynes, J.M. 1971 [1920]. *The Collected Writings of John Maynard Keynes, Vol. 2: The Economic Consequences of the Peace*. London: Cambridge University Press.

Krugman, P. 2008. *The Return of Depression Economics and the Crisis of 2008*. London: Penguin Books.

Maier, C. 1979. 'The Truth about the Treaties?'. *The Journal of Modern History* 51:1:56-57.

Pollard S. & Holmes C. (eds.). 1973. *Documents of European Economic History, Vol. 3; The End of the Old Europe*. London: Edward Arnold.

Rathenau, W. 1973. 'Speech Before the Supreme Allied Council at Cannes, 12 January 1922' in S. Pollard & C. Holmes (eds.) *Documents of European Economic History, Vol. 3; The End of the Old Europe*. London: Edward Arnold.

Robinson, N. 1944. 'German Foreign Trade and Industry after the First World War'. *The Quarterly Journal of Economics* 58:4:615-636.

Smith. A. 1995 [1784]. *The Wealth of Nations*. Manchester: Manchester University Press.

Trachtenberg, M. 1980. *Reparation in World Politics: France and European Economic Diplomacy, 1916-1923*. Guildford: Columbia University Press.

Webb, S. 1989. *Hyperinflation and Stabilization in Weimar Germany*. Oxford: Oxford University Press.

Van der Wee, H. & Buyst, E. 1989. 'World Economic Performance Since 1870' in C.L. Holtfrerich (ed.) *Interactions in the World Economy: Perspectives from International Economic History*. Hemel Hempstead: Harvester Wheatsheaf.

DO SHARE PRICES FOLLOW A RANDOM WALK?

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Senior Sophister

Ever since it was proposed in the early 1960s, the Efficient Market Hypothesis has come to occupy a sacred position within the belief system of modern finance. In fact modern finance can trace its origins to the universal acclaim accorded to the Efficient Market Hypothesis. One of its key corollaries suggests that shares should follow what has been succinctly referred to as a 'a random walk'. In this essay, Michael Sherlock uses the techniques of econometrics to empirically test the validity of this theory. Interestingly, his results differ from the conclusions of the previous essay in this section, highlighting the equivocal nature of many answers to economics' questions.

Introduction

In 1978, Jensen (1978: 95) declared that 'there is no other proposition in economics which has more solid empirical evidence supporting it than the Efficient Market Hypothesis' (EMH). Subsequent empirical testing has led experts to question the validity of this statement. Lo and MacKinlay (1999: 52) best summarised the debate when they stated that 'even after three decades of research and literally thousands of journal articles, economists have not yet reached a consensus about whether markets, particularly financial markets are efficient or not'. This essay will outline the theoretical underpinning of this thesis and in particular how the random walk model is associated with the idea of market efficiency. The empirical approach will then be presented along with any adjustments made to it. A detailed description of the empirical results will be provided to aid analysis. Finally, the results will be discussed and conclusions made based on the findings.

Background and literature review

The EMH concerns prices and information: it contends that prices reflect all known information and that the only driver of changing prices is 'news', i.e. new information (Cuthbertson and Nitzsche, 2001). This implies that stock returns are entirely unpredictable based on past returns, as past information is already incorporated into prices. Therefore, the only determinant of price movements is new information and as this is unforecastable, and hence unpredictable, share prices themselves are unpredictable and their behaviour is said to exhibit a random walk (Shleifer, 1999). Fama's early research supported this. He found that on any given day the price of a stock was just as likely to rise after a previous day's increase as after a previous day's decline (Fama, 1965).

A closely related concept and one which will be used to empirically test this contention is that of volatility, which refers to patterns of price movements. Volatility itself can be interpreted as an indicator of efficiency, being a measure of the speed at which securities are able to incorporate new information (Frewen, 2004). Essentially, if markets are efficient and prices unpredictable, price movements are driven by news (as shares adjust to fundamentals). Such price adjustments should give rise to normal volatility patterns. Once volatility changes over time in a predictable fashion -, i.e. there is a statistically significant relationship between volatility in one period and volatility in the next - the pattern of volatility clusters can be examined to determine whether excess or normal volatility occurs (Koop, 2005). If markets are not efficient, there is excess volatility which reflects the fact that prices may deviate from fundamentals for long periods (Cuthbertson and Nitzsche, 2001). Early volatility studies pioneered by Shiller (1981) provided statistical evidence against the Efficient Market Hypothesis by finding excess volatility. Shillers' results suggested that stock market prices are far more volatile than could be justified by the incorporation of news alone. However Cuthbertson and Nitzsche (2001) note that such variance-bound tests are plagued by statistical problems (for example, the peso problem). Consequently, a different methodology (based on Koop's approach) will be tested in this project.

Empirical Approach

To model random walk behaviour using financial time series, the following AR(1) model was used, as suggested by Koop (2005):

$$\Delta y^2_t = \alpha + \Phi \Delta y^2_{t-I} + e_t$$

The dependent variable is volatility at time t and the independent variable is the volatility lagged one period. α is the drift term and e_t is the error term. The drift term captures the fact that in reality shares generally display a slight upward trend over time; the inclusion of α accounts for this observation. The error term models the unexpected events that continually influence prices (and which are now being controlled for). Assuming rational expectations and orthogonality conditions, this implies that the error term is independent and identically distributed. This model, known as the random walk with drift model, implies that shares on average increase by α per period but are otherwise unpredictable. Note this regression equation is a modified model of the standard random walk with drift model used in financial time series analysis ($\Delta Y_t = \alpha + e_t$).

Certain adjustments were necessary to capture the relationship under examination. Incorporating differenced variables eliminates nonstationarity, thus avoiding the generation of a spurious regression (Gujarati, 2002). Because squaring amplifies changes, allowing one to detect patterns more easily, this was incorporated into the model. Cumulatively, this means that Δy^2_t is the estimate of volatility at time t . Overall, specifying the model as above allowed one to test for volatility clusters and thereby provided a means to test the random walk hypothesis.

Description of Data Set

Autoregressive models such as that specified above essentially model clustering. This model as Koop (2005: 182) points out 'has volatility in one period depending on volatility in a previous period'. Once a statistically significant relationship is found among clusters, one can reliably examine the pattern of clusters to determine whether this data set exhibits excess volatility. The data set consists of the stock price of a company collected on a weekly basis for a four year period, giving 208 observations.[1] The data has been logged for ease of use and manipulated according to the following algebraic operations to yield the chosen measure of volatility. The stock price data was differenced, deviations from the mean were taken and the result squared. In mathematical terms:

$\Delta y_t = \Delta Y_t - \Delta \hat{Y}$ where $\Delta \hat{Y} = \sum \Delta Y_t / N$

This procedure was necessary for a variety of reasons. Firstly, an unadjusted measure of variance could not be used as the measure of volatility, since a variable that would model *the change* in the volatility of an asset over time is needed. Specifying the model in this form also had certain statistical benefits, as the dependent variable was regressed against a lagged deviation from its mean as opposed to simply a pure lag of itself. According to Koop (2005), this allows the coefficient of correlation to be estimated using standard statistical tests, i.e. OLS (otherwise a tau(τ) test statistic would have been required to estimate the coefficient). Likewise, the fact that a differencing procedure was involved took care of the problem of autocorrelation, as differenced time-series can be assumed not to be autocorrelated (Gujarati, 2002). The econometric software package Microfit was used to carry out all the necessary adjustments and subsequent statistical tests.

[1] Data set source: www.wileyeurope.com/go/Koopdata2ed.

Empirical Results

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
INTER:	.2416E-5	.1486E-5	1.6259[.106]
VOLLAG :	.73618	.047368	15.5419[.000]

R-Squared: .54214 R-Bar-Squared: .53990

DW-statistic: 1.9471

Serial Correlation*CHSQ(1)= .26308[.608]*F(1, 203)= .25958[.611]*

Heteroscedasticity*CHSQ(1)= 84.5770[.000]*F(1, 204)= 142.0959[.000]*

White's Heteroscedasticity adjusted S.E.'s:
INTER T-Ratio[Prob]= 1.7206[.087], VOLLAG= 2.8309[.005]

ARCH F(1,202)= 245.5902[.000]

Unit root tests for residuals:

DF: -13.8764, ADF(1): -7.8959

95% critical value for the Dickey-Fuller statistic = -3.3672

AR(2):
NVOLLAG Coeff (.22914), T-Ratio[Prob]: 3.3512[.001]
R-Squared: .089354.

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Regression: VOL = .2416E-5 + .73618VOLLAG + e_t

Note: VOL= Δy^2_t and VOLLAG= Δy^2_{t-I}

Comment

The value 0.73618 is the regression coefficient and tells us the percentage change (the original data was logged) in the dependent variable from a 1% increase in the independent variable. The magnitude of both t and p statistics confirm that it is statistically significant at the 5% significance level. This can be interpreted as meaning that a statistically significant relationship exists, i.e. a causal relationship exists, in which this week's volatility is dependent on last week's volatility. The positive value is indicative of clustering. In addition, an R^2 value of 0.54 suggests that 54% of the variation in this week's volatility can be explained by last week's volatility. The interval term is statistically

insignificant; as this does not affect the primary contention of the study, it can be ignored.

Although heteroscedasticity is not usually a statistical problem with time series data, a test of heteroscedasticity was automatically included in this regression. This showed the presence of heteroscedasticity. In fact, this was to be expected as the underlying model is an autoregressive conditional heteroscedasticity model (this was confirmed by running an ARCH test - see table). This means that the interpretative value of the initial test statistics was not compromised. A heteroscedasticity adjusted standard error test was performed which confirmed the validity of the OLS results (both t and p values confirmed statistical significance at 5% level). Similarly the problem of autocorrelation was taken care of by subjecting all the data to a differencing procedure (as mentioned earlier). The D-W value reported (1.9471) was close to 2 and would normally be interpreted as confirmation of no autocorrelation. But in this case no interpretative weight can be attached to the value as an autoregressive process was involved; this violates one of the key conditions of the test (Gujarati, 2002).

As Microfit provides the facility to test for unit roots, this test was run to confirm the assumption of stationarity and no autocorrelation. Since both the Dickey-Fuller test and Augmented Dickey-Fuller test statistics were more negative than the provided critical value, the unit root hypothesis was rejected in each case; the unadjusted test confirming stationarity and the augmented test confirming no autocorrelation. Cumulatively, all the statistical evidence can be interpreted as confirming the presence of volatility clusters, i.e. one can be reasonably sure that periods of high volatility are followed by periods of high volatility (and similarly for periods of low volatility).

Is this confirmed graphically? Given that a statistically significant relationship exists, one can examine the graph for clustering; upon doing so it becomes apparent that clustering patterns are evident i.e. periods of high volatility are followed by periods of high volatility and periods of low (normal) volatility are followed by periods of low volatility. What is of interest in this study is the pattern of occurrence. If it is assumed that periods of high volatility can be interpreted as excess and low volatility as normal, there are periods of excess volatility in weeks 90-97 and, to a lesser extent ,weeks 4-8 and 101-107. But in general for most of the period under examination, normal volatility prevails (as Figure 1 indicates).

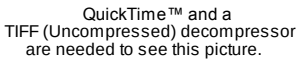

Figure 1: Volatility Clustering

Conclusion

The establishment of a statistically significant relationship between regressor and regressand demonstrated the presence of volatility clusters in the data set. Examining this diagrammatically allows one to conclude that in general stock prices seem to adhere to the Efficient Market Hypothesis and exhibit random behaviour, as the general pattern exhibited was one of normal volatility. Although there were one or two periods of excess volatility, these were rare occurrences and were generally time-limited. However, it should be noted that the Efficient Market Hypothesis is robust enough to accommodate such anomalies. Indeed, many proponents argue that limited periods of excess volatility are essentially rational and are more accurately described as high volatility (Scheifer, 1999). At certain periods in the business cycle, news may be highly variable, causing a significant deviation from normal levels as prices and fundamentals efficiently adjust. This may explain the patterns observed; the fact that they are time-limited suggests this is a plausible explanation. As the dates of the data were not supplied nor the type of business the company was in, it is impossible to speculate as to what macroeconomic event could have been responsible.

Although Schiller's volatility study provides evidence against the Efficient Market Hypothesis, this does not invalididate the findings of this project, as a different methodology was used. A possible extension could be to use a variance bound test, as Schiller did, to test for excess volatility and compare results. As dividend data was not available in the data set this was not empirically possible. Another possible extension could be to test successive lags to see if inclusion improves on initial results. This was tested by running an AR(2) regression. Although statistically significant, inclusion did not improve the model's explanatory power.

To conclude: based on the methodology used, the results of this project seem to suggest that markets are efficient and stock prices do follow a random walk.

Bibliography

Cuthbertson, K. & Nitzsche, D. 2001. *Investments: Spot and Derivatives Markets*. Chichester: Wiley.

Fama, E. 1965. 'The Behaviour of Stock Market Prices'. *Journal of Business* 38:4:34-105.

Frewen, R. 2004. 'Are Stock Markets Excessively Volatile?'. *Student Economic Review* 18:261-273.

Gujarati, D.N. 2002. *Basic Econometrics* (4th ed.). London: McGraw-Hill.

Jensen, M.C. 1978. 'Some Anomalous Evidence Regarding Market Efficiency'. *Journal of Financial Economics* 6:2:95-101.

Koop, G. 2005. *Analysis of Economic Data* (2nd ed.). Chichester: Wiley.

Lo, A.W. & MacKinlay, A.C. 1999. *A Non-random Walk Down Wall Street*. Princeton: Princeton University Press.

Mandelbrot, B. 1966. 'Forecasts of Future Prices, Unbiased Markets, and "Martingale" Models'. *Journal of Business* 39:1:242-255.

Merton, R. 1987. 'On the Current State of the Stock Market Rationality Hypothesis' in R. Dornbusch, S. Fischer, and J. Bossons (eds.) *Macroeconomics and Finance: Essays in Honor of Franco Modigliani*. Cambridge: MIT Press.

Samuelson, P. 1965. 'Proof that Properly Anticipated Prices Fluctuate Randomly'. *Industrial Management Review* 6:2:41-49.

Shiller, R.J. 1981. 'Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?'. *American Economic Review* 71:3:421-436.

Shleifer, A. 1999. *Inefficient Markets: an Introduction to Behavioral Finance*. Oxford: Oxford University Press.

THE EURO AT TEN: ITS EFFECT ON INTRA-EUROZONE TRADE

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Senior Sophister

On the 1st of January 1999, the euro was introduced in eleven EU states, as part of a wider aim to promote economic integration, growth and stability within the EU. In this essay, Mark Havel looks at its effect on trade within the Eurozone. Despite high expectations from some quarters, the currency has not led to dramatic increases in intra-Eurozone trade. Notwithstanding this, it can still be seen as a successful monetary policy endeavour, and even more so when considering the current economic climate.

Introduction: the genesis of the single currency

The euro is now ten years old. After a decade, what has been the effect of the euro on trade between the Eurozone countries? The Treaty of Rome laid down only minor provisions for monetary cooperation. The establishment of the internal market led the Community to revive the objective of monetary union. The Hanover European Council in 1988 stated that 'in adopting the Single Act, the Member States of the Community confirmed the objective of progressive realisation of economic and monetary union'. In April 1989, a report by the Delors Committee envisaged the achievement of European Monetary Union (EMU) in three stages: the first stage, between June 1990 and January 1992, was to step up cooperation between central banks; the second stage was the establishment of a European System of Central Banks (ESCB) and the progressive transfer of decision-making on monetary policy to supranational institutions; and in the final stage, the national currencies would have their exchange rates irrevocably fixed and would be replaced by the European single currency. At the Madrid European Council in 1989, the Delors Plan was adopted as a basis for moving toward monetary union. With minor alterations made, this plan went ahead, and on the 1st of January 1999, eleven countries joined the EMU. Greece subsequently joined in 2001, and in 2002 the euro currency came into circulation in twelve countries (European Parliament Fact Sheet, 2001).

Effect of the euro on intra-Eurozone trade

Before looking at the euro's effect on intra-Eurozone trade, it should be noted that the euro was introduced mainly to achieve a higher level of economic integration within the common market and promote economic growth and stability. The anticipated trade effects were small.

Some early work by Andrew Rose (2000) predicted that having a common currency would have a large effect on trade between participating countries, increasing trade by a factor of three. His calculations were made using the gravity model, which states that the flow of trade between a pair of countries is proportional to their economic mass and inversely proportional to the distance between them. He showed that even after taking into account other factors such as output, size, distance between other countries and other controls, two countries that share the same currency trade

substantially more than countries with their own separate currencies. The reasons for such a large increase may be due to the effect of 'home bias' in trade. McCallum (1995) quantifies the size of this 'home bias' at more than twenty to one. Part of this home bias may come from the fact that a single currency is used domestically, a circumstance the monetary union hopes to recreate.

Yet the general consensus is that trade among Eurozone members has increased by far less than had been estimated by Rose. Bun and Klaassen (2002) estimate a total cumulative increase in intra-EMU exports of 3.9% in 1999, 6.9% in 2000, 9.6% in 2001 and 37.8% in the long run. These effects are significant and show that from an economic point of view the euro has a positive impact on trade. This may be relevant in the policy debates on whether to join the euro in Denmark, Sweden and the U.K., and for the negotiations on the accession of central and eastern European countries to the EU and EMU. The evidence shows that in the ten years that the euro has been in use, the increase in trade has been 10-15%, much less than the tripling effect estimated by Rose. What are the reasons that trade did not increase by a factor of three?

One of the reasons may be language. Evidence has shown that sharing a land border, a language, or a regional trade agreement increases trade by economically and statistically significant amounts. While the euro area has two of these traits, it does not have a common language, which might act to restrict trade between Eurozone nations.

Another reason is time. At ten years old, the euro is still a new currency and there could be a time lag between its introduction and full effects. Other important aspects, other than a common currency, that exist within nations but not between nations that affect trade are: common cultural norms, a common legal system, and a common history. Because these have not been harmonised to the degree that the financial markets have, they could impede the euro's full effects.

One of the criticisms of the euro's effect on trade is that its benefits have not just been to those who joined the single currency. Through the EU single market, euro 'outsiders' are able to participate in the gains of the euro, especially if they sustain stable exchange rates with the euro (Dyson, 2008). This acts as an incentive to stay out of the euro, as a country can realise the gains from the single currency while still having control over monetary policy.

A second criticism of the euro is that it did not boost the growth rates of the Eurozone to economically or historically high levels. While trade between the Eurozone countries did increase, the growth rates of the Eurozone, seen in the table below, lagged behind the US and non-Eurozone EU members.

Macroeconomic performance indicators

		Period averages					
		Euro area		Denmark, Sweden, UK		United States	
		1989-1998	1999-2008	1989-1998	1999-2008	1989-1998	1999-2008
Real GDP	% rate of change	2,2	2,1	2,0	2,7	3,0	2,6
Real GDP per capita	% rate of change	1,9	1,6	1,7	2,2	1,8	1,6
Real GDP per capita	index, US = 100	73	72	74	78	100	100
Employment	% rate of change	0,6	1,3	0,1	0,9	1,5	1,0
Labour productivity	% rate of change	1,6	0,8	1,9	1,8	1,5	1,6
Unemployment	% of labour force	9,3	8,3	7,9	5,2	5,8	5.0
Inflation	%	3,3	2,2	3,4	1,7	3,3	2,8
Fiscal balance	% of GDP	-4,3	-1,7	-3,6	-0,9	-3,3	-2,5
Gross public debt	% of GDP	68,6	68,6	48,7	43,0	67,8	60,7
Long term interest rate	%	8,1	4,4	8,6	4,9	7,1	4.6
Real long term interest rate	%	4,7	2,4	4,2	3,3	4,3	2,4

Source : European Commission, OECD

Figure 1

Another criticism is that the trade effects, at least the beneficial trade effects, are greatest at the 'core'. The 'core' refers to Germany, France, Austria, Belgium and the Netherlands. These countries were, and are, the most synchronised, meaning they had the most to gain and the least to lose when embarking on a monetary union. Countries on the periphery that were less synchronised had less to gain. Future entrants could gain more from membership of the currency union than existing members, for example the Czech Republic is more synchronised to Germany and the core than an outlier like Ireland. As the graph below shows, Germany's trade surplus has risen a great deal since the launch of the euro; this strengthens the claim that the main beneficiaries of the monetary union are the 'core' countries.

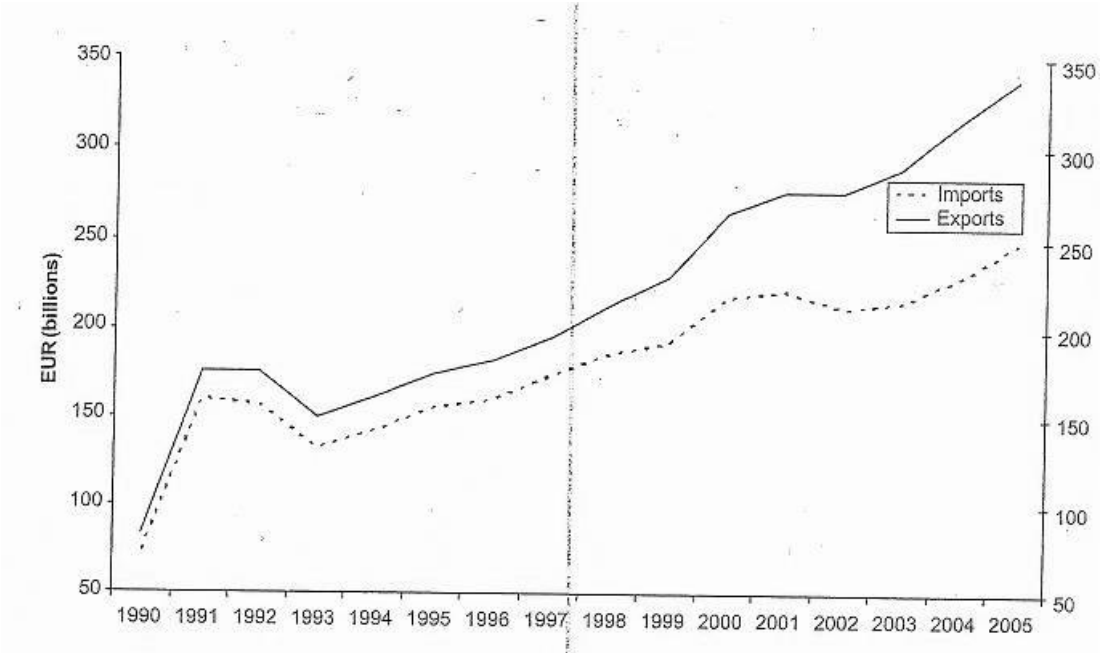
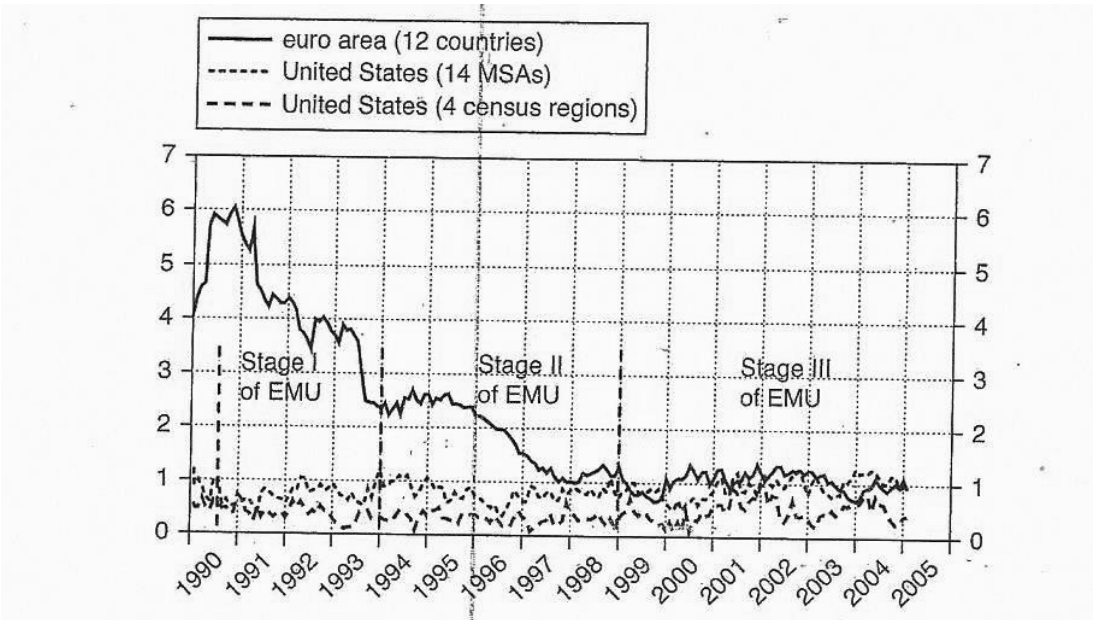


Figure 1.9 Germany pushing Euroland apart *(Germany's soaring trade imbalance with its Euroland partners)*

Source: Reuters.

Figure 2

It should be noted though that the 'core' has had positive effects on the other members too. Or, rather, Germany has had positive effects on other members, lowering interest rates to German levels, lowering the cost of capital to German levels, and, as in the graph below, lowering inflation levels to the German level. In this sense, it could be worthwhile for countries to join the monetary union in order to import lower German inflation levels.



Sources: Eurostat, US Bureau of Labor Statistics and ECB calculations.

[1] Data up to February 2005.

Figure 17 Dispersion of annual inflation in the euro area, fourteen US metropolitan statistical areas (MSAs) and the four US census regions[1]

Figure 3

Although the gains of a trebling in trade did not materialise, the euro should not be seen as a failure. The gains in trade that occur are noteworthy on their own accord. If Andrew Rose had predicted gains of 15%, as has occurred, the euro would be hailed as a success. Intra-area trade flows now account for one third of the area's GDP, up from one quarter ten years ago. The euro also had the effect of reducing the capital costs to firms by lowering interest rates toward the German level. The gains in trade that have occurred can be attributed to a few variables. The removal of exchange rate risk is one such variable, although its effect was probably minimal. Lower transaction costs is another, as currencies no longer had to be changed, for which there is a cost, and insurance against exchange rate risk no longer had to be taken out. Price and cost transparency as a result of a single currency can also be credited with increasing trade.

Although the euro has been criticised for not exclusively favouring Eurozone members in terms of trade, the graph below shows that intra-Eurozone trade has increased and trade with EU non-euro users has declined since the euro's inception.

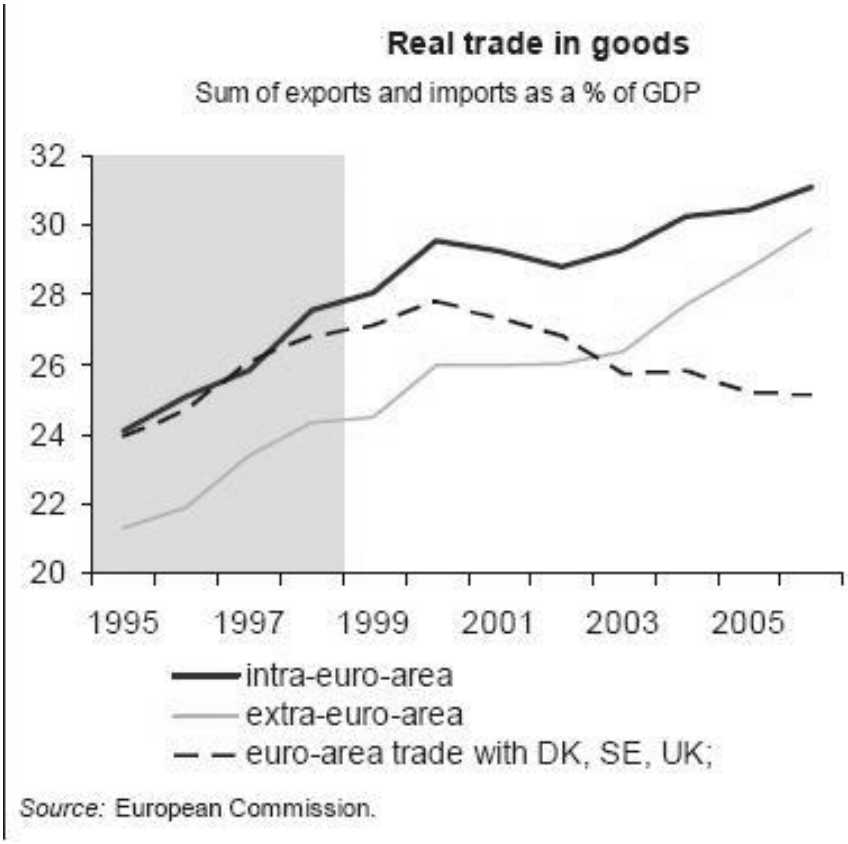
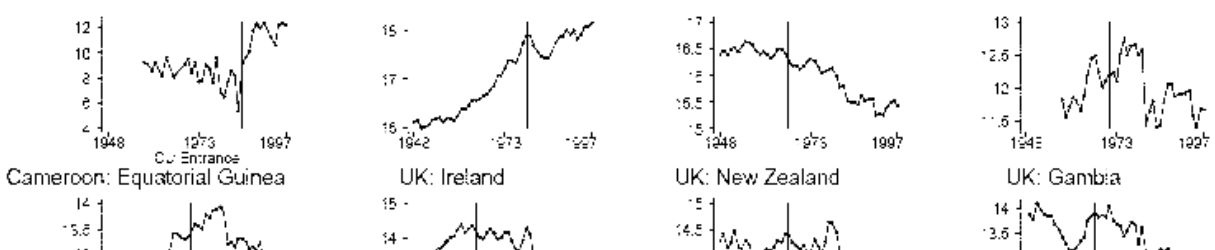


Figure 4

Extra-Eurozone trade in goods has risen faster than intra-Eurozone trade, but this is because of the rapidly emerging economies of China and India, from which there has been an increased demand for European exports. Importantly, the increase in trade flows between Eurozone countries has not been at the expense of trade with non-Eurozone countries, pointing to a genuine trade creation effect, which is supported by the findings of Nitsch and Pisu (2008).

Did the euro cause trade growth?

Another problem is whether the trade growth can actually be attributable to the single currency, or whether it would it have occurred regardless. Berger and Nitsch (2008) argue that the increase in trade within the Eurozone is simply a continuation of a long-run trend, probably linked to a broader set of EU economic integration policies. Of course, it is impossible to know for sure what the correct answer is. However, it is feasible to view the effects of leaving a currency union, and this can be used as a measure against which we can view the success of the monetary union. The following graphs from Glick and Rose show the impact of leaving a currency union on trade.



It is evident that in all but a few cases that leaving a currency union has a negative effect on trade with the former partner. Work done by Thom and Walsh (2002) focused on the dissolution of the currency union between Ireland and the UK in 1979, their results show that leaving the currency union had little effect on trade, explaining the initial dip as part of a business cycle. But from the other evidence compiled by Glick and Rose it seems obvious that the conclusions of Thom and Walsh cannot be generalised beyond the Irish–British case. Glick and Rose found that the exiting of a currency union has a bigger effect on trade than entering into one, so the graphs above do not offer a perfect counter factual to monetary union, but can be interpreted to show that when in a currency union, countries do trade more with each other. Although it should be noted that in the countries used for the study, all were small, poor, or both, so restraint should be used when applying the results to the EMU.

Taking a different approach, Nitsch and Pisu (2008) examined the trading activities of Belgian firms, to find out what effect the euro has had at the micro level. They found that the euro has raised the propensity of firms to export to countries in the euro area. Also, they found that the euro has increased the number of products that exporters ship to the euro area. This shows that the euro has resulted in trade creation rather than trade deflection.

Another area, in which far less work has been done, is the effect of the euro on trade in financial assets. The euro's impact on trade in financial assets should be of interest because the euro may more directly affect transaction costs on financial markets than on goods markets, as it can be considered a direct engine of financial integration. Also, financial integration should generate gains in terms of allocation efficiency and risk diversification (Coeurdacier and Martin, 2007). The latter point is all the more important in the Eurozone where asymmetric shocks cannot be tackled using

monetary policy. Coeurdacier and Martin (2007) estimate that the transaction costs to buy assets from the Eurozone are lower by around 17% for equity and 14% for bonds. This applies to countries that are in and outside of the Eurozone. In addition to these effects, the countries inside the Eurozone benefit by an extra 10% for equities and 17% for bonds. So for a country inside the Eurozone, the transaction cost for the cross-border purchase of a stock is lower by 27% and by 31% for a bond. The share of equity held by Eurozone members in other Eurozone countries has risen from 20% in 1999 to 40% in 2008.

The euro during the recession

The advantages of euro membership became obvious when the current economic crisis increased in intensity. Capital drained from currencies that investors saw as risky. That included countries such as Iceland, with bloated financial industries, as well as some eastern European states with current account deficits, large public borrowing or both. Euro area currencies with similar faults have been spared the currency crisis that plagued others. Ireland's guarantee of bank deposits and debt would seem unrealistic if it still managed its own currency.

Outside the Eurozone things don't look as good. Some people even have doubts about the wisdom of holding the British pound. Britain can be viewed as Ireland on a larger scale, but without Ireland's lifeline: its membership of a large and liquid currency pool. Denmark had to raise interest rates last October to keep its currency peg with the euro. Raising interest rates at this time is not a desirable option. The lessons of the crisis have not been lost on European countries that have yet to join. Even though joining can be a lengthy process, countries are aware that the next recession is only a boom away, and euro membership could prove worthwhile.

There are downsides in being in the Eurozone during a recession. When a country's wage costs rise too quickly, it can no longer recover competitiveness through a lower exchange rate. This is a concern for some countries because wages have become dangerously inflated. Portugal had a 27% increase in unit labour costs between 1999 and 2007, Greece a 28% increase, and Ireland a 33% increase; these are all well above the euro area average of 14% (OECD, 2008). The old remedy of a lower exchange rate is no longer available. In 1992, the last time there was a currency market crisis in Europe, both Britain and Italy were forced to devalue their currencies against other EU nations. Such an option is not available today, at least not to Italy. Nor is it an option to leave the euro, default on your euro debt and devalue. As soon as a Eurozone country started preparations for leaving the euro, a bank run would ensue, as people would seek to make an arbitrage gain once devaluation occurs. Borrowing costs would surely rise as well, as is the case for countries that have in the past defaulted.

2008 saw the Eurozone hit by an asymmetric shock, as different countries in the zone experienced different problems, but the monetary union emerged intact. 2009 is likely to see a symmetric shock, as Eurozone countries all deal with the same problems of GDP contraction and rising unemployment. This means that the ECB will react in a manner that is likely to suit all Eurozone countries, namely, cutting interest rates. Given that the euro survived the asymmetric shocks of 2008 its immediate future

seems secure.

Conclusion

The euro is a one-of-a-kind concept. Never before has a currency changeover like it taken place. Therefore there is no yardstick against which to measure its success. The fact that the euro has survived its first ten years should be enough to deem it a success. And while not fully conclusive, most commentators believe it to have had a positive impact on intra-Eurozone trade. Trade between Eurozone members has increased 10-15% since its inception, and at least some of this must be attributed to the monetary union.

Bibliography

Bun, M. & Klaassen, F. 2002. 'Has the Euro increased trade?'. Retrieved from the Tinbergen Institute: http://www.tinbergen.nl/discussionpapers/02108.pdf

Coeurdacier, N. & Martin, P. 2007. 'The euro stimulates Eurozone financial asset trade.' Retrieved from VOX: http://www.voxeu.org/index.php?q=node/648

Dyson, K. 2008. *The Euro at 10*. Oxford: Oxford University Press.

The Economist. 3rd January 2009. 'Demonstrably durable'.

European Commission. 2008. 'EMU@10. Success and challenges after ten years of economic and monetary union.' Retrieved from the European Commission: http://ec.europa.eu/economy_finance/publications/publication12682_en.pdf

European Parliament Fact Sheets. 2001. '5.1.0. The historical development of monetary integration'. Retrieved from the European Parliament: http://www.europarl.eu.int/factsheets/5_1_0_en.htm

Frankel, J. 2008. 'The Euro at ten: Why do effects on trade between members appear smaller than historical estimates among smaller countries.' Retrieved from VOX: http://www.voxeu.org/index.php?q=node/2736

Frankel, J. & Romer, D. 1999. 'Does trade cause growth?'. *American Economic Review* 89: 3: 379-399.

Glick, R. & Rose, A. 2002. 'Does a currency union affect trade? The time series evidence.' *European Economic Review* 46: 6: 1125-1151.

McCallum, J.T. 1995. 'National Borders Matter: Canada-U.S. Regional Trade Patterns'. *American Economic Review* 85: 615-623.

Nitsch, V. & Pisu, M. 2008. 'The Euro and trade: New evidence'. Retrieved from

VOX: http://www.voxeu.org/index.php?q=node/1400

OECD Unit Labour Cost Index (seasonally adjusted). Q1 2008. Retrieved from the OECD's Statistics Portal : http://stats.oecd.org/WBOS/Index.aspx?DatasetCode=ULC_QUA

Rose, A. 2000. 'One Money, One Market: the effect of common currencies on trade.' *Economic Policy* 15: 30: 9-48.

Thom, R., & Walsh, B. 2002, 'The Effect of a Common Currency on Trade: Ireland Before and After the Sterling Link'. *European Economic Review* 46: 6: 1111-1123.

ECONOMIC DIP, DECLINE OR DOWNTURN? AN EXAMINATION OF THE DEFINITION OF RECESSION

EMMA O'DONOGHUE

Senior Sophister

'The point is that all important events in the real world - whether admirable or monstrous - always have their prologue in the realm of words'. This observation by Vaclav Havel seems especially appropriate when reading this essay. It is currently impossible to escape talk of the 'R-word' in academic circles, the government and the media. In this essay, Emma O'Donoghue goes beneath all the talk and examines the very definition of recession. Her analysis suggests that the current definition needs revision, and she explores other possible interpretations. She argues that an appropriate meaning of the word is necessary to combat this economic phenomenon's unfortunate consequences.

Introduction

'Due to cost-cutting, the light at the end of the tunnel has been turned off.'
- Anonymous.

The world economy is currently in the depths of a recession, a fact which has been debated, denied, and glumly accepted. Recession is a word that appeared in many a newspaper's and economic expert's vocabulary during the deepening financial crisis at the end of last summer, and evokes in all of us an intuitive idea about what it means for the economy. It is a necessary component of the business cycle, but the word itself seems to represent so much more than that. Yet it is interesting to note that despite all the talk of recession, there is not yet a consensus on how to measure one.

What constitutes a recession or a depression? There is an old joke among economists that has been revived recently: when your neighbour loses his job, it is an economic downturn; when you lose your job, it is a recession; but when an economist loses his job, it becomes a depression. This essay will examine the definition of a recession, and the current academic debate around the features of these definitions. It will seek to argue that the traditional 'negative GDP' measurement has become inadequate, and highlight the suggested alternatives and their various benefits and drawbacks.

Hands up who knows what a recession is?

Since the 1970s, it has been generally accepted that a recession is a period of two quarters of negative GDP growth.[1] Under this definition, Ireland was announced to be in recession in June 2008 following a contraction of 0.3% in the first quarter of 2008, and a 0.5% contraction

[1] 'GDP – gross domestic product – combines in a single figure the total market value of all final goods and services produced within a country's economic territory during a given period. It is the most frequently used indicator of market activity and the change in GDP over time is the principal indicator of economic growth' (Wesselink et al., 2007).

in the second; and the UK was declared to be in recession in January 2009 (see Figure 1). The idea behind two consecutive quarters is supposed to ensure that statistical aberrations or one-time events cannot create a recession; for a recession to occur, the real economy (production and consumption of goods and services) must decline. However, this definition is becoming increasingly unpopular due to several identified issues. *The Economist* recently published an article advocating the need to fundamentally redefine the term 'recession.' In fact, the definition of two negative quarters came about only as a result of a 1974 article written by Julius Shiskin, in which he included a list of factors for spotting a recession. For some reason, the particular idea of two negative quarters of GDP growth was seized upon and became the standard norm, but it is simply too narrow a rule.

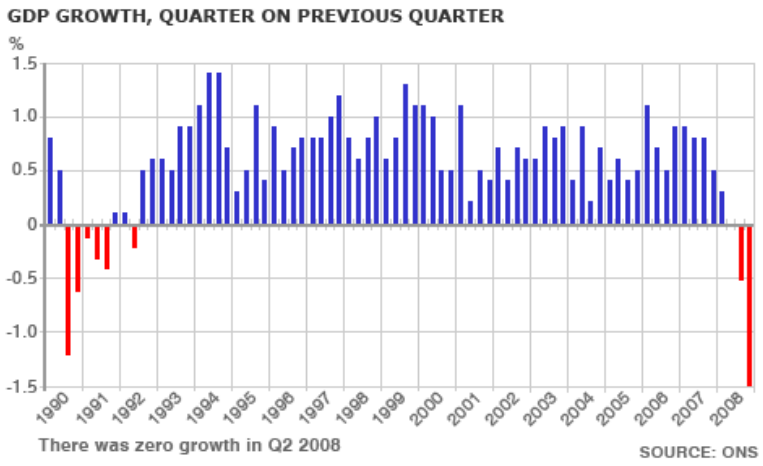


Figure 1: GDP growth in UK

Firstly, the definition of recession used above fails to take account of factors *other* than GDP. It has long been recognised that GDP is a somewhat crude measure of economic well-being or social welfare, and its exclusion of various factors which impact aggregate economic activity is well documented (Harding and Pagan, 1999). Such factors include employment, distribution of income, non-market goods etc. It is argued their inclusion is unnecessary as they will conform to trend over time; however, the speed of events during the financial crisis of 2008 would surely argue against the wisdom of such an assumption. 'Whilst the additional measures may be expected to show similar patterns to output over the long term, in particular macroeconomic episodes their time paths over the short term can be sufficiently different from measured GDP as to be of material importance to the task of properly and precisely dating the peaks and troughs in the business cycle' (Layton and Banerji, 2003: 1790).

Furthermore, the accepted definition would have failed to recognise the 2001 recession in America, as it never had two consecutive quarters of declining GDP, though it was preceded by two quarters of alternating decline and weak growth (revised figures later revealed *three* consecutive quarters of negative GDP). This is also true of the severe recession experienced in Japan during the 1970s. Thus, the definition of two consecutive quarters of falling GDP seems absurd. In a very practical application, if country A grows by 3% in one quarter but then declines by 0.25% in the two following quarters, it is deemed to be in recession. But if country B contracts by 2%, grows by 0.5%, then contracts again by 2%, it essentially escapes a recession, despite the fact that B's economy is fundamentally weaker. 'To use such a rule

blindly to conclude that such a country was not in recession would be not only patently silly but also quite dangerous…if it meant that much needed policy changes were postponed for many months or not even implemented at all' (Layton and Banerji, 2003: 1792).

Problems with the GDP measurement were highlighted in the case of the US last year. Despite an unemployment rate that was rising since 2007 and other economic indicators of recession (such as a stagnant GDP per head growth), the second quarter of 2008 actually saw the US's GDP grow at an annualised rate of 3.3%. But GDP far from represents an economic certainty. 'The first observation for a given month or quarter is almost never the final word on what happened' (McKelvey, 2008:2). Later revisions mean pluses can easily become minuses, and vice versa. GDP is argued to be valuable in defining recession as it is a coincident indicator, but the fact the GDP data is subject to constant revisions argues against this, and offers the risk of policymakers having more faith in the economy than they rightly should.

There is a suggestion that recession starts when there are several consecutive quarters of slowing (but still positive) growth. Other economists argue that *real monthly GDP* measures would be the ideal measure of economic fluctuations, and that it is only because of the absence of such an index that we need to look at alternatives.[2] However, monthly GDP is likely to be subject to even more revisions than quarterly GDP would be and is unlikely to truly present a credible short-term forecast.

Recognising Recession: Alternative Options

So what alternatives are on offer as indicators of economic status? The Business Cycle Dating Committee at the National Bureau of Economic Research (NBER) provides a different method.[3] They look at the level of business activity in the economy, taking into account factors such as employment, industrial production etc. In the Eurozone, the Centre for Economic Policy Research (CEPR) sponsors a panel called the Euro Area Business Cycle Dating Committee. The CEPR broadly follows the NBER approach, except that the European committee dates in terms of quarters rather than of months.

The NBER defines a recession more broadly as 'a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP growth, real personal income, employment, industrial production, and wholesale-retail sales' (NBER, 2003:1). The use of this broader definition means a variety of factors are considered to enable an insight into the economic health of a nation. It also means it is possible to examine the 'depth' of a recession – for example, the 2001 recession was considered 'shallow'.[4] A further benefit is that they also make use of figures which are much less likely to be revised at later dates.

While the NBER's approach is advantageous in that it uses a broader array of indicators than just real GDP, it is not without problems. Again, defining recession as an absolute downturn in economic activity appears too simplistic. 'Suppose country A has a long-term potential

[2] 'We could define the *ideal* measure of aggregate economic activity as monthly real GDP… The ideal measure of monthly real GDP could also be used to provide the basis for identifying reference cycle chronologies and hence, phases of the business cycle' (Boehm and Summers, 1999: 13-14).

[3] Perhaps significantly, the NBER is a private, non-partisan, not-for-profit institution established in 1920.

[4] 'The 2001 recession lasted eight months, which is somewhat less than the average duration of recessions since WWII. The post-war average, excluding the 2001 recession, is eleven months' (NBER, 2003: 1).

(trend) growth rate of 3% and country B one of only 1.5%, due to slower labour-force growth. Annual GDP growth of 2% will cause unemployment to rise in country A (making it feel like a recession), but to fall in country B. Likewise, if faster productivity growth pushes up a country's trend rate of growth, as it has in America since the mid-1990s, an economic downturn is less likely to cause an absolute drop in output' (The Economist, 2008a).

Additionally, waiting for the data tends to take some time. As a result, most recessions have not been declared by NBER until at least five months after they have ended, with some recessions declared eighteen months after they have started. The declaration that the recent peak of industrial output was in December 2007 did not come until December 2008: 'The committee determined that a peak in economic activity occurred in the U.S economy in December 2007. The peak marks the end of the expansion that began in November 2001 and the beginning of a recession' (NBER, 2008). Furthermore, despite the broadness of the factors they look at, the NBER have never announced a recession without at least one quarter of negative GDP growth – seemingly indicating GDP does play a large role in defining recessions no matter what other indicators are included.

A further alternative that has been suggested for measuring recessions is the use of unemployment figures. The one marker that seems to be a constant in most recessions is unemployment: rising unemployment generally indicates that growth has fallen below potential. To most people, when unemployment figures start rising, that means they are in a recession. Indeed, paying more attention to unemployment figures may be important, given that the numbers are not subject to revision and are available sooner and more frequently (from sources such as the Live Register). 'There has never, in the post-war U.S., been a one percentage point increase in unemployment without a recession having been declared, and much of that increase in unemployment occurs after the recession started', says Robert Gordon, a NBER Committee member from Northwestern University (Ramirez, 2008). But rising unemployment is a symptom of a recession, not a cause.

There are many other problems with exclusively using unemployment to define recession and thus economic performance. While figures on unemployment are available sooner, it is important to remember that unemployment is often a lagging indicator, and thus is not as relevant as those indicators that relate more directly to the economy, such as real GDP. Consider the fact that communist countries, in which all people are employed by the state (and thus have a constant 100% employment rate), would never experience recessions. Furthermore, if the critical cause of a recession is considered to be unemployment, then there exists a risk that the government would seek to minimise unemployment statistics without addressing the primary problems in the economy, instead manipulating data or replacing social security with government jobs to achieve full employment. The term recession would thus lose all meaning.

This suggests that it makes more sense to define a recession as a period when growth falls significantly below its potential rate, or perhaps simply as a slowdown in growth. Ultimately, defining recession must include several dimensions: output measures, employment and income. 'No single measure of aggregate economic activity is called for in the definition because several such measures appear relevant to the problem, including output, employment, income and [wholesale and retail] trade… Use of several measures necessitates an effort to determine what the consensus among them is, but it avoids the arbitrariness of deciding upon a single measure…' (Moore, 1982: 82).

Further complications: defining a global recession

There is even more confusion when the term 'global recession' gets thrown into things. The old 'rule of thumb' of two negative quarters is not applicable because of higher trend growths in emerging markets, which means the 'combined real GDP of the world has increased continually in the last four decades' (Abberger & Nierhaus, 2008: 75-76). The IMF defines a global recession as a period when global growth is less than 3%. In November 2008, the IMF released its global economic forecast; with global growth estimated to be 2.2% in 2009 (see Table 1). 'Using the IMF's definition (i.e. growth below 3%), the world economy has been in recession for 11 out of the past 28 years' (The Economist, 2008b). But again, can one really consider the global economy to be in a recession when there still exists positive growth of 2.2%?

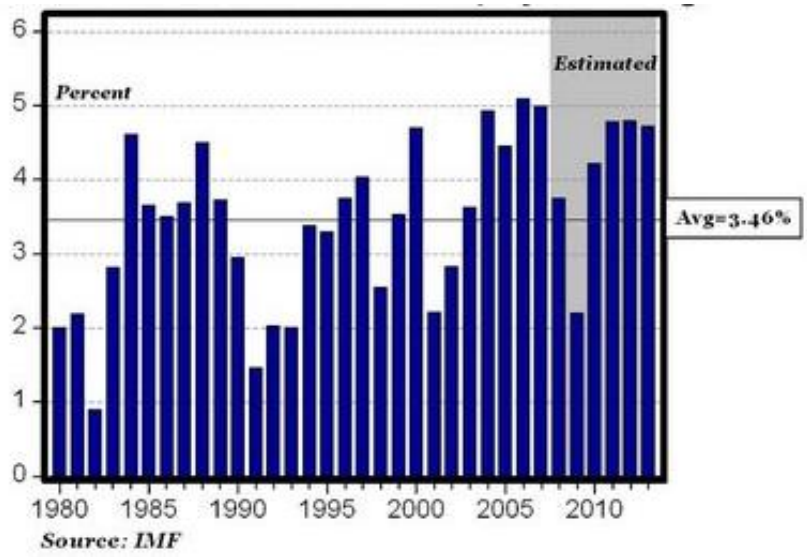


Figure 2: World Real GDP Growth, 1980-2013

The question then argued is why 3%? What does 3% represent? If the global economy is still growing, how is there a global recession? The problem with the data is that developing countries often do not present GDP in quarterly figures, and seasonal issues present comparison problems – it is the old adage of comparing apples and oranges. Also, usually any downturn that does occur in the international economy would normally not affect all countries at the same time. Thus it would be nearly impossible to ever manage to register a negative global GDP growth, and hence the need to set the bar at some level. World population growth is taken into consideration when determining this figure. 'The IMF suggests that a sufficient (although not necessary) condition for a global recession is any year in which world GDP per head declines' (The Economist, 2008a). The rate of 3% also attempts to account for differences in trends between emerging and developed economies. While for a developed economy like the UK, 6% would be a boom, '...for China, a growth rate of 6% would be equivalent to a recessionary hard landing' (Roubini, 2008). However, the IMF seems to have taken on board criticisms that the figure of 3% is likely too high, and to make things more confusing at the launch of the World Economic Outlook the IMF said that 'we're not defining global recession as something at 3% or less.'[5]

[5] Transcript of a Press Briefing on the World Economic Outlook Update by Olivier Blanchard and Jorg Decressin, available on http://www.imf.org/external/np/tr/2008/tr081106.htm

Latest IMF projections

(year over year percent change)

		Projections		Variance from last IMF forecast	
	2007	2008	2009	2008	2009
World output	**5.0**	**3.7**	**2.2**	**–0.2**	**–0.8**
Advanced economies	2.6	1.4	–0.3	–0.1	–0.8
United States	2.0	1.4	–0.7	–0.1	–0.8
Euro area	2.6	1.2	–0.5	–0.1	–0.7
Japan	2.1	0.5	–0.2	–0.2	–0.7
Emerging market and developing economies	**8.0**	**6.6**	**5.1**	**–0.3**	**–1.0**
Sub-Saharan Africa	6.8	5.5	5.1	–0.6	–1.2
Developing Asia	10.0	8.3	7.1	–0.1	–0.6
China	11.9	9.7	8.5	–0.1	–0.8
India	9.3	7.8	6.3	–0.1	–0.6
Middle East	6.0	6.1	5.3	–0.3	–0.6
Western Hemisphere	5.6	4.5	2.5	–0.1	–0.7

Source: IMF, *World Economic Outlook*, November 2008.

Table 1: The IMF's global economic forecast, 2008

Conclusion

'What's a recession? Sometimes it is a thingumajig.'
- Time, 1953.

This paper has sought to show that the 'two quarter negative growth rate' of GDP measure of a recession is obsolete, and racked with problems. There are those who argue that a sharp fall in the stock market is indicative of a recession. Siegel (1994) says that since 1948, ten recessions were preceded by a stock market decline, with a lead time of zero to thirteen months, but by this measure, as Paul Samuelson (1966) commented, 'The stock market has forecast nine of the last five recessions'. Should we focus on leading, lagging or coincident indicators? Procyclical or countercyclical? The NBER approach appears more sound, but also means we do not know we are in a recession until after it has started, and sometimes not until it is already over. At the root of the matter is the philosophical notion that what defines 'an economy' is much more than a broad measure of output (Layton and Banerji, 2003).

The power of the word 'recession' seems disproportionate to its meaning. Alfred Kahn, a Cornell university economist who became known as President Carter's 'anti-inflation' czar, was instructed never to use the word recession when he worked for the administration in the late 1970s. So when asked questions by Congress in 1979 about the economic situation, he

replied, 'I have been instructed not to say that we're experiencing a recession. So I'll tell you that we're experiencing a banana'.[6]

Writing all throughout the 1930s, both Mises and Hayek tried to explain that the recession itself served a market purpose, in the same way a correction to an inflated stock market serves a purpose. It re-coordinates economic structures that have grown seriously out of balance. 'The recession is the way that the economy tells the truth about the fundamentals' (Rockwell, 2008). But defining a recession does not define how to pull ourselves out of one. It can, however, alert us to necessary policy changes and lessen the impact of a recession if it is recognised in time, and this is the key to why a universally accepted and comprehensive definition of recession must be adopted.

Thus, it can be debated when the recession started and when it will end, and how such instances will be recognised, but there can be no denying that we are currently in the midst of one. The one solace we can find is in the words of the author Bo Bennett, 'As sure as the spring will follow winter, prosperity and economic growth will follow recession'.

Bibliography

Abberger, K. & Nierhaus, W. 2008. 'How to define a recession?'. *CESifo Forum* 9:4:74-76.

Boehm, E. & Summers, P.M. 1999. 'Analysing and Forecasting Business Cycles with the Aid of Economic Indicators'. *Melbourne Institute Working Papers Series* WP No. 18/99.

Harding, D. & Pagan, A. 1999. 'Dissecting the Cycle: a Methodological Investigation'. *Melbourne Institute Working Papers Series* WP No. 13/99.

Layton, A.P. & Banerji, A. 2003. 'What is a recession?: A reprise'. *Applied Economics* 35:1789-97.

McKelvey, E.F (ed.). 2008. 'Understanding US Economic Statistics'. Retrieved from Goldman Sachs at: http://www2.goldmansachs.com/ideas/economic-outlook/understanding-us-economic-statistics-pdf.pdf

Moore, G.H. 1982. 'Extract on 'Business Cycles'' in D.Greenworld (ed.) *Encyclopaedia of Economics*. London: McGraw-Hill.

National Bureau of Economic Research. 2008. 'Determination of the December 2007 Peak in Economic Activity'. Retrieved from the National Bureau of Economic Research at: http://www.nber.org/cycles/dec2008.html
National Bureau of Economic Research Business Cycle Dating Committee. 2003. 'Recession Dating Procedure'. Retrieved from the National Bureau of Economic Research at: http://www.nber.org/cycles/recessions.pdf

Ramirez, J. 2008. 'Exactly How Bad Is It?: The difference between a recession and a depression' in *Newsweek*, 16th October 2008.

[6] When banana companies started to complain, he switched the fruit to 'kumquat'.

Rockwell, L.H. Jr. 2008. 'Recession or depression?'. Retrieved from the Ludvig von Mises Institute at: http://www.mises.org/story/2844

Roubini, N. 2008. 'The perfect storm of a global recession'. Retrieved from RGE Monitor at: http://www.rgemonitor.com/roubini-monitor/253308/the_perfect_storm_of_a_global_recession

Samuelson, P. 1966. 'Science and stocks' in *Newsweek,* 19th September 1966.

Shiskin, J. 1974. 'The Changing Business Cycle' in *The New York Times*, December 1st 1974.

Siegel, J.J. 1994. *Stocks for the long run: A guide to selecting markets for long-run growth.* New York: Irwin Professional Publishing.

The Economist. 2008a. 'Redefining Recession' in *The Economist*, September 11th 2008.

The Economist. 2008b. 'The global slumpometer' in *The Economist*, November 6th 2008.

Time Magazine. 1953. 'What is a recession?' in *Time Magazine*, November 9th 1953.

Wesselink, B., Bakkes, J., Best, A., Hinterberger, F. & ten Brink, P. 2007. 'Measurement beyond GDP'. Retrieved from Beyond GDP at: http://www.beyond-gdp.eu/download/bgdp-bp-mbgdp.pdf

THE EDGE OF CHAOS – AN ALTERNATIVE TO THE RANDOM WALK HYPOTHESIS

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The Random Walk Hypothesis claims that stock price movements are random and cannot be predicted from past events. A random system may be unpredictable but an unpredictable system need not be random. The alternative is that it could be described by chaos theory and although seem random, not actually be so. Chaos theory can describe the overall order of a non-linear system; it is not about the absence of order but the search for it. In this essay Ciarán Doran O'Fathaigh explains these ideas in greater detail and also looks at empirical work that has concluded in a rejection of the Random Walk Hypothesis.

Introduction

This essay intends to put forward an alternative to the Random Walk Hypothesis. This alternative will be that systems that appear to be random are in fact chaotic. Firstly, both the Random Walk Hypothesis and Chaos Theory will be outlined. Following that, some empirical cases will be examined where Chaos Theory is applicable, including real exchange rates with the US Dollar, a chaotic attractor for the S&P 500 and the returns on T-bills.

The Random Walk Hypothesis

The Random Walk Hypothesis states that stock market prices evolve according to a random walk and that endeavours to predict future movements will be fruitless. There is both a narrow version and a broad version of the Random Walk Hypothesis.

Narrow Version:

The narrow version of the Random Walk Hypothesis asserts that the movements of a stock or the market as a whole cannot be predicted from past behaviour (Wallich, 1968). This would suggest that an investor cannot beat the market, yet there are many stories of those who have. This can partially be attributed to the fact that those who do not beat the market, i.e. those who perform worse than the market are slow to publicise their failures.

Broad Version:

The broader version of the Random Walk Hypothesis expands on the narrow version, claiming that '…in a well functioning market, all known information has already [been] discounted' (Wallich, 1968: 160). Similar to the Efficient Market Hypothesis, this broad version, if correct, demonstrates even further that one cannot out-perform the market. If new information becomes available, any past information becomes irrelevant, as it has already caused any market movements that it was capable of.

Possible Flaws with in the Broad Version RWH

The broad version of the Random Walk Hypothesis assumes that all information is reflected immediately in the prices of stocks and this means that past information has no effect on stock price movements in the future. There are two flaws with the fundamental assumptions in this theory.

Firstly, there is the assumption that all investors have the same access to the same information. This is surely not the case. Reliable and detailed information is usually obtained from a paid service, or through the employment of analysts - resources not available to every investor. Also, there is the assumption that all investors act upon the information at the same time. Investors receiving information up to several hours after it becomes public may still act on it. Naturally, this affect prices.

Secondly, the effect of information obtained at time t may not be fully understood without information at time t+1. This could lead to the effects of information from the past compounding with the effects of information subsequentially released. Thus, the past information can still have an effect on the market prices.

Random vs. Unpredictable

Before elaborating on the nature of a chaotic and complex system, it is necessary to distinguish between two concepts: random and unpredictable. These two words are generally used interchangeably, and generally this does not pose a problem in everyday usage. However, when discussing the nature of a particular system and deciding how best to analyse it, it is appropriate to be pedantic. The best way to distinguish the subtleties between these two concepts is by illustration of their application to a given system. For the purposes of example, the weather shall be used, not least because it was the study of this system that led to the discovery of chaos theory.

Unpredictable:

The weather is unpredictable. By this it is meant that it would not be possible to gauge at this moment what the weather will be in six hours' time. Perhaps it will be raining, perhaps not. A meteorologist, it would be assumed, would be able to take into account more information in making what essentially amounts to an educated guess. The odds of being correct would increase. However, he would not be guaranteed to be correct. Also, as we extend the timeline, the likelihood of being correct would decrease.

Random:

The weather is not random however. If, at midday today, it is seven degrees and raining, it is fairly certain that it will not be twenty four degrees and sunny six hours later. This is because there are *deterministic relationships* at play here. There are many variables that affect the weather, many of which may not be taken into consideration when making predictions about future weather conditions.

The Distinction:

It seems then that a clear distinction can be made. Unpredictable events or systems can be described as those that we are unable to forecast, or are only able to partially

forecast, due to a lack of information. Random systems are systems in which no deterministic relationship exists.

Chaos Theory

Chaos is a non-linear deterministic process, which looks random (Hsieh, 1991). The explanation of the concept is, ironically, not overly complex. There are several characteristics, which, once properly understood, lead to a functional understanding of the idea. They are:

- Sensitive dependence on initial conditions.
- Apparent randomness disguising deterministic relationships.
- Strange Attractors (also known as Chaotic Attractors or Fractal Attractors).
- Fractal Dimension.

Sensitive Dependence on Initial Conditions:

The first characteristic of chaotic systems that will be discussed is possibly the most important. This is due to the fact that the chaotic nature of a system's evolution arises from it. In a standard statistically modelled system, one expects that, if the independent variable is altered by some proportion, then there will be a similar or predictable change in the dependant variable. This is the reason that such systems are so widely used: they facilitate prediction of events.

However, in a chaotic system, an infinitesimally small change in the initial conditions can cause the model to evolve in a completely different fashion. This phenomenon was discovered by a meteorologist, Edward Lorenz, while he was running a weather-predicting model In 1961, he wished to re-examine a certain portion of the results and, in the interest of expedience, he used the data from a read-out which he had obtained previously for the beginning of that sequence, rather than re-running the entire model. The system evolved in a completely different fashion from his earlier models. The reason, he discovered, was that during the initial run, the computer had used figures to six decimal places but he had only printed out figures to three decimal places. A change of just over a *thousandth of a significant figure* completely altered the model. This has very obvious implications for economics or finance systems if they are indeed found to be chaotic.

Apparent Randomness Disguising Deterministic Relationships:

The best explanation of this concept is through example. Consider a roulette wheel. The outcome is believed to be random and certainly seems that way on first observation. However, the result has several influencing factors: the speed and number of rotations of the wheel, the spin on the ball as it leaves the croupier's hand, the force the croupier uses to throw the ball, etc. So what seems random is in fact deterministic. If the initial conditions were known, a better forecast of the result could be obtained. In the final section of this essay, further examples will be drawn from market data.

Strange Attractors:

So, it would seem that if an economic or financial system is chaotic, then it cannot be modelled. However, this is not the case. This is a crucial aspect of the theory; the point at which order arises from disorder. While the *positions* of data at a specific

time cannot necessarily be predicted, quite accurate models of the overall *behaviour* of the system can be created.

An attractor is the equilibrium level of a system, but should not be confused with an econometric equilibrium, which is a narrow form of an attractor. An attractor is the level or value a system attempts to regain after external effects have abated (Peters, 1991).

A strange (or chaotic) attractor is present in a system that tends towards a set of possible values. The possible values are infinite in number but limited in range. Chaotic attractors are not periodic, i.e. they do not have any repetition regardless of the length of the timeline (Peters, 1991). Attractors are labelled as strange or chaotic when they have a non-integer dimension.

Fractal Dimension:

The most basic way to understand fractal dimension is as a measure of how chaotic a system is; the closer to the higher integer the dimension is between, the more chaotic the system. Again, chaotic does not mean random. On a more complex scale, fractal dimension is a statistical quality, giving a measure of how completely a fractal fills space.

Empirical Examples Demonstrating Random Market Hypothesis Failures

Real Exchange Rates:

In his 1999 paper, In Choi examines whether the Random Walk Hypothesis is observed for real exchange rates. He uses the log-differenced US real monthly exchange rates and certain other major currencies. In his paper he sets out a null hypothesis that a random walk is observed. The alternative hypothesis is that there is serial correlation present. He does not propose any specific model for the correlation, thus allowing both linear and non-linear dependence (Choi, 1999).

The rates used are the US real exchange rates versus the Canadian dollar, French franc, German mark, Japanese yen, British pound and Swiss franc, for the periods 1960:1 to 1993:11 (Choi, 1999). Several tests were run for each currency, and the results were mixed. In his conclusions, he states that '…for the full sample, the null is rejected at conventional significance levels for Japan, Switzerland and Britain' (Choi, 1999: 306). Here the Random Walk Hypothesis is rejected, with the possibility arising of the presence of a non-linear system.

A Chaotic Attractor for the S&P 500:

In 1991, Edgar E. Peters examined the S&P 500 index in order to ascertain whether or not there was a chaotic attractor present. The dynamic observable used was the log-linear deflated S&P 500. However, it was not the changes in the values that were recorded but the absolute values themselves. The reason for this is that using simply the percentage changes in prices may destroy the delicate non-linear structure present in the data (Peters, 1991). The results, again, help to refute the Random Walk Hypothesis.

Firstly, he found that the fractal dimension of the detrended S&P 500 is approximately 2.33 (incidentally, this is the same fractal dimension as cauliflower). If the data were completely random, the dimension would have been an integer. Random data, as stated above, fills any space available to it. He states that '…the attractor is "chaotic", with a positive Lyapunov exponent' (Peters, 1991: 61).

Lyapunov exponents measure the loss in predictive power experienced by non-linear systems over time, by measuring the divergence of nearby trajectories over time. A positive exponent indicates expansion while a negative one indicates contraction (Peters, 1991). The positive Lyapunov exponent indicates that the system is subject to 'sensitive dependence on initial conditions', another feature of chaotic systems, as mentioned above. When using Lyapunov exponents as a measure of divergence from initial trajectories, it is common to simply use the largest one. This is known as the Maximal Lyapunov exponent, MLE.

Not only does this example refute the Random Market Hypothesis, but it also supports the presence of chaotic behaviour in the market. Due to sensitive dependence on initial conditions, attempts to model its behaviour stochastically could lead to extremely large errors, which grow exponentially as time goes on.

Returns on T-Bill Rates:

In a different paper in 1991, Larrain rightly asserts that if the past interest rates affect the future evolution of interest rates, then the Random Market Hypothesis is false. If this turns out to be the case, then a genuine and justified use of investment tools and strategies can be made to generate a profit (Larrain, 1991).

According to Larrain, both fundamentals and technical analysis can be used to determine future interest rates. Moreover, the relationships are non-linear in nature (ibid.). This not only discredits the Random Market Hypothesis, but gives further credence to the idea that markets are chaotic in nature.

Before presenting the results, the issue of a series being random some of the time, and deterministic the remainder of the time is addressed. Instead of asking whether or not the T-bill series is random, he examines the process which creates the series to ascertain if it may, at times, have a native 'random-number' generator (ibid.).

The conclusions reached by Larrain are as follows. Firstly, there is a non-linear structure in the series for T-bill rates and secondly, this non-linear structure, while not explicitly guaranteeing mathematical chaos, does allow for the possibility of it arising, under certain market conditions (ibid.).

Conclusions and Remarks

After examining the possibility of chaos theory being an alternative to the Random Market Hypothesis, the following conclusions can be drawn from the academic literature and empirical data:

1. The Random Walk Hypothesis is not correct in its narrow or broad form as is shown by the empirical data.

2. It is possible that chaos theory could be used to describe some markets but is not to be adopted as the complete alternative.
3. Where the situation arises that a system is not chaotic, it may very well be nonlinear, and so still requires that we do not assume randomness.

In recent years there have seen an increasing tendency for economists to explore the ideas of chaos theory in search of explanations for events in the markets and the economy as a whole However, the concept is still in its infancy relative to many of the alternative quantitative tools which have been in use since econometrics first came to prominence, at the beginning of the twentieth century. With continued research, there is a lot of potential to gain a better understanding not just of the markets, but in many other fields of economic theory, and to establish patterns and models in areas which were believed to be operating in disorder and randomness.

Bibliography

Choi, I. 1999. 'Testing the Random Walk Hypothesis for Real Exchange Rates'. *Journal of Applied Econometrics* 14:3:293-308.

Hsieh, D. 1991. 'Chaos and Nonlinear Dynamics: Application to Financial Markets'. *The Journal of Finance* 46:5:1839-1877.

Larrain, M. 1991. 'Testing Chaos and Nonlinearities in T-Bill Rates'. *Financial Analysts Journal* 47:5:51-62.

Peters, E. 1989. 'Fractal Structure in the Capital Markets'. *Financial Analysts Journal* 45:4:32-37

Peters, E. 1991. 'A Chaotic Attractor for the S&P 500'. *Financial Analysts Journal* 47:2:55-62+81.

Wallich, H. 1968. 'What Does the Random Walk Hypothesis Mean to Security Analysts?'. *Financial Analysts Journal* 24:2:159-162.

ECONOMETRIC METHODOLOGY AND THE SCIENTIFIC STATUS OF ECONOMICS

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To many economists, econometrics is a method of exploring many of the heated debates in a clinical, scientific way. However in this essay, Michael Sherlock argues that, despite the myriad rules and rigidity in the models, econometrics can be seen as a deeply flawed attempt by economists to legitimise their subject in the eyes of broader scientific disciplines. He discusses the weaknesses inherent in the field and explains how they clash with the standard ideas of what constitutes a science.

Introduction

This essay seeks to engage in the debate on the scientific status of economics by considering whether econometric methodology constitutes a scientific process sufficiently similar to that of other sciences in order that the epithet of 'science' can be conferred on the discipline of economics. The essay will first attempt to clarify what is meant by the term 'science' and situate it within the context of economic history. It will then proceed to discuss the crux of the intellectual debate, considering in turn the various problems that have been identified within econometric methodology. The conclusion will reflect upon the issues raised and take a position as to whether economics can be classified as a science.

Economics as a science: a false hypothesis?

'Science is a public process. It uses systems of concepts called theories to help interpret and unify observation statements called data, in turn data are used to check or test the theories' (Hendry, 1980: 388). Although various definitions of the term 'science' exist, what is interesting about this one, written by an economist, is that it highlights the importance of *empirical testability* within economic models. Traditionally, classical economics (economics without econometrics) largely consisted of deductive theories, wholly devoid of any real data, which relied on quite complicated mathematics for their existence (consider general competitive equilibrium, a fundamental axiom of microeconomics whose existence was eventually proved using fixed point theorems). Accordingly, classical economics could not be considered a true science in any meaningful sense of the word. This led to an identity crisis in the economics profession which has resulted in the birth of econometrics, a branch of economics which provides a series of methods necessary for the analysis of data.

Pearson (1938) championed the 'unity of science' principle which conceived that the essence of any science consists of a scientific method. Ritchie (1923) concurred, arguing that the only constant in science was this scientific method and that while scientific theories are in a constant state of flux, the process used to generate these theories has remained static. This stimulated debate among economists as to whether econometrics provided economics with this much needed 'scientific process', thereby providing the discipline with the intellectual legitimacy which it sought. The essence of econometric methodology is the development of a framework which seeks an adequate

'conjunction of economic theory and actual measurement, using the theory and technique of statistical inference as a bridge pier' (Haavelmo, cited in Pesaran & Smith, 1992: 9). Ever since the Cowles commission, regression analysis has become the empirical workhorse of econometrics, apparently providing the methodology of the scientific process at last.

'It must be possible for an empirical scientific system to be refuted by experience' (Popper, 1959: 41). This statement encapsulates the principle of *falsifiability* - the fact that in order for a theory to be considered scientific it must be capable of being disproved. Much of the controversy surrounding econometric methodology is whether it is capable of testing theories. Ostensibly, it seemed to do so. Nash (2007: 56) highlighted the fact that, from the outset, econometric methodology appeared to graft a scientific method onto mainstream economics 'as now, apparently, hypotheses can be tested empirically and also falsified, thereby satisfying the scientific method'. In the early days, many commentators were less sanguine and even displayed open scepticism about the ability of econometrics to achieve this objective. Spanos (1986: 660) best articulated this position when he said 'No economic theory was ever abandoned because it was rejected by some econometric test nor was a clear-cut decision between competing theories made in lieu of such a test'. To disambiguate the position we need to examine in depth the econometric process itself.

A 'failure to accept' the econometric methodology

Koutsoyiannis (1973) has identified the following steps as the core of econometric methodology: formulation of maintained hypothesis, testing of maintained hypothesis, evaluation of estimates and evaluation of the model's forecasting validity. A cursory glance suggests the pre-eminence of hypothesis testing within the overall framework of regression analysis. Koutsoyiannis extols the benefits of such; and he adds that it confers scientific status on classical economics by virtue of the very fact that it is capable of sustaining rigorous testing. Many authors are critical of such claims. Hypothesis testing essentially involves what Koop (2005: 80) has referred to as 'knocking down the straw man', i.e. rejecting the null hypothesis and thereby establishing statistical significance. However, such a process is riven with a variety of interrelated problems.

Firstly, a finding of statistical significance does not necessarily denote scientific significance. Popper (1959: 23) defines a scientifically significant effect 'as that which can be regularly reproduced by anyone who carries out the appropriate experiment in the way prescribed'. Much research has highlighted the remarkably high incidence of inability to replicate empirical studies in economics (Dewald et al., 1986). Hence, an econometric finding of statistical significance cannot be considered scientifically significant in any meaningful way. The problem is that the nature of data in a non-experimental discipline such as economics makes reproducibility impossible. This, in turn makes testability and falsifiability impractical, thereby rendering the whole process *de facto* unscientific. Kennedy (2003: 8) describes economic data as being 'weak' which refers to the fact that many of the forces governing economic behaviour are unquantifiable, being neither numerical nor measurable. O'Dea (2005: 40) even contends that they cannot be truly considered 'economic' and argues that the unwillingness of economists to consider such forces 'flies in the face of its claim to be scientific'.

Some of the desirable features of any science are those of objectivity and precision. Regarding the latter, the fact that 'outcomes are only probable to a given level of confidence, places econometrics and hence economics into a realm which is too imprecise to be deemed science' (Nash, 2007: 57). As it is very often human behaviour that is being modelled, exact or deterministic relationships are

impossible. Researchers compensate for this implicit uncertainty through the use of inferential statistics based on probability distributions. Consequently, levels of significance are assigned to outcomes. When one carries out a hypothesis test it is always at a given level of significance. It should also be noted that this imprecision is captured in the linguistic register of the terminology employed - it is best practice never to say that one rejects a null hypothesis, instead one employs the term 'fails to accept'. This highlights the fact that econometrics is 'a language for communicating results as well as a set of methods of analysis' (Krueger, 2001: 10). At an alternative level of significance, a previously statistically insignificant regression coefficient may become statistically significant. This arbitrary use of significance levels raises the interrelated question of objectivity.

Scientific credibility demands objectivity. Keuzenkamp and Magnus (1995) took issue with such an arbitrary use of significance levels whilst Berkson (1938) noted that for asymptotic samples, any null hypothesis was likely to be rejected and suggested that the choice of level should be decided by such pragmatic considerations. Unfortunately, in practice, choice is usually determined by the subjective needs of the econometrician; Keuzenkamp and Magnus (1995: 16) note that 'the choice of significance level seems arbitrary and depends more on convention and, occasionally, on the desire of an investigator to reject or accept a hypothesis rather than on a well-defined evaluation of conceivable losses that might result from incorrect decisions'. That being the case, the objectivity of the econometric process is severely compromised. This leads to a related problem extensively observed in econometrics, that of data-mining.

Leontief (1971: 390) once presciently commented on the state of econometrics describing it as 'an attempt to compensate for the glaring weakness of the data base available to us by the widest possible use of more and more sophisticated statistical techniques'. This emphasis on statistical analysis has lead to the problem of data-mining which has been frequently cited as a major source of evidence against econometrics' claim to scientific status. Data-mining consists of 'moulding or selecting models based only on an ability to pass desired statistical tests rather than underlying theory' (Hansen, 1996: 1408). The mainstay of regression analysis is the linear regression model. Over the years this model has been subjected to a dizzying array of statistical tests (heteroscedasticity, autocorrelation etc.) while undergoing significant refinement in order to deal with more complex data sources such as panel data. Such statistical myopia has led to an increased incidence of spurious regressions. For example, Hendry (1980) in his seminal paper quotes the reported case in which researchers found a higher correlation between annual inflation and cases of dysentery than that between annual inflation and the rate of change of excess money supply. This undermines scientific credibility as it becomes 'meaningless to talk about confirming theories when spurious results are so easily obtained' (Hendry 1980: 395).

The fourth step in Koutsoyiannis' econometric methodological framework (evaluation of model's forecasting validity) emphasises the importance of prediction for regression analysis. In fact, Friedman (1940: 658) argues that 'the real test of a theory' lies in its predictive ability. It is in this very area that many critics have based their refusal to accept the scientific claim of economics. Prediction implies a causal relationship and to establish this requires the use of a series of statistical assumptions (Gauss-Markov assumptions) regarding the disturbance or stochastic error term. The principle assumption is that of *zero conditional mean* which establishes a *ceteris paribus* relationship between regressor and regressand, without which a causal relationship cannot be established. In essence it is 'an attempt to control statistically what ideally would be controlled experimentally' (O'Dea, 2005: 38). Nash (2007: 56) contends that such a strong assumption nullifies the scientific process by 'invalidating the scientific status of the underlying theory'. This

also impinges on the falsification issue *vis-à-vis* the Duhem-Quine problem. The Duhem-Quine problem raises the potential unreliability of a falsity finding based on hypothesis testing as a rejection of a hypothesis 'could well be due to any number of flaws with the buried assumptions rather than the falsity of the hypothesis under examination' (O'Dea, 2005: 39).

Conclusion

'An ability to use the laws of statistics/mathematics to test and potentially reject hypotheses from theory is a necessary but insufficient condition to justify economics as a science' (O'Dea, 2005: 40). This essay has shown that not only does classical economics not deserve the 'science' epithet but neither does neo-classical economics as the empirical testing process known as econometrics is not sufficiently robust to be considered a true scientific process. Although econometric methodology has added a degree of testability to the discipline, econometrics is in essence a statistical process not a scientific one. However, this does not mean that it is not a valid study in its own right as it may lead to the development of a satisfactory scientific methodology in the future and as such can be considered a milestone in economic history.

Bibliography

Berkson, J. 1938. 'Some Difficulties of Interpretation Encountered in the Application of the Chi-Squared Test'. *Journal of the American Statistical Association* 33:526-536.

Dewald, W., Thursby, J. & Anderson, R. 1986. 'Replication in Empirical Economics: The Journal of Money, Credit and Banking Project'. *American Economic Review* 76:587-603.

Friedman, M. 1940. 'Review of Jan Tinbergen. Statistical Testing of Business Cycle Theories, II: Business Cycles in the United States of America'. *American Economic Review* 30:657-661.

Hansen, B.E. 1996. 'Review Article, Methodology: Alchemy or Science?'. *The Economic Journal* 106:9:1398-1413.

Hendry, D. 1980. 'Econometrics: Alchemy or Science?'. *Economica* 47:188:387-406.

Kennedy, P. 2003. *A Guide to Econometrics* (5th ed.). Oxford: Blackwell Publishing.

Keuzenkamp, H. 2000. *Probability, Econometrics and Truth: The Methodology of Econometrics*. Cambridge: Cambridge University Press.

Keuzenkamp, H.A. & Magnus, J.R. 1995. 'On Tests and Significance in Econometrics'. *Journal of Econometrics* 67:5-24.

Koop, G. 2004. *Analysis of Economic Data* (2nd ed.). London: Macmillan.

Koutsoyiannis, A. 1973 *Theory of Econometrics: Ann Introductory Exposition of Econometric Methods.* London: Macmillan.

Krueger, A.B. 2001. 'Symposium on Econometric Tools'. *The Journal of Economic Perspectives* 15:4:3-10.

Leontief, W. 1971. 'Theoretical Assumptions and Nonobserved Facts'. *The American Economic Review* 61:1:1-7.

Nash, I.G. 2007. 'The Scientific Status of Economics and Econometric Methodology'. *Student Economic Review* 21:53-58.

O'Dea, C. 2005. 'Econometric Methodology and the Status of Economics'. *Student Economic Review* 19:37-42.

Pesaran, M. & Smith, R. 1992. 'The Interaction between Theory and Observation in Economics'. *Cambridge Working Papers in Economics* 9223.

Pearson, K. 1938 [1892]. *The Grammar of Science*. London: Everyman Edition.

Popper, K.R. 1959. *The Logic of Scientific Discovery*. London: Hutchinson.

Ritchie, A.D. 1923. *Scientific Method: An Inquiry into the Character and Validity of Natural Laws*. London: Routledge and Kegan Paul Ltd.

Spanos, A. (1986) *Statistical Foundations of Econometric Modelling.* Cambridge: Cambridge University Press.

SHOULD A TRAFFIC CONGESTION CHARGE BE INTRODUCED IN DUBLIN?

STUART PATTERSON

Senior Sophister

In this essay, Stuart Patterson examines the theoretical basis for road congestion charges. Using the successful empirical example of the city of London, he attempts to determine the applicability of this model to Dublin city centre. He also considers the social, practical and political opposition to such a scheme and whether it would be feasible within the limitations of Dublin's present public transport system.

Introduction

'The years have made me bitter, the gargle dims my brain,
'cause Dublin keeps on changing, and nothing seems the same.
The Pillar and the Met have gone,
the Royale long since pulled down,
As the great unyielding concrete, makes a city of my town.'

'Dublin in the Rare Old Times', Pete St. John.

Although this paper's ultimate objective is to come to a conclusion as to whether or not a congestion charge would be an appropriate way to relieve Dublin's chronic traffic problems, the issues that emerge in this discussion could apply to any urban area that suffers from congestion. This paper will first look at the theoretical basis behind the idea of congestion charging. The impact such a charge would actually make can be seen when we look at other city's experiences, most notably in London. However it is also important to investigate why many cities have flirted with the concept of congestion charging but so few have implemented one. Is this due to the design and workings of the city or simply a lack of political conviction? This is a particularly important question to answer in a country not especially known for the latter.

Theoretical basis

The theoretical basis for congestion charging lies in the fact that the act of driving a car imposes costs on other members of society. With respect to congestion in particular, Gwilliam and Mackie (1975: 149) state that 'individual road users fail to perceive the delay costs which they impose on others'. Along with Button (1993), they outline four instruments for controlling congestion:

1. Restrain the movement of traffic; for example, one-way systems and bus lanes.

2. Lower the cost of using uncongested facilities. In most cities this would involve subsidising the running of a public transport system.
3. Charge for parking in urban areas to encourage the use of other forms of transport.
4. Raise the cost of using congested facilities; road pricing.

The latter of these, the least used but potentially the most effective, takes from the wisdom of Pigou, who developed the concept of internalising externalities through taxes. In essence, when road space must be paid for, it will be used in the most economically efficient way. This is largely achieved by users either cancelling journeys or transferring to public transport. Barrett (1982: 178) explains that a bus 'is a low cost user of expensive road space but since there is no market for road space it is unable to use this advantage to its commercial benefit'.

However, there are a number of difficulties in applying this economic insight to real life. Based on the theory, an appropriate congestion charge would be calculated at marginal social cost. That is the extra cost imposed upon society, especially other road users, from the congestion caused by one extra vehicle on the road (Santos, 2004). The difficulty with this is that marginal social costs vary with the level of congestion already on the road, which in turn depends on the time of day and the route in question. Simply calculating marginal social cost is largely a guessing game as there are too many factors at play to put into a model. Thus the prospect of determining current and varying marginal social costs is completely impractical and costly (ibid.). At present, it is not cost effective to charge different prices for travelling along different routes in a town centre; although advances in satellite tracking systems that measure distances travelled by cars in congested areas may become an option in the future. All this implies that great simplifications need to be made in applying the theory of congestion charging to real life.

Santos (2004) examined the extent to which the theoretical benefits of marginal cost pricing could be retained using a more simplified cordon system. This system operates whereby motorists must pay a toll when passing through a cordon placed around town centres. Santos' study used a computer programme to simulate the introduction of a cordon toll in eight English towns. Notably she found that gains in efficiency from a cordon charge compared favourably with those of a hypothetical system of road pricing based on marginal social cost. A number of issues were also highlighted. It is both difficult to determine the optimal positioning of the cordon and the optimal price of the toll. If it is set too high, too many people will change route and cause congestion outside the charged area, while a low congestion charge will have little impact on people's behaviour. Trial and error is the only solution to this problem. Button (1993) argues that an optimal toll may not exist if demand functions for road space are not continuous.

The 1964 Smeed Report produced for the British Ministry of Transport was the first serious attempt by a national government at assessing the usefulness of road pricing to tackle the emerging problem of urban traffic congestion. At the time, it concluded that technological factors would make the costs of implementing road pricing prohibitive (Smeed, 1968). However, by 2003 this had changed.

Congestion Charging in London

In 2003, London introduced a congestion charge of £5.00 for motorists driving within a designated area of the city centre between the hours of 7am and 7pm on weekdays. It used an automatic registration plate registration system with video cameras at every point of entry to the zone (Transport for London, 2007a). This was the first time a charge had been introduced with the sole purpose of fighting congestion. As such, it is an important case study for any city considering similar action.

The charge had quite a significant impact. A Transport for London Report (2007a) stated that traffic levels entering the zone in 2006 were 16% down on pre-charge levels. The number of charged vehicles had been reduced by 30%. As a result bus journeys per day had increased from under 90,000 to 116,000 in 2006. At the same time London underground journeys increased by only 1%, indicating that those served by it were already inclined to use it. It was found however that the main effect of the charge was upon traffic entering the city from 11am onwards, after the morning rush. This would indicate, as might have been expected, that those travelling for non-work purposes were more sensitive to the increased cost of driving in the city. There is evidence that the charge is likely to have caused only a once-off shift in motorist's preferences as an increase in the charge to £8.00 had little additional effect on traffic levels (Transport for London, 2007a).

Why is London the only city doing this?

The economic theory has largely been backed up by the experience of London. So why have other British cities resisted implementing congestion charges in spite of pressure to the contrary from central government? (Swinford, 2007) Arguments centre upon the issues of equity and the authorities' accountability (Viegas, 2001).

Congestion charging has implications for the welfare of those who use the road system. The wealthy experience some gain in welfare by being able to purchase quicker travel, and the poorest gain as the buses they travel on encounter less congestion; but it is feared that those who are forced to substitute private driving for public transport will experience a welfare reduction (Button 1993). This can be addressed through some form of redistribution. However, the means by which this is done is controversial.

Theoretical examples do not overly concern themselves with how the tax revenue should be spent because the primary motivation is efficiency. However, in the real world, the way this money is spent is of great importance to the general public (Button 1993). This is illustrated by the fact that much of the media reporting on London's congestion charge has concerned itself with how much money has been channelled back into improvements in the public transport network (Swinford, 2007). Evans (1992) states that road pricing can create perverse incentives for enforcing authorities as they may depart from the goal of economic efficiency in setting prices and substitute a revenue target in its place.

By law all surplus revenue collected from the London congestion charge must be spent on improving alternative transport options. In 2006-2007 the revenue was distributed as follows:

Bus network improvements	82%
Road safety	4%
Walking & cycling programmes	2.5%
Road & bridge maintenance and upgrades	11%

Table 1: Revenue Distribution
Source: Transport for London, 2007b.

However, projected surpluses have fallen short of expectations due to higher than expected costs of running the system. In 2006-2007 the revenue collected by the charge amounted to £252.4 million; £130.1 million was spent running the system resulting in net revenue of £122.3 million (Transport for London, 2007b).

The standard of the public transport system in any city introducing congestion charging also needs to be addressed. If people have no real alternative to using their car they will feel exploited as they will have no other option but to pay the charge. In such a situation, congestion charging simply becomes a revenue-raising mechanism as little substitution of mode of transport can be made. This in turn militates against any reduction in congestion.

Congestion charging in Dublin?

The main issues in introducing congestion charges to Dublin are: its feasibility; its potential to be effective; and the level of public acceptance needed if it is to survive the political process. Any zone created to introduce a system of congestion charging in Dublin would ideally mirror the boundary which has already been created by the ban on the unnecessary passage of heavy goods vehicles through the city centre. This zone effectively covers all land within the canal cordon along which the North and South Circular roads run. Currently Gardaí must patrol this area in order to enforce the ban on HGVs (Dublin City Council, 2007). If the kind of electronic systems used for congestion charging in London and the M50 motorway toll in Dublin were introduced for a congestion charge, a saving could be made on Garda resources as the cameras would now also catch infringing HGVs.

With regard to feasibility, it must be remembered that London's charge has proved an expensive one to implement, costing £161.7 million to install; and, as noted previously, around half of the revenue it generates is spent on running the system (Transport for London, 2007b). This raises the issue of whether Dublin is large enough to sustain such a system. According to the Dublin Transport Office (2007) around 70,000 vehicles, including 62,000 private cars, cross the canal cordon in the direction of Dublin between the hours of 7am and 10am every day. Given that around 120,000 cars enter the London zone during the twelve-hour charging period on any day in London, it seems likely that Dublin's traffic levels should be heavy enough to cover costs. It is clear that the costs involved should also be smaller than London's as Dublin's charging zone covers a smaller area (although a larger area in terms of the proportions of the respective two cities). There are also fewer entrance points that must be monitored by cameras, thus cutting down on the costs of installing the system.

The effectiveness of congestion charging in Dublin will depend on the willingness of its citizens to substitute travel by private car for travel by public transport. This in turn is reliant on the quality of alternatives available. A report by Deloitte (2009), recently presented to the Department of Transport, found that Dublin Bus was run inefficiently and that the organisation should be able to maintain the current level of services despite cutbacks in government spending. While London channels all of its congestion charge revenue back into public transport, the prospect of increasing Dublin Bus's level of subsidisation would be unpalatable and a poor use of the revenue. Without a good public transport system that can act as a substitute for private cars, any benefit from congestion charging will be smaller than it ought to be and will prove very unpopular among the public. A privatisation of bus routes, as has occurred in London, may provide bus services that respond to demand for public transport more effectively.

Another factor militating against Dubliners becoming less car-dependent is the manner in which Dublin is growing as a city. Wickham (2006) argues that the increased suburbanisation of Dublin and its sprawl into neighbouring counties entrenches Dublin's dependence on the car. Poor urban planning is at fault for this. In Helsinki, the population density is as low as it is in Dublin, but new housing, employment and retail facilities there have been planned to cluster around high capacity public transport links which otherwise would not be viable. In contrast, Dublin's development has encroached into swathes of rural areas with poor public transport links and a dependence on the M50 (originally planned as a by-pass route) to get from place to place. The operation of efficient public transport services may no longer be viable in many areas due to the manner of development. This has occurred in many American cities, most notably in Los Angeles.

The issue of accountability would be a live one in Dublin also. It is an important issue if the implementation of road pricing is to pass though local government unscathed. In fact, there have recently been discussions on the introduction of congestion charges in Dublin. The current Minister for Transport, Noel Dempsey, has indicated that they will be introduced in the near future (Taylor, 2009). It is notable that this has only become a feature of government policy at a point in time when the public finances are in dire straits. Road pricing should ultimately be seen as a way of replacing the current system of motoring taxation (road tax and fuel duty) with a system that does more to influence efficient behaviour (Gwilliam and Mackie, 1975). The government will have to be careful where and how it spends the revenue it receives from such a scheme.

Conclusion

This paper has sought to identify the issues that must be considered by any urban area which seeks to introduce road pricing. Road pricing internalises the social cost of congestion and as a result, roads are used more efficiently and everyone can make welfare gains through time saved. Congestion charging has been shown to work in reality as well as in economists' models, helping to ease London's congestion and encouraging more to use public transport where available.

However, there are difficulties to be confronted with such a scheme. The potential for market failure in public transport systems decreases the likelihood of any charge being effective. Currently people have little option but to use their car, particularly in the greater Dublin area. There exist genuine public fears that welfare could decrease as a result of such a charge. It is also clear that the allocation of revenues from congestion charging needs to be transparent; in order to avoid public resentment it must not appear like a 'stealth tax' (as has been the case with the M50 toll).

If this transparency was achieved and some reform was to occur in the public transportation market, there exists no reason why congestion charging should not become a positive feature of life in Ireland's capital city.

Bibliography

Barrett, S. 1982. *Transport policy in Ireland*. Dublin: Irish Management Institute.

Button, K. 1993. *Transport Economics* (2nd ed.). Cheltenham: Edward Elgar Press.

Deloitte. 2009. 'Cost and efficiency review of Dublin Bus and Bus Eireann'. Retrieved from the Department of Transport at: www.transport.ie/upload/general/final%20report%20bus%20review%20220109.pdf

Dublin City Council. 2007. 'Report to the Chairman and Members of the Traffic and Transportation Strategic Policy Committee: Heavy Goods Vehicle Management Strategy – Six Month Review'. Retrieved from Dublin Chamber of Commerce at: www.dublinchamber.ie/uploads/hgv%20strategy.doc

Dublin Transport Office. 2007. 'Road Use Monitoring Report'. Retrieved from Dublin Transport Office: www.dto.ie/web2006/rum2007.pdf

Evans, A. 1992. 'Road Congestion Charging: When is it a Good Policy?'. *Journal of Transport Economics and Policy* 26:3:213-243.

Gwilliam, K. & Mackie, P. 1975. *Economics and Transport Policy*. London: George Allen and Unwin Ltd.

Santos, G. 2004. 'Urban Congestion charging: A Second Best Alternative'. *Journal of Transport Economics and Policy* 38: 3: 345-369.

Smeed, R.J. 1968. 'Traffic Studies and Urban Congestion'. *Journal of Transport Economics and Policy* 2:1:33-70.

Swinford, S. 2007. 'British Cities Shun London's Wasteful Car Tax' in *The Sunday Times*, 9th December, 2007.

Taylor, C. 2009. 'Enough Buses in Dublin Despite Cuts says Minister' in *The Irish Times*, 27th January 2009.

Transport for London. 2007 a. ‘Fifth Annual Impacts Monitoring Report’. Retrieved from Transport for London at: www.tfl.gov.uk/assets/downloads/fifth-annual-impacts-monitoring-report-2007-07-07.pdf

Transport for London. 2007 b. ‘Annual Report and Statement of accounts 2006/07’. Retrieved from Transport for London at: www.tfl.gov.uk/assets/downloads/corporate/annual-report-and-statement-of-accounts-06-07.pdf

Viegas, J. 2001. ‘Making Road Pricing Acceptable and Effective: Searching for Quality and Equity in Social Mobility’. *Transport Policy* 8: 289-294.

Wickham, J. 2006. *Gridlock: Dublin’s Transport Crisis and the Future of the City.* Dublin: New Island Press.

THE REQUIREMENT FOR AIRPORT COMPETITION IN DUBLIN

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The aviation industry has been revolutionised by the development of low cost carriers. Yet competition among airlines is not mirrored by competition among airports. Here, Marcus O'Carroll determines and evaluates the potential monopoly power of Dublin Airport Authority and the negative impact that this has on Irish air travellers. He highlights the inefficiency and waste inherent in the system as well as the impotence of the aviation regulator in sanctioning anti-competitive activities. The potential for competition in this market is examined, as well as potential pitfalls to such proposals.

Introduction

In almost every market a monopoly is undesirable for the consumer. In the past, most airports operated as 'natural monopolies', on the basis that their industry was believed to be unable to support competition. However, contemporary analysis calls this assumption into question, particularly in the face of a revolutionised airline industry driven by low-cost carriers.

In this essay, the operation of Dublin Airport will be examined with a view to showing that passengers would benefit greatly from airport competition in Dublin. In doing so, the role of airport competition in the modern aviation industry will be discussed. The practices of Dublin Airport and the aviation regulator will then be assessed, showing that monopoly power is being abused. Finally possible policy solutions to this predicament will be analysed.

Dublin Airport as a monopoly

The first issue that must be addressed is whether Dublin Airport is indeed a monopoly. There are other international airports on the island of Ireland but it is argued that Dublin Airport operates as an effective monopoly due to the distance between Dublin city and other potential alternate airports. Given that the majority of flights taken to and from Dublin Airport are short-haul and low-cost, passengers are unlikely to be willing to incur

the additional travel time and cost involved in using one of these alternate airports. For example, the Dublin-London route, which is the second busiest air-corridor in the world, is only 460km (varying depending on which London airport is the destination) and may be flown in just over one hour. Thus it may be concluded that Dublin Airport Authority (henceforth DAA) operates an effective monopoly because alternate airports are simply too remote to compete.

Airport competition and low-cost carriers

The emergence of low-cost airlines (henceforth LCCs) and the resulting decrease in airfares has transformed the structure of the costs faced by airlines. As Barrett (2000:13) described it: 'The world of non-competing airlines was mirrored in non-competing airports'. However, the portion of the average airfare which consists of airport charges has now increased greatly. For example, Ryanair's average fare in 2008 was €44 and DAA's 2008 passenger-charge price-cap was €7.28 – thus airport charges represent 16.54% of the fare (Ryanair, 2008a; CAR, 2008a). This provides a far greater incentive for airlines to seek lower charges.

Previously, airlines had no scope to bargain with airports, as Doganis stated:

> 'While the airlines as a whole, acting through the IATA, may try to hold increases in landing fees or en-route charges down in a particular country, an individual airline has no scope for negotiating better rates for itself' (Doganis, 2002:110-111).[1]

Modern LCCs do have considerable scope to bargain with airports in order to reduce fares. This is witnessed by the newfound prominence of secondary airports. LCCs now have the option of rejecting high charges at hub airports in favour of low-service, low-charge secondary airports, such as Charleroi or Lübeck. Forsyth (2003) argues that, assuming secondary airports are more cost-efficient, they will offer choice to LCCs and introduce some heterogeneity to the market.

As well as securing lower charges, LCCs can also demand customised services from airports which face competitors. Barrett (2004) states that the main requirements of LCCs are low charges and simple, quick facilities. This is severely at odds

[1] It is worth noting that this is an extract from the first edition, published in 1985 before the LCC revolution.

with the services provided by the existing DAA monopoly, which boasts both high charges and complex, unnecessary facilities, which are more suitable for long-haul legacy flights.

Dublin Airport Authority and monopoly power

Having established firstly that Dublin Airport is a monopoly and secondly that airport monopolies are antithetical to the development of successful aviation markets, the actions and regulation of DAA will now be discussed with a view to determining whether this monopoly power is indeed being abused.

As Adam Smith (1776:I.7.26: 78) stated:

> 'The monopolists, by keeping the market constantly under-stocked, by never fully supplying the effectual demand, sell their commodities much above the natural price, and raise their emoluments, whether they consist in wages or profit, greatly above their natural rate'.

The above quote has been reproduced countless times, but has yet to lose its relevance in any argument regarding competition. In this context, the implication is that an airport which operates a monopoly can and will abuse its power by undersupplying and overcharging the airlines. According to Baumol's theory of contestable markets, it is the duty of potential competitors to 'exercise discipline over the incumbent' (Baumol, 1982:14). However, the start-up time and costs for an airport are sufficiently large to ensure that Dublin Airport is not vulnerable to what Baumol refers to as 'hit-and-run' entrants. As stated in the introduction, the contemporary airline industry has changed the role of the airport; while it was once viewed as a public utility, it is now a business (Barrett, 2004). Thus with Smith's words in mind, any airport not exposed to competition must be observed with great suspicion.

Dublin Airport Authority and supernormal profits

A simple way to identify a monopolist which is abusing its market power is to observe profit levels. While in most competitive markets large profits may be a sign of virtue, they are a sign of cynical practice in a monopoly. DAA's Dublin Airport accounts for 2007 (the most recent year for which audited accounts are available) yield the information contained in Table 1. Dublin Airport recorded very substantial pre-tax profits of over €84m in 2007. This represents 23.7% of total

revenue in 2007. In any competitive market these profit levels would have attracted the potential entrants discussed by Baumol (1982). This would push prices down to marginal cost and increase quantity. The LCCs, who themselves compete fiercely, would then pass the savings on to passengers.

Year	Revenue (€ 000)	Airport Charges Revenue (€ 000)	Passenger Numbers (000)	Pre-Tax Profit (€ 000)	% Profit
2006	308,123	128,409	21,196	71,489	23.20%
2007	355,972	158,976	23,287	84,383	23.70%
% Change	15.53%	23.80%	9.87%	18.04%	

Table 1: Revenue and Profits of DAA at Dublin Airport
Source: CAR Regulated Entity Accounts for Dublin Airport plc 2007 (CAR, 2008b).

Of particular interest is the dramatic increase in revenue accrued from airport charges in Table 1. Though passenger numbers increased by 9.87%, revenue from airport charges increased by an enormous 23.8%. The (albeit reluctant) willingness of airlines to endure this tremendous price increase indicates that passenger numbers would have grown even further had the prices been lower. Thus it may be concluded that DAA increased prices above their natural level and effectively undersupplied the demand of airlines. This, when considered alongside the enormous profits made by DAA, is *exactly* what Smith (1776) warned us of.

Regulation of DAA at Dublin Airport

In order to ensure that that DAA does not abuse its monopoly power, the Irish Government instructed the Commission for Aviation Regulation (henceforth CAR) to monitor the charges and policies of DAA under the Aviation Regulation Act, 2001 (CAR, 2008c). If CAR performs its duties effectively, outcomes in Dublin Airport should resemble as closely as possible outcomes that would occur under competition.

For 2007, CAR set a price cap (airport charge per passenger) of €6.39 for Dublin Airport (CAR, 2006). Table 2 documents the relevant figures for Dublin Airport in 2007. DAA exceeded the

price-cap by €0.44 in 2007, resulting in an estimated €10m in illegitimate revenue. This represents overcharging of passengers by 6.89%.

	Passenger Charge	Airport Charge Revenue[2]
CAR Price-Cap	€6.39	€148,734,500
Actual Passenger Charge	€6.83	€158,976,000
Difference	€0.44	€10,241,500
% Difference	6.89%	

Table 2: Dublin Airport Price Cap and Actual Charge in 2007
Source: CAR, 2008a.

In response to this overcharging, CAR claims to have built a discount into the 2009 price cap, which will return the €0.44 plus interest to passengers (CAR, 2008a). This proposition is incredible – the 2009 passengers and 2007 passengers are different groups, one of which now apparently benefits from the overcharging of the other. CAR failed to penalise DAA in any way for the overcharging of customers. Thus, CAR has allowed moral hazard to develop by signalling that there is no significant downside to overcharging. In reality, it is DAA who decide charges, as they have 'regulatory capture' over CAR. The resulting dissatisfaction of Ryanair with CAR is very much evident in the following extract from a press release:

> 'The main purpose of the Aviation Regulator is to replicate the effects of competition. Competition reduces charges and improves services. This Regulator has totally failed to do either... How can we reasonably expect this inefficient civil service quango to effectively regulate another inefficient semi-state service airport monopoly?' (Ryanair, 2004a).

Investment in Dublin Airport

A major criticism of DAA has been that they are using profits extracted from passengers to undertake grandiose, inefficient, 'gold-plated' investments (Aviation Appeals Panel, 2009). Table 3 documents several past, current and potential investments undertaken or planned by DAA at Dublin Airport.

[2] Passenger numbers are assumed to be price-inelastic only for the purpose of determining the proportion of 'ill-gotten' revenue.

	Pier C	Pier D	Terminal 1 Extension	Terminal 2	Second Runway
Projected Cost	€40m	€120m	€55m	€270m	€200m
Actual Cost	€150m	€120m	€80m*	€582m*	NA
Overrun	€110m	€0	€25m	€312m	NA

***Currently in Process**

Table 3: Investments by DAA (/Aer Rianta)

Sources: Whitaker 2008; Joint Committee on Regulatory Affairs 2008; DAA 2007 & 2008; CAR 2008d; Hancock 2008; Aviation Appeals Panel 2009.

Pier C, which was originally completed in 1999 at a cost equivalent to €150m, has already been demolished in order to make way for Terminal 2. As a result, Pier D (including 'Skybridge') was built to replace the lost capacity at a cost of €120m. However, poor planning led to Pier D passengers' isolation from vital retail units. Retail is far more important to Dublin Airport than most European airports, supplying €114m in revenue to DAA in 2007 (Graham, 2008; CAR, 2008a). Thus the Terminal 1 'retail' extension was built for €55m and is currently awaiting an upgrade at a further cost of €25m.

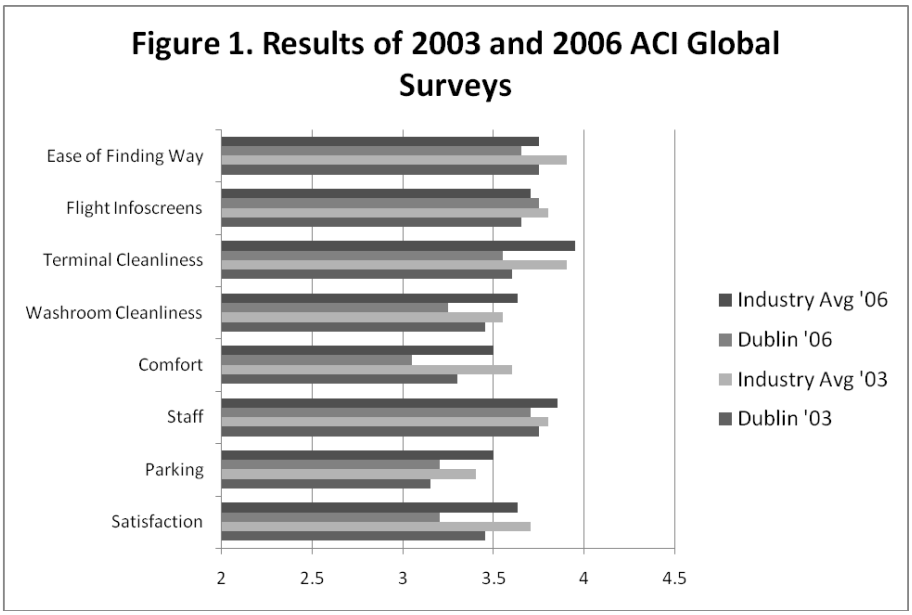
The current projected cost of Terminal 2 is €582m, which is already €312m over budget. When completed (likely mid-2010), this terminal will expand Dublin Airport's terminal capacity from 23mppa (million passengers per annum) to 35mppa. However, the main runway is currently operating near capacity, so any passenger increase is contingent on completion of the second runway (CAR, 2008d). The second runway is optimistically scheduled to open in 2012. However, recently passenger number fluctuations have prompted DAA to defer runway construction, essentially rendering Terminal 2 impotent (Hancock, 2008).

Although these investments have proven to be extremely flawed, costs of ill-planned and ill-fated projects will be passed on to passengers through the Regulatory Asset Base (RAB) allowance in the CAR price-cap.

Quality of service at Dublin Airport

As well as quantity and price, it is informative to discuss the quality of service at Dublin Airport with a view to determining whether increasing charges and high profit margins are justified by an increase in service quality. Airline Council International

regularly surveys passengers in thirty-two airports to determine quality of service. The results of the 2003 and 2006 surveys are displayed in Figure 1. Six out of eight indicators show a decline in service quality in Dublin Airport between and 2003 and 2006. Furthermore, Dublin Airport's results are worse than the industry average for all but one indicator. Thus it must be concluded that service quality certainly does not justify the high charges and profits of DAA. It appears more likely that these service quality results confirm that Dublin Airport can comfortably operate a substandard service due to the lack of competition from viable alternate airports.



Source: ACI 2007, cited in CAR 2008d.

Prospects for Airport Competition in Dublin

Occasionally, the establishment of a second commercial airport for Dublin receives attention in the press and in government. A frequent candidate is the Air Corps base at Baldonnel in South Dublin. South Dublin County Council has recently expressed a desire to develop the existing base for joint civilian and military use (Kelly, 2009). This would strongly resemble the experience of countless NATO and Warsaw Pact airfields across Europe, which have since become civilian airports. Barrett (2000) points out that the availability of these ready-made airports was crucial to the growth of the LCC industry. Other candidates include a retired (and dilapidated) military airfield in Gormanston and a green site in Monasterevin, Kildare.

The most accessible and cost-effective site is Baldonnel, which is still an active airfield and is located near motorways and a tramline. However, any plans to develop this site into a commercial airfield would likely meet with considerable opposition from local residents and could become something of a 'third rail' issue. Furthermore, the large investments already undertaken by DAA at Dublin Airport may motivate the government to prevent the development of a competing airport.

Terminal competition

Another way of introducing competition to Dublin Airport would be to separate Terminal 2 from Terminal 1 upon its completion. A contract to operate Terminal 2 could be put to tender, inviting private firms to compete with DAA. The two terminals could then compete on the basis of price and service levels. McLay and Reynolds-Feighan (2006:182) argue that terminal competition may well be the ideal solution to the DAA's monopoly power:

> 'The notion of competition between individual terminals at Dublin Airport is introduced as a measure that has the potential to overcome the locational barriers to competition and provide an alternative to ''heavy regulation '.

There are very few examples of terminal competition within airports. An oft-cited case is the 'Trillium' Terminal 3 at Toronto Pearson Airport. It operated in competition with the two publicly owned terminals for five years, making large profits until the Canadian government purchased it in 1996 as part of a redevelopment plan (McLay and Reynolds-Feighan, 2006). The experiment was perhaps too short-lived to provide any long-term insights, though its short-term success is encouraging.

Ryanair have frequently stated their desire to see terminal competition in Dublin Airport, in the past going so far as to offer to build a new terminal themselves (Ryanair, 2004b). However, the Minister for Transport recently announced that there would be no terminal competition at Dublin Airport, citing a €1.3m report by Goodbody Corporate Finance (Downes, 2009; Hancock, 2009).

Conclusions and Policy Implications

In examining the practices and regulation of Dublin Airport, it has been shown that DAA is operating an extremely inefficient monopoly. Returning to Smith's (1776) condemnation of the monopolist, the effects of the DAA monopoly will now be outlined:

1. **Quantity** is restricted by the slow and inefficient planning of Dublin Airport and its Terminal(s).
2. **Price** is artificially high, as is witnessed by the almost conspiratorial nature of CAR's price-setting practices, which allow DAA's losses to be passed on to passengers. Thus prices are following costs, rather than the other way around. Furthermore, the DAA has been allowed to ignore what little regulation there has been.
3. DAA has accrued vast **profits,** through its €1.2bn RAB, rarely heard of in even the most efficient companies (Aviations Appeals Panel, 2009). As DAA is a semi-state company, these supernormal profits cannot be passed on to private investors.
4. **Quality** of service is in constant decline at Dublin Airport according to key indicators, in spite of the large-scale investments undertaken by DAA.

The DAA bears all of the hallmarks of an abusive monopoly. There is one reason why this happens: DAA is not exposed to any competition. Returning to Baumol's (1982) theory of contestable markets, producers will act efficiently for fear of losing their business, *not* because of a sense of civic duty.

Ideally, a second airport should be established in the greater Dublin area. This would offer an alternative to airlines and passengers while simultaneously motivating DAA to be more efficient. However, several vested interests are likely to block any such development. A more realistic alternative may be to award a contract to operate Terminal 2 to a private entity, as already discussed. Although this practice is relatively unproven, the current excess capacity of the Dublin Airport terminals relative to the runway capacity should minimise the possibility of so-called 'wasteful competition'. Put simply, the better terminal will win.

Failing the former two suggestions, a new, aggressive regulator must be appointed to actively engage in lowering charges, increasing quantity and increasing quality. The recent success and acclaim of the UK Competition Commission, which is currently breaking up the BAA monopoly, suggests that there is indeed scope for efficient regulation of airports as long as

regulatory capture is avoided (Ryanair, 2008b, 2008c; Robertson, 2009).

Since the late 1990s, European aviation markets were revolutionised by the emergence of LCCs, who depended upon competing secondary airports to enable them to provide efficient services. In Dublin, passengers have benefitted from competing airlines, but have yet to benefit from competing airports. Particularly as an island economy, it is vital that this deficit in the aviation market is somehow rectified.

Bibliography

Aviation Appeals Panel. 2009. 'Decision of Aviation Appeals Panel: Appeal of Ryanair against the Determination of the Commission for Aviation Regulation CP6/2007'. Dublin: Commission for Aviation Regulation.

Barrett, S. 2000. 'Airport competition in the deregulated European aviation market'. *Journal of Air Transport Management* 6:1:13-27.

Barrett, S. 2004. 'How do the demands for airport services differ between full-service carriers and low-cost carriers?'. *Journal of Air Transport Management* 10:1:33-39.

Baumol, W. 1982. 'Contestable Markets: An Uprising in the Theory of Industry Structure'. *The American Economic Review* 72:1:1-15.

Commission for Aviation Regulation. 2006. 'Maximum Levels of Airport Charges: Price Caps for 2007'. Dublin: Commission for Aviation Regulation.

Commission for Aviation Regulation. 2008a. 'Dublin Airport Authority plc Extract from Regulated Entity Accounts Year Ended 31 December 2007'. Dublin: Commission for Aviation Regulation.

Commission for Aviation Regulation. 2008b. 'Maximum level of airport charges at Dublin Airport: Price Cap for 2009'. Dublin: Commission for Aviation Regulation.

Commission for Aviation Regulation. 2008c. 'Annual Report to the Minister for Transport for the year ended 31 December 2007'. Dublin: Commission for Aviation Regulation.

Commission for Aviation Regulation. 2008d. 'Maximum level of airport charges at Dublin Airport: Issues Paper'. Dublin: Commission for Aviation Regulation.

Doganis, R. 2002. *Flying off course: the economics of international airlines* (3rd ed.). London: Routledge.

Downes, J. 2009. 'Department of Transport pays €3.4m to consultants despite cutbacks' in *The Sunday Tribune*, 18th January 2009.

Dublin Airport Authority. 2007. 'DAA Investment Programme for Dublin Airport Gathers Pace'. Retrieved from Dublin Airport Authority at: http://www.dublinairportauthority.com/media-centre/press-releases/162007.html

Dublin Airport Authority. 2008. 'DAA to start work on €55m extension to Terminal One'. Retrieved from Dublin Airport Authority at: http://www.dublinairportauthority.com/media-centre/press-releases/032008.html

Forsyth, P. 2003. 'Airport Competition and the Efficiency of Price Structures at Major Airports'. *GARS Seminar*. Leipzig.

Graham, A. 2008. 'How important are commercial revenues to today's airports?'. *Journal of Air Transport Management* (in Press) Corrected proof available online on 12th December 2008 from Science Direct at: http://www.sciencedirect.com/science?_ob=ArticleListURL&_method=list&_ArticleListID=892138261&_sort=d&view=c&_acct=C000007920&_version=1&_urlVersion=0&_userid=103681&md5=5c4e99f222e1a12dd822ef83642885a9

Hancock, C. 2008. 'Plan to cut airport jobs and shelve Dublin's second runway' in *The Irish Times*, 18th December 2008.

Hancock, C. 2009. 'Plans for Terminal 2 operator scrapped' in *The Irish Times*, 3rd February 2009.

Joint Committee on Regulatory Affairs, 2008. 'Regulation of Dublin Airport: Discussion with Ryanair'. Dublin: Office of the Houses of the Oireachtas.

Kelly, O. 2009. 'Council wants to turn Baldonnel into commercial airport' in *The Irish Times*, 4th February 2009.

McLay, P. & Raynolds-Feighan, A. 2006. 'Competition between airport terminals: The issues facing Dublin Airport'. *Transportation Research Part A: Policy and Practice* 40:2:181-203.

Robertson, D. 2009. 'Business big shot: Christopher Clarke of the Competition Commission' in *The Times*, 20th January 2009.

Ryanair. 2004a. 'Ryanair To Appeal Aviation Regulator's Latest Decision'. Retrieved from Ryanair at: http://www.ryanair.com/site/EN/news.php?yr=04&month=apr&story=reg-en-060404

Ryanair. 2004b. 'Aer Rianta Monopoly Price Increases Ruled Unlawful'. Retrieved from Ryanair at: http://www.ryanair.com/site/EN/news.php?yr=04&month=apr&story=reg-en-010404

Ryanair. 2008a. 'Annual Report 2008'. Dublin: Ryanair Limited.

Ryanair. 2008b. 'Ryanair Welcomes Competition Commission's Call to Break up BAA Airport Monopoly'. Retrieved from Ryanair at: http://www.ryanair.com/site/EN/news.php?yr=08&month=aug&story=gen-en-200808-3

Ryanair 2008c. 'Ryanair's Cautious Welcome on Stansted Pricing'. Retrieved from Ryanair at: http://www.ryanair.com/site/EN/news.php?yr=08&month=dec&story=gen-en-091208

Smith, A. 1976. [1776]. *An Inquiry into the Nature and Causes of the Wealth of Nations.* London: Oxford University Press.

Whitaker, A. 2001. 'Regulator's Aer Rianta Plans Raise Serious Concerns' in *The Irish Times*, 6th July 2001.

THE DUBLIN PORT TUNNEL: A COST-BENEFIT ANALYSIS

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An ex-post *cost-benefit analysis has never been completed on the Dublin Port Tunnel. Simon Rattigan rectifies this problem in this essay by undertaking his own cost-benefit analysis. His conclusions are radically different from the official estimates of costs and benefits for the tunnel. This highlights the need for more realistic planning and greater accountability in public sector investment.*

Introduction

The National Roads Authority (NRA) states that since public sector investment resources are scarce, the Government is 'concerned with securing value for money from investment expenditure' (NRA, 2008: 35). Thus Cost-Benefit Analysis (CBA) was established as 'the most important technique for project appraisal in the public sector' (Mulreany, 2002: 1). However, even though the NRA produced a very sizeable document (Performance Appraisal Guidelines, 2008) outlining the project appraisal guidelines for public sector investments, an *ex-post* CBA has not been conducted for the Dublin Port Tunnel (hereafter 'the tunnel' or 'DPT'). This is rather surprising considering it cost a total of €752 million to the exchequer.

In this paper, the rationale for CBA as a tool for project appraisal in the public sector will be explained and then a CBA of the Dublin Port Tunnel will be prepared. The observed benefits will be weighed against the costs and discounted to establish a Benefit/Cost ratio and the Net Present Value (NPV) over the 'appraisal period'. This will then be compared to the initial figures presented in the Environmental Impact Statement 1998 (EIS) circulated prior to the project commencement, which justifies the tunnel with very favourable cost-benefit predictions. For the purpose of this paper, the effects of the Heavy Goods Vehicle (HGV) Management Strategy will be included as part of the DPT, as the DPT has enabled the removal of HGVs from the city centre.

Cost-Benefit Analysis

This is an extremely important tool for project appraisal, especially for 'sectors that do not have a marketable output' (NRA, 2008: 35). CBA is an application of welfare economics (Mulreany, 2002) and, as such, consumer surplus is used to measure the benefits of road investment. This is due to the fact that 'transport is not usually an end product in itself… it permits other activities to be undertaken' (Barrett, 1982: 28) and therefore CBA substitutes 'social benefit for the revenue of the firm' (ibid.: 29). Clearly then, it is important that overall gains to society are evaluated in the CBA and a project must satisfy the Pareto optimality condition: 'if we can find a way to make some people better off without making anybody else worse off, we have a Pareto improvement' (Varian, 2006: 15).

Barrett and Mooney (1984: 22) state that 'highway investments have quantified three main benefits: time savings, accident reduction and vehicle cost savings' and similarly, this paper finds these benefits with regard to the tunnel. The valuation of costs is relatively straightforward because they

reflect market prices (Mulreany, 2002), and in this paper it is assumed that they are competitive. However, since market prices do not exist for the aforementioned benefits, shadow prices are used to reflect social prices. In this paper shadow prices are taken from the NRA's project appraisal guidelines document (the 'Project Appraisal Guidelines', Appendix 6 'National Parameters Value Sheet', NRA, 2008 - hereafter referred to as 'Appendix 6'), which themselves extend from the COBA computer programme manual (2004).

The Dublin Port Tunnel

Dublin City Council states that, while the NDP gave financial assistance for the 'preliminary design package [of the tunnel] as part of the Cohesion Fund of around 80-85% of this expense, the contract itself was funded entirely by the exchequer'. The overall project cost was €752m which is significantly higher than the initial EIS estimate of €215m (converted from Irish pounds in 2002 prices) (Dublin City Council, 1998a). The project is a 5.6 km underground dual carriageway, and the entrances to the tunnel are at the East Wall Road in the North Port and at Santry, creating a direct link between the congested port area and the M50 outer ring road. Construction lasted from June 2000 until December 2006.

Objectives

The objective of this project was to create a 'vital strategic corridor… ultimately for the benefit of the national economy' (DCC, 2008c). The beneficial effects would therefore stem from a dramatic reduction in the number of HGVs in the city centre and residential areas. As a result, there would be time savings on journeys for cars in the city, accident cost savings due to safer conditions, and vehicle cost savings due to lower journey times. While these are 'the quantified benefits from road investment' (Barrett and Mooney, 1984: 33), other environmental effects such as air quality, noise levels and the impact on the physical environment could be observed.

Money values will be attached to the benefits (where applicable), and they will be listed alongside the costs while comparing the time streams of both (Barrett, 1982: 33). For the purpose of this paper, sensitivity tests will be omitted in preparing the CBA.

Accident costs

'The cost of injuries is estimated from hospital and other medical data and from the loss of output while the patient is undergoing treatment' but it is not possible to establish the cost to the victim in the case of a fatality, so this measure is therefore imperfect (Barrett and Mooney, 1984: 23). Nevertheless, accident costs will be taken from Appendix 6 as shadow prices (NRA, 2008). Appendix 6 shows that there are 0.06 fatalities per accident on motorways compared to 0.045 on two lane single carriageways and 0.032 on dual carriageways. Hence, accident severity is greater on motorways, but 'accident rates are lower' (Barrett and Mooney, 1984: 26) – from Appendix 6, a probability of 0.037 per million vehicle kilometres is obtained. However, with the DPT (and the HGV ban as part of the HGV Management Strategy) traffic is removed from the city centre. As a result there are more vehicles on the M50, which has a lower accident probability, but such an

accident is likely to be more severe. The greater severity of impact means a higher cost per accident (ibid.: 27).

For this calculation, the same methodology as Barrett and Mooney (1984) will be utilised. There is limited data regarding traffic flows involving the tunnel so the following analysis is based on various assumptions. Using aggregated data from the DPT website and calculations based on Dublin City Council information (DCC, 2007), approximately 8,200 HGVs use the tunnel daily. Therefore the assumption is made that 8,200 trucks will use the M50 from junction 1 to junction 9 that otherwise would not have taken this route. This journey is 18 kilometres and therefore generates 53.87 million vehicle kilometres per year.[1] The proportions of accidents are 0.09 for death and 0.169 for a serious injury (NRA, 2008) and thus the motorway accident rates are 0.00333 deaths and 0.006253 serious injuries per million vehicle kilometres. Therefore there will be 0.1794 deaths and 0.3368 serious injuries per year that will cost €377,025 at 2002 prices

It has been aggregated from the data (DCC, 2007) that 82.4% of all HGVs have been removed from the city centre area. In 2004 HGVs accounted for 21.4% of the 28 fatalities in Dublin City and 8.5% of the 1,109 injuries (NRA, 2004), and using this as a year of reference, the removal of the above proportion of trucks will save €8,507,346 in the cost of fatalities and €1,511,524 in the cost of serious injuries: in total, a reduction in costs of €10,018,870. Therefore the annual net saving in accident costs from utilising the Dublin Port Tunnel is €12,304,619 (2002 prices). And 'the accident rate reduction will more than compensate for the higher average cost per accident on motorways than in urban areas' (Barrett and Mooney, 1984:27).

Time savings

These are the 'largest benefits of most transportation projects' and the 'key assumptions are that the value of a person's output is at least equal to the cost of employing him or her and that a saving in time will allow production to increase by a corresponding amount' (Mulreany, 2002: 10). Following from this, work and non-work travel times are valued differently, and NRA input values are utilised here. Examined below are the time savings that materialise for motorists in the city area as a result of the removal of haulage vehicles.

The volume of traffic flows has been recorded (NRA, 2004) in various areas throughout the city and these figures themselves indicate the roads most travelled on. The most recent data relates to the year 2004 and thus an estimate of traffic volume reduction from the tunnel is derived from these figures. On average, 31,644 vehicles travel though these various 'main' routes and 10.7% of this is accounted for by HGVs (NRA, 2004). Using traffic forecasts (NRA, 2003) this volume will increase by 5.6% to 33,416 vehicles daily in 2006. There is no current or historic data available for journey times within the city and more specifically, no data relating to time savings as a result of the removal of HGVs in these areas, therefore the following analysis is be based on certain assumptions.

[1] 8,200 x 18km x 365 = 36.87m km

Category	People per day	Time Saved (hours/day)	Value of Time (€/day)	Annual Savings (€000)
Work	4,348	742.4	22.2	6,015.7
Non-work	41,770	7,131.6	6.35	16,529.3
	46,118	7,874		22,545

Table 1: Time savings from the Tunnel (2002 prices in euro)

According to the NRA, one HGV is equivalent to 2.5 'passenger car units' (NRA, 2008); each HGV removed will therefore be worth 2.5 cars. Accordingly with the removal of 82.4% of HGVs as noted above, travel times within the highly used city areas will be reduced by 18.9%. Therefore 30,469 vehicles should have lower journey times due to the tunnel. Taking NRA vehicle proportions by categorisation and vehicle occupancy rates, it is estimated that over 46,100 people will save time on journeys. It is difficult to calculate actual journey time savings for these motorists because of the vast variety in their routes and journey lengths (surveys would be useful in this regard); therefore based on anecdotal evidence, the assumption is made that the average journey time in the city between 08.00 and 20.00 is one hour. It is also assumed that 71% of the daily traffic total is accounted for between 08.00 and 20.00 and that journey times outside this period are two-thirds of those within it (forty minutes), as in Barrett and Mooney (1984). Therefore 32,744 vehicles (71% of traffic) save 11.34 minutes and 13,374 (29%) save 7.56 minutes daily. In total 46,118 people will save 7874 hours daily, and using values of time savings in Appendix 6 (NRA, 2008), the estimate annual value of savings is €22.545m.

These time savings may be overstated because the relevant NRA data relates to 5-plus axle vehicles, whereas the DCC have stated that 'more than 1,700 four-axle trucks use routes in the city each day' as these are not yet banned (Cooke, 2008). This may give rise to imprecise results but for the purpose of this paper the above serves as a reasonable estimate.

Vehicle Cost Savings

These savings are made through differences in levels of fuel consumption that arise from a road project. Below is an analysis of additional costs to HGVs using the tunnel and savings to those remaining motorists in the city. It is estimated from the National Spatial Strategy and the NRA (2003) that there are approximately 511,789 cars in County Dublin (2006), 5.9% of which travel through the city centre daily. Therefore, of the estimated 29,980 million car kilometres in Ireland for 2006, 1,769m of these occurred in the city centre. A source of overstatement would arise if, for simplicity, fuel savings are directly equated to traffic volume. Therefore, (somewhat arbitrarily) the resulting benefits will be reduced by half, since distances travelled are assumed to be constant irrespective of the volume of traffic. Therefore with a reduction in passenger car units of 18.9% by

the tunnel, just over 30,000 vehicles will save 344m kilometres. Using NRA (2008) vehicle operating costs this will amount to €20.862m annually,[2] and adjusted to €10.431m (in 2002 prices).

However, many trucks must now travel greater distances than they otherwise would have – 8,200 trucks now use the tunnel and the M50 to reach the Red Cow roundabout that ordinarily would have driven through the city. This journey is 24km compared to the previous route of 13km though the city, therefore 8,200 trucks must now travel an additional 11km. While the Irish Road Hauliers Association (IRHA) claim that this costs an additional €10m per year (Cooke, 2008), this paper calculates an overall additional cost to hauliers of just over €5.4m.

Category	Number per day	Extra Kilometres	Fuel Costs (cent/km)	Annual Cost (€000)
LGV	4,346	47,806	6.987	1,219.3
OGV1	1,319	14,509	16.191	857.5
OGV2	2,535	27,885	32.866	3,345.1
	8,200	90,200		5,421.8

Table 2: Additional fuel costs to HGVs (2002 prices in euro)

Overall, subtracting the additional cost to hauliers from the savings to the remaining city road users, there is a net saving of €5.009m per year. These benefits are the smallest of those enjoyed by the DPT.

Costs

The costs of an individual road investment are those that are required 'to establish, maintain and operate a project' (Georgi 1973:19) and the NRA split these project costs into two categories: investment costs and operating costs (NRA, 2008: 44). The former includes construction, land acquisition and labour while the latter relates to the cost of maintenance. In 1998 before construction, an EIS appraisal summary announced a total cost outlay of only €215m for the DPT over a 43 month period approximately. Admittedly, the ultimate tender price was for €457m but the

[2] 7.0864m km [344 x 0.0206] x 6.98772640 cent/km + 336.8792m km [344 x 0.9793] x 5.151189102.

total cost came to €752m taking sixty-six months to complete, opening three years later than intended. This begs the question as to why a more realistic approach was not taken towards costing.

According to the NRA the toll revenue from small vehicles is minimal but 'roughly offsets maintenance costs'. Therefore for simplicity it will be assumed that this will always be the case and both their toll revenues and maintenance costs will be removed from the streams of discounted costs and benefits throughout the appraisal period (30 years).[3] The cost outlay of €752m for the project is converted from 2006 prices to 2002 prices to €662.454m in order to compare the values of the costs and benefits.

	Time (€m)	Accident (€m)	Fuel (€m)	Total Benefit (€m)	Costs (€m)
2006	-	-	-	-	662.454
2007	22.545	12.305	5.009	39.859	-
2008	21.678	11.831	4.816	38.326	-
2009	20.844	11.376	4.631	36.852	-
2010	20.042	10.939	4.453	35.435	-
2011	19.272	10.518	4.282	34.072	-
2012	18.530	10.113	4.117	32.761	-
2013	17.818	9.725	3.959	31.501	-
2014	17.132	9.350	3.806	30.290	-
2015	16.473	8.991	3.660	29.125	-
2016	15.840	8.645	3.519	28.004	-
2017	15.231	8.313	3.384	26.927	-
2018	14.645	7.993	3.254	25.892	-
2019	14.082	7.686	3.129	24.896	-
2020	13.540	7.390	3.008	23.938	-
2021	13.019	7.106	2.893	23.018	-
2022	12.518	6.832	2.781	22.132	-
2023	12.037	6.570	2.674	21.281	-
2024	11.574	6.317	2.571	20.463	-
2025	11.129	6.074	2.473	19.676	-
2026	10.701	5.840	2.377	18.919	-
2027	10.289	5.616	2.286	18.191	-
2028	9.894	5.400	2.198	17.491	-
2029	9.513	5.192	2.114	16.819	-
2030	9.147	4.992	2.032	16.172	-
2031	8.795	4.800	1.954	15.550	-
2032	8.457	4.616	1.879	14.952	-
2033	8.132	4.438	1.807	14.377	-
2034	7.819	4.267	1.737	13.824	-
2035	7.518	4.103	1.670	13.292	-
2036	7.229	3.945	1.606	12.781	-

[3] Source: 'Project Appraisal Guidelines', Appendix 6 'National Parameters Value Sheet', NRA, 2008:4

Total	716.816	662.454

Table 3: Stream of costs and benefits (at the 4% discount rate): 2002 prices in euro.
Note: the project was completed in December 2006 so it is assumed that no benefits will occur in that year.

Summary of CBA Cash Flows

Using a 4% discount rate the values of benefits (cash inflows) can be seen over time; this analysis shows that these only marginally cover the costs. The internal rate of return (IRR) is therefore determined to be 4.33%, only slightly higher than the 'hurdle rate' on public sector projects of 4% (NRA, 2008). It is important to note however, that the above calculations are based on zero growth rates in traffic and income levels (it can be viewed as a pessimistic scenario), and since this may be unrealistic over a 30 year period, sensitivity tests showing growth in these areas would result in higher IRRs. Time savings account for 57% of the benefits of the DPT, so the IRR would be most sensitive to changes in the monetary values attached to these (Barrett and Mooney, 1984), which also vary according to sensitivity tests. Nevertheless, the above analysis shows an observed Benefit/ Cost ratio of merely 1.082:1, which is considerably less than the pre-construction appraisal summary figures that show a ratio of 4.56:1.[4] The EIS also applies a NPV of €789.21m to the project (whereas this analysis has found an NPV of €54.4m, very small in comparison to overall cost) with an IRR of 15.4% - significantly greater than the above findings.

Unquantifiable Benefits

These take the form of 'amenity and environmental aspects of road investment' (Barrett and Mooney, 1984: 30), but despite difficulty in valuation, these items are 'none the less important' (ibid.: 31). A significant result of the tunnel project is the resulting HGV ban, and this has had a tangible impact due to the removal of environmentally deficient vehicles from the city. The DCC (1998c) states that this gives rise to an automatic increase in the quality of the environment that is immediately noticeable since there is a reduction in noise and pollution levels in central areas. However, it is argued anecdotally that due to air currents particular to Dublin's coastal location, the increase in air quality is not significant since it was reasonable to begin with – this indeed is difficult to quantify.

Conclusion

Significantly, the differences between the 1998 EIS appraisal summary figures and the findings in this paper are due mostly to an initial understatement of costs as opposed to an overstatement of benefits. Even if the costs had remained at the level of the tender price (€457m – still significantly higher than the EIS forecast) there would have been a more favourable Benefit-Cost ratio of 1.57:1, an NPV of €259.8m and an IRR of 7.81 per cent. This must then call into question the validity of the initial appraisal, and lay blame on the part of the contractee of the project for the significant overrun. Nevertheless, this analysis allows the DPT to pass three 'decision rule' criteria for an

[4] Figures were adapted to consider a 4% discount rate as opposed to a rate of 5% that is used in the EIS (1998).

individual project: NPV > 0; Benefit-Cost ratio > 1:1; and the IRR > the NRA 'hurdle' discount rate. However, the discounted benefits shown by these methods as part of the CBA only marginally exceed the costs, delivering only a small gain to the welfare of society. While there may be drawbacks in terms of the breadth of this type of analysis, it is apparent why it is considered 'the most important technique for project appraisal in the public sector' (Mulreany, 2002: 1). Perhaps the most disappointing result in this study is the apparent lack of accountability for public investment projects and this highlights the fear that 'the failure to publish *ex post* cost benefit analyses of these projects increases the taxpayer risk in further tunnel… transport projects' (Barrett, 2006: 41).

Bibliography

Barrett, S. 1982. *Transport Policy in Ireland*. Dublin: Irish Management Institute.

Barrett, S. 2006. 'Evaluating Transport 21 – Some Economic Aspects'. *ESRI Quarterly Economic Commentary* 4:36-58. Dublin: ESRI.

Barrett, S. & Mooney, D. 1984. 'The Naas Motorway Bypass – A Cost Benefit Analysis'. *ESRI Quarterly Economic Commentary* 1:21-34. Dublin: ESRI.

Central Statistics Office: www.cso.ie

Cooke, N. 2008. 'City centre to benefit further from lorry ban' in *The Sunday Business Post*, 17th February 2008.

Cost Benefit Analysis computer programme (COBA). 2004. 'Economic Assessment of Road Schemes'. *COBA Manual* 13. London: Department of Transport.

Dublin City Council. 1998a*, Environmental Impact Statement – Volume 5: Appendices*. Dublin: DCC.

Dublin City Council. 1998b*, Environmental Impact Statement – Non-Technical Summary.* Dublin: DCC.

Dublin City Council 1998c. *Environmental Impact Statement – Overall Evaluation*. Dublin: DCC.

Dublin City Council. 2007. *'HGV Management Strategy Six Month Review*'. Dublin: DCC.

Dublin Port Tunnel: www.dublinporttunnel.ie

Georgi, H. 1973. [translated from the German by E.F.N. Jephcott]. *Cost Benefit Analysis and Public Investment in Transport: a survey.* London: Butterworth.

Honohan, P. 1998. *Key Issues of Cost-Benefit Methodology for Irish Industrial Policy*. Dublin: ESRI.

Mishan, E. 1988. *Cost Benefit Analysis* (4th ed.). London: Routeledge.

Mulreany, M. (ed.) 2002. *Cost Benefit Analysis: Readings*. Dublin: IPA.

National Roads Authority. 2008. *Project Appraisal Guidelines.* Dublin: NRA.

National Roads Authority. 2007. *Heavy Goods Vehicle Management Strategy Six-Month Review.* Dublin: NRA.

National Roads Authority. 2005. *Roads Collisions Facts, 2004.* Dublin: NRA.

National Roads Authority. 2004. *National Roads and Traffic Flow, 2004.* Dublin: NRA.

National Roads Authority. 2003, *Future Traffic Forecasts 2002 – 2040.* Dublin: NRA.

The National Spatial Strategy: www.irishspatialstrategy.ie

Varian, H. 2006. *Intermediate Microeconomics: a Modern Approach* (7th ed.). London: Norton.

DO THE GLOBAL ALLIANCES PROVIDE REAL BENEFITS FOR THE CONSUMER? AN EXAMINATION OF STAR ALLIANCE, ONEWORLD AND SKYTEAM

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In light of current international aviation regulations and the commercial and economic realities facing airlines globally, Deena Blacking investigates the recent phenomenon of airline alliances. She focuses on the three major alliances - oneworld, SkyTeam and Star Alliance - and their impact on the global aviation market as well as their effect on consumers. The potential benefits to travellers are considered in addition to the potential problem of price collusion inherent in an imperfectly competitive market structure.

Introduction

In 2007, the global airline industry carried approximately 2.26 billion passengers (International Civil Aviation Organisation, 2007). For many countries, particularly island nations such as Ireland or Australia, access to air transport is vital for remaining connected to the rest of the world. Since the signing of the Convention on International Civil Aviation in Chicago in December 1944, there has been international recognition of the need to create conditions where 'international civil aviation may be developed in a safe and orderly manner and that international air transport services may be established on the basis of equality of opportunity and operated soundly and economically' (taken from the Preamble to the Convention). Today, with the advent of globalisation, air transport is an integral part of the world economy and society.

The first international airline alliance was formed in 1986 between Air Florida and British Island (Iatrou, 2007). Since then, many attempts at alliances have been made, some more successful than others. A primary catalyst for alliance formation was the liberalisation of the aviation industry, first in the United States in 1978 and followed by successive deregulation moves globally. In 1997, the creation of Star Alliance, and the formation of oneworld and SkyTeam in 1998 and 2000 respectively marked a divergence from previous alliance practice. These alliances took a strategic leap from traditional partnership methods - such as codesharing, bilateral agreements, and regional alliances - towards the creation of global networks and a common strategy. They achieved this by uniting several airlines from different regions to provide a global service of worldwide interconnected route networks (Doganis, 2007).

Today, these alliances generate about 55% of the world's passenger traffic (Doganis, 2007), carrying over one billion passengers annually. The large presence of the global alliances in the aviation industry attracts continual attention from regulatory authorities (ICAO, 2007). On 3rd February 2009, the U.S. House of Representatives' Committee on Transportation and Infrastructure introduced a bill 'to study the effects airline alliances and anti-trust immunity have on consumers', based on a concern that the initial 'pro-consumer trend' from global alliance formation had reversed.

This paper will consider the effects of global airline alliances on the consumer as follows: section one provides an overview of the global alliances and states the advertised benefits of their global service; section two explains why and how the alliances formed; section three compares the advertised benefits for customers with the evidence from twelve years of global alliances; and section four considers the case of competition and the price of air fares. Ultimately, this paper will produce a conclusive statement on whether or not the formation of global alliances is in the public interest or not.

An overview of the global alliances

'The major benefit of global alliances to the airlines and consumers is an expanded and optimised route network. Through global alliances, passengers can, in theory, easily travel from one destination to another, anywhere in the world, with a ticket from one airline' (Vasigh, 2008: 171).

- **Star Alliance**, founded in 1997, has twenty-one member airlines. It serves 912 airports in 159 countries and carries 499 million passengers annually
- **oneworld**, founded in 1998, has ten member airlines. It serves 673 airports in 134 countries and carries 328 million passengers annually
- **SkyTeam**, founded in 2000, has eleven member airlines and three associate airlines. It serves 905 airports in 169 countries and carries 462 million passengers annually.

Differing from the concept of alliances that operated prior to their formation, the global alliances expanded beyond purely commercial agreements towards the creation of strategic alliances and the use of a common brand (Doganis, 2007). Yet despite continual efforts to appear unique, the three global alliances have little basis for differentiation in the aviation market:

> 'The three alliances essentially differ only in identity and membership – otherwise they can be seen to be pursuing the same objectives. From a product point of view there is no reason to prefer one alliance/airline over the other, since they are competing with similar tools and offering comparable products' (Iatrou, 2007: 21).

An examination of each alliance's advertised benefits and objectives exhibits this similarity. All three alliances present the following four points as key customer benefits of their service:

- They exist to serve the needs of the global traveller by providing worldwide access and benefits that are beyond the reach of any individual airline's network;
- Faster transfer times;
- 'Seamless connections';
- Frequent Flyer Programmes (FFPs) and lounge access worldwide.

To what extent have these benefits been realised for customers? How do these gains to the consumer from global alliances compare to the gains to the airlines?

Why did global alliances come into existence?

Before we examine the benefits of the alliances, it is necessary to understand the conditions which permitted their formation; the factors which necessitated their formation; and what the airlines stood to gain from the alliances.

The developments in the aviation industry are best understood within the context of the industry's environment. The environment which permitted the formation of the global alliances at the end of the twentieth century can be attributed largely to the twin external stimuli of globalisation and deregulation (Iatrou, 2007). The development of alliances was also necessitated by the drive to reduce costs, particularly during the early 1990s when the airline industry faced rising fuel costs, and in the North Atlantic markets in particular there were pressures on labour costs (Doganis, 2007). Finally, as liberalisation and insufficient traffic growth resulted in over-capacity and falling yields, the formation of alliances was seen as a way of maintaining market position and reducing competition. The reasons leading to the formation of the global alliances can therefore be seen as responses to these conditions.

Responding to deregulation and globalisation:
Since the first act of domestic deregulation of the US aviation industry in 1978, there has been a continually evolving trend towards the liberalisation of air transport. During the 1980s and early 1990s, the US, the European Community, and other governments worldwide were enabling more open and unrestricted markets. The deregulation of the industry enabled the emergence of new competitors, and a relaxation of pricing controls (Doganis, 2007). During these decades, the trend toward globalisation was creating a new need for global coverage and greater geographical spread. Despite deregulation, restrictive barriers to entry in international markets remained; ownership restrictions in nearly all bilateral agreements prevented cross-border mergers. The desire to respond to global needs for international route structures was thus unable to be satisfied. As a response, the main means by which airlines overcame these restrictions was through the formation of strategic alliances (Williams, 2002).

Responding to costs and uncertainty:
The aviation industry is cyclical in nature, which makes it vulnerable to the instabilities and uncertainties of the international economy (Iatrou, 2007). Unlike other service industries, it is a capital and labour-intensive business which is dependent on technology and subject to high operating costs. In the early 1990s, the airline industry was in a cyclical downturn and faced its most serious crisis of the twentieth century as revenue fell and costs spiralled. There was strong economic pressure towards the restructuring of most existing airline companies and a consolidation of the airline industry (Lawton, 2002). The development of alliances was therefore driven by the need to generate revenue, and to share the high fixed costs of major investments, especially in the advanced and expensive technologies of the aviation industry (Doganis, 2007)

By creating alliances, airlines were able to build global networks at relatively little extra cost, achieving economies of scale through resource pooling across operational areas such as sales and marketing, station and ground facilities, and maintenance and purchasing. In addition, membership of an alliance would buffer against the cyclical and unstable nature of the industry (Button, 1998).

Responding to demand and competition:
In the liberalised aviation industry, individual airlines struggled as they battled for market share and for limited capacity airport slots (Doganis, 2003). By forming alliances, three specific advantages could be gained to counter the problems of limited capacity and falling yields: access to new markets by tapping into a partner's under-utilised route rights or slots; traffic feed into established gateways to increase load factors and to improve yield; and defence of current markets through seat capacity management and shared operations (Button, 1998). There is consensus in the industry that alliances produce substantial increases in traffic (Doganis, 2007; Button, 1998; Vasigh, 2008).

Dr. Michael Gremminger, from the European Commission Directorate General for Competition, believes that certain alliances seem to have been formed not only to achieve the necessary scale to compete globally, but also with the aim of limiting competition i.e. to control certain markets, to preside over slots at congested airports and to exploit traffic rights. The formation of airline alliances has made it possible for the partners to enjoy a kind of monopoly. Determining whether the lessening of competition is against the public interest would 'depend if efficiency gains outweigh efforts by the airlines to extract supernormal profits' (Button, 1998: 116). This can perhaps best be understood by considering not only the services and benefits provided by the global alliances, but also the price of the air fares.

What benefits do the global alliances create? Examining the evidence.

To assess whether the global alliances provide benefits to the global traveller, we examine the evidence from alliance performance to determine how well they provided the four key advertised customer benefits of their service.

Providing access to a global network:
It is generally recognised that alliances have enhanced global access. Data clearly shows scheduling frequencies are higher, that passenger traffic has increased, and there is a greater availability of destinations with on-line connections (Doganis, 2007). In a 2005 study of the global alliances, Iatrou and Skourias concluded that alliances lead to a significant increase in traffic on alliance routes (9.4% on average), enabled by the creation of effective hub-and-spoke systems offering worldwide coverage.

Faster transfer times:
Evidence shows that improvement in transfer times has been achieved (Doganis, 2007). For example, the Star Alliance strategy for achieving faster transfer times, *Move Under One Roof*, has reduced waiting times at Narita, Japan, by 50%. This reduction is achieved by grouping all the member airlines at the same terminal.

'Seamless Connections'
The promise of 'seamless connections' is based on the alliances' ability to provide a 'one-stop check-in' for passengers and their luggage no matter how many flight changes they need to make. This promise, however, is often not met as 'passengers may not be fully informed that they have to change

planes' (Sinha, 2001). oneworld claims the benefit of providing a fully e-ticketed service, but evidence has shown that communication breakdowns may still occur between the check-in at one airport and the transfer desk at another. Finally, while flying with an alliance can guarantee the connecting flight will wait in the case of a delay; this requirement to wait may cost other passengers on the connecting flight.

Frequent Flyer Programmes (FFPs) with lounge access worldwide:
None of the three alliances have created a single branded FFP, nor fully integrated the individual carrier FFPs. This lack of cohesion means that the privileges offered are quite standard, because they have to compromise between the offerings of all members (Iatrou, 2007). Nonetheless, for business class travellers, the global alliance's combined FFPs with lounge access worldwide is an attractive loyalty scheme (Doganis, 2007).

Having considered the services and advertised benefits provided by the global alliances, the evidence is generally positive. Global alliances create benefits for the customer. However, given the concerns that entry into an alliance is not primarily to generate benefits for customers but to reduce competition, determining whether or not the alliance benefits the consumer depends also on the price of the air fares.

Competition and air fares

On 3rd February 2009, the U.S. House of Representatives' Committee on Transportation and Infrastructure introduced a bill 'to study the effects airline alliances and anti-trust immunity have on consumers'. Within the bill, concern was expressed that 'fares in markets dominated by alliances have increased'. This was based on a 2007 article by James Reitzes and Dorothy Robyn. In the article, which analysed SkyTeam, it was shown that the initial 'pro-consumer trend' had been reversed. According to the article, the major factor for increased fares was the exercise of market power by alliances, reflecting a lack of sufficient inter-alliance competition.

When the formation of an alliance reduces operating costs, ideally this should transfer to customers by reflecting cost savings in lower fares (Doganis, 2007). Fare reductions are the most tangible way to demonstrate to antitrust authorities and the public that the alliance formation is in the public interest (Iatrou, 2007). While some studies have confirmed that passengers may benefit from lower fares when using one alliance rather than two non-partner airlines (Brueckner 1998; 2000), there is also evidence of fare increases (Sinha, 2001).

As with any other form of collusive action, the formation of alliances is likely to result in less competitive pressure (Williams, 1993). In consideration of the consequences for customers, the ultimate effect depends on the characteristics of the market where the airline alliance operates (Button, 1998). When alliances become very powerful at one or more hub airports, they may abuse that dominance to stifle new entrants and competition. They can also reduce competition on specific routes by creating effective monopolies (Doganis, 2007). A detailed economic study of air fares and market structures published in 2000 found evidence that economy, and to a lesser extent, business fares are higher on routes dominated by airline alliances (Gonenc and Nicoletti, 2000 in Doganis, 2007).

Conclusion

This paper aimed to determine the ultimate effect of global airline alliances on the consumer by considering the reasons for and factors enabling their formation; the strategies they choose to pursue; and the effects these have had on the consumer in terms of realised benefits and air fares. Based on the evidence presented in this paper, it appears that the formation of global alliances can provide certain benefits, such as increased traffic volumes, a greater availability of destinations, and the convenience of a 'one-stop check-in'. Global alliances claim to provide greater global access and seamless connections through their effective use of hub-and-spoke systems. However, if they reduce competition and airfares increase as a result, it cannot be concluded that they provide overall benefits for the consumer. The growth of the low cost carrier model in recent years has demonstrated that consumers are increasingly indifferent to loyalty schemes and membership perks, and their perception of value is determined largely by the prices of air fares.

An important lesson from the emergence of global alliances is that the provision of complete economic freedom does not guarantee a strongly competitive environment (Williams, 1993). The future of aviation and the interests of the consumer appear to depend largely on the actions of legislators and regulators. Consumers will reap overall benefits from the global alliances only where there is adequate competition and market discipline.

Bibliography

Banister, D. & Button, K. (eds.). 1991. *Transport in a Free Market Economy*. London: MacMillian.

Barrett, S. 2006. 'Commercialising a National Airline – the Aer Lingus Case Study'. *Journal of Air Transport Management* 12:4: 159-167.

Barrett, S. 2000. 'Airport Competition in the Deregulated European Aviation Market' in P. Forsyth , K. Button & P. Nijkamp (eds.) *Air Transport.* 2002. Cheltenham: Edward Elgar.

Button, K. 1998. *Flying into the Future: Air Transport Policy in the European Union.* Cheltenham: Edward Elgar.

Dobson, A. 2007. *Globalization and Regional Integration: The Origins, Development and Impact of the Single European Aviation Market.* London: Routledge.

Dobson, A. 1995. *Flying in the Face of Competition: the Policies and Diplomacy of Airline Regulatory Reform in Britain, the USA and the European Community 1968-1994*. Aldershot: Avebury Aviation.

Doganis, R. 2002. *Flying off Course: The Economics of International Airlines* (3rd ed.). London: Routledge.

Doganis, R. 2006. *The Airline Business* (2nd ed.). London: Routledge.

Graham, A., Papatheodorou, A. & Forsyth, P. 2008. *Aviation and Tourism: Implications for Leisure Travel*. Aldershot: Ashgate.

Gudmundsson, S. & Lechner, C. 2006. 'Multilateral Airline Alliances: Balancing Strategic Constraints and Opportunities'. *Journal of Air Transport Management* 12:3:153-158.

House of Representatives. 2009. *A Bill to Ensure Adequate Airline Competition Between The United States and Europe*. Washington: House of Representatives.

Iatrou, K. & Oretti, M. 2007. *Airline Choices for the Future: From Alliances to Mergers*. Aldershot: Ashgate.

Iatrou, K. & Skourias, N. 2005. 'An Attempt to Measure the Traffic Impact of Airline Alliances'. *Journal of Air Transportation.* 10:3: 73-99.

International Civil Aviation Organisation. 2007. *Annual Report 2007*. ICAO.

Lawton, T. 2002. *Cleared for Take-Off: Structure and Strategy in the Low Fare Airline Business*. Aldershot: Ashgate.

oneworld. www.oneworld.com

Reitzes, J. & Robyn, D. 2007. 'An Economic Analysis of How Antitrust Immunise Alliances Have Affected Transatlantic Competition'. *Transportation Antitrust Update* 16.

Schipper, Y. 2001. *Environmental Costs and Liberalization in European Air Transport: a Welfare Economic Analysis.* Cheltenham: Edward Elgar.

Shaw, S. 2004. *Airline Marketing and Management* (5th ed.). Aldershot: Ashgate.

Sinha, D. 2001. *Deregulation and Liberalisation of the Airline Industry: Asia, Europe, North America and Oceania*. Aldershot: Ashgate.

SkyTeam. www.skyteam.com

Star Alliance. www.staralliance.com

Vasigh, B. 2008. *Introduction to Air Transport Economics: from Theory to Applications*. Aldershot: Ashgate.
Williams, G. 1993. *The Airline Industry and the Impact of Deregulation*. Aldershot: Ashgate.

Williams, G. 2002. *Airline Competition: Deregulation's Mixed Legacy*. Aldershot: Ashgate.