

Anyone for Tennis?

Robert P. Murphy - Junior Sophister

Trinity's sporting societies play a key role in students' daily lives. Yet membership has varied significantly in recent years. The Lawn Tennis Club has been no exception to this trend. A lighthearted econometric approach to explaining this has been taken by Robert Murphy, who concludes that the weather does not affect a prospective member's 'propensity' to join.

In correspondence with Dublin University Lawn Tennis Club (DULTC) in 1903 J.C. Parke declared '*with its[DULTC's] present prospects & energetic committee I can see nothing to prevent it becoming the foremost club in college.*' The quality and quantity of membership in any athletic club are crucial in determining the club's success, just as '*the life's blood of [a country's] industrial engine is good old fashioned competition.*' The purpose of this essay is neither to establish DULTC's ranking among Trinity College's athletic clubs nor to seek an explanation as to what motivates individuals to play tennis. My objective is to obtain an explanation, by application of microeconomic theoretical analysis, as to the considerable variation in student membership of DULTC from the academic years of 1978-79 to 1992-93. An explanation of this variation, (see chart below), in the quantity of members will be sought using econometric techniques, as significant variation in club membership determines club morale, the probability of competitive success, the financial status of the club and in essence the future existence of the club.

Chart 1

Explanatory Variables

Dublin University Central Athletics Committee (DUCAC) membership

DUCAC is a '*federal body composed of students, staff members, and graduates, established in 1919 by the Board of Trinity College to revive sport in the university after World War One.*' To be officially recognised, a sports club must be affiliated to DUCAC. All affiliated clubs submit annual membership records and DUCAC have thus provided reasonably accurate records. The aggregated annual membership of affiliated clubs shall be the first explanatory variable, which shall henceforth be referred to as DUCAC membership (X1). A number of new clubs were affiliated during the investigated period. However, it is felt that their establishment did not lead to substitution away from DULTC, as DULTC's close substitutes, the badminton and squash clubs, were founded prior to 1978-79. Hence the year on year relationship between DULTC and DUCAC student membership is *a priori* expected to be positive.

Remembering R.H. Tawney's declaration that '*the most obvious facts are the most easily forgotten*' it is evident that DULTC membership had some limiting influence. To represent this limiting force DUCAC membership was chosen as opposed to the student population of Trinity College. To postulate a positive relationship between DULTC membership and the College population, surely the only rational hypothesis, requires the assumption of a constant marginal propensity to join DULTC among all students. This assumption could possibly be analogous to the microeconomics assumption of a constant marginal utility of income, shown to be inconsistent with empirical evidence by P. Samuelson (1942). Empirical evidence from 1978-79 to 1992-93 shows that not only is the relationship not constant but that it is not even monotonic! i.e. given an increase in X1 it will always lead to an increase in the dependent Y variable (DULTC membership). Utilising DUCAC membership data merely requires the assumption that for students joining DUCAC their probability of joining DULTC is not negatively related to the number of students joining other athletic clubs.

The seven year period from 1983-84 to 1989-90 is of interest for two reasons. Firstly, during this period DULTC membership was extremely responsive to DUCAC membership, providing evidence of the strong positive relationship of the two. Secondly, it is a period of consistent decline in the number of students participating in sport during the 1980's, perhaps the converse to what one might have expected during the so called 'jogging decade'. One possible explanation is that, due to the high public profile of jogging, students associated sport with excessive commitment, personal effort, physical exhaustion and perhaps even pain, thus demand decreased.

Conformable Days

'Man whether civilised or savage is a child of nature, he is not the master of nature.'

The second explanatory variable taken is the number of conformable days per calendar year (X2). Where conformable days is the number of days per annum when snow, hail, and gales were not recorded at the meteorological station at Dublin Airport. One believes the number of conformable days provides a more realistic representation of students' incomplete knowledge of weather conditions than other measures would, such as mean values of rainfall, temperature or sunlight per annum. However the number of conformable days is still an idealised representation of students' evaluation of weather conditions.

The proposed relationship between DULTC membership and the number of conformable days is founded on the theoretical presumption that an economic agent's decision to consume a good or service is determined by the benefits, or utility, of consuming a particular good or service. This is somewhat unfortunate for the DULTC committee as this unpredictable variable could have a significant influence on DULTC membership since it determines the service the club can offer to College students. Weather conditions determine the quantity, as no service is available when the tennis courts are covered with snow or when gales prevail, and quality, a game of tennis on a hot and dry day is considerably different to a game on a cold and wet day, of service available to DULTC members. The higher the number of conformable days in any one year the higher the quantity and quality of service available to DULTC members. Members' utility, in an ordinal sense, or benefits received are thereby positively related to the number of conformable days and thus DULTC membership per academic year should be positively related to the number of conformable days per calendar year.

Excluded Explanatory Variables

Adam Smith noted that all economic behaviour may be understood as the rational pursuit of self interest as '*it is not from the benevolence of the butcher, the brewer, or the baker that we can expect our dinner but from their own regard to their own self interest.*' Trinity College students, as consumers, seek to maximise their utility given their budget constraints and so when considering any consumption decision the price and associated costs are of paramount importance. So why have the DULTC annual membership fee and the playing costs been excluded from the model?

Membership Fee

Microeconomic theory postulates that the price of a commodity is by no means an arbitrary figure, as it is a representation of the markets valuation of a commodity. An increase in membership fee which exceeds the marginal willingness to pay of previous or potential (at old membership fee) members would, *ceteris paribus*, decrease club membership. However, this theoretical negative relationship is excluded from the model for two reasons. Firstly, over the fifteen year period the sample variance of membership fee is only 1.2499 hence there is clearly insufficient variation for it to be a regressor. Secondly, the cross price elasticity of demand, which could possess more explanatory power, cannot be calculated as DUCAC has incomplete information on membership fees charged by other clubs.

Playing Costs

The costs incurred by tennis players may be analysed in terms of fixed and variable costs. Fixed costs are the monetary expenditures incurred when purchasing a tennis racquet and tennis trainers. Fixed costs incurred by members are excluded from my model as, not surprisingly, DUCAC has no data on the above goods and constructing a mean price for racquets and trainers for each year is not satisfactory due to the considerable variation in price range and model for both goods each year. The cost of tennis balls used per game multiplied by the number of games played per year measures the variable cost that a member faces. There is no inclusion of this cost in the model as it is doubtful that any College student would attempt to forecast annual tennis ball expenditure!

The Model

In an attempt to estimate the significance of my explanatory variables the ordinary least squares technique shall be used, which will yield a line of best fit corresponding to the data. In this multiple regression the model will take the following form:

$$Y = B_0 + B_1X_1 + B_2X_2 + U_i$$

U_i is the stochastic disturbance term, acknowledging the nonsystematic nature of the relationship. The investigation will arrive at an estimate of the sign, size and significance of the unknown parameters B_0 , B_1 , B_2 .

The Estimation

The estimation of the regression line was achieved using the SPSS econometric package, using 15 observations of annual data, from 1978-79 to 1992-93. The results of the multiple regression are as below. The Line of Best Fit has been estimated as:

$$Y = -670.530316 + 0.132062 X_1 + 1.359159 X_2$$

REGRESSION RESULTS

Y regressed on X1,X2

Variables in the Equation				
Variable	B	SE B	t	Sig t or p-value
X1	.132062	.027176	4.859	.0004
X2	1.359159	.475173	2.860	.0143
Constant	-670.5303	189.85828	-3.532	.0041

Y regressed on X1

Variables in the Equation				
Variable	B	SE B	t	Sig t or p-value
X1	..112041	.032718	3.424	.0045
Constant	-.193.179	112.7950	-1.713	.1105

Y regressed on X2

Variables in the Equation

Variable	B	SE B	t	Sig t or p-value
X1	.764427	.759956	1.006	.3328
Constant	-43.04551	230.375	-.187	.8547

X1 regressed on X2

Variables in the Equation

Variable	B	SE B	t	Sig t or p-value
X2	-4.503418	4.685817	-.961	.3541
Constant	4751.4295	1420.471	3.345	.0053

R squared 0.47425

Evaluation

As expected the two X variables are positively related to Y and explain a significant degree of its variation, almost 69%. The author expected that, with the exception of the cricket club, few clubs would be as weather sensitive as the tennis club and there should consequently be little multicollinearity between the explanatory variables. A separate regression of X1 on X2 confirmed my expectations as an R2 of 0.066 was yielded. By regressing Y on X1 alone, an R2 of 0.474 was yielded, showing that 47% of the variation of Y was explained by variation in X1. However, by the same procedure on X2, an R2 of 0.07 was yielded, showing that only 7% of the variation in Y is explained by X2. This raises the question, whether these parameter estimates are statistically significant?

Statistical Evaluation

In order to address the above problem it is necessary to examine the t-statistics derived. The null hypothesis that there is no statistical relationship between the X and Y variables ($H_0: t=0$) shall be considered. An estimate of a parameter is statistically significant if the t-statistic associated with it, at a particular significance level, causes one to reject the null hypothesis. For the multiple regression the estimates for 1 and 2 are statistically significant at both the 5% and 10% significant levels. Examining the regression of Y on X1, the t-statistic is 3.424, which shows a high degree of statistical significance. This is an indication of a causal relationship and confirms the strong relationship between X1 and Y. However, the estimate provided by regressing Y on X2 is statistically insignificant at both the 5% and 10% significant levels.

Conclusion

The objective of this essay was to obtain an explanation of the factors influencing the microeconomic phenomena of DULTC membership. By utilising microeconomic theory the author proposed some plausible explanatory variables and then sought their empirical determination. Despite the economic rationale behind the influence of weather conditions, its explanatory power was seen to be insignificant, thus demonstrating that theory and reality often diverge. However, the model is satisfactory as it enables prediction of DULTC membership, at 90% and 95% confidence intervals and thereby is crucial to DULTC's future policy. The effect which the proposed 1996-97 increase in membership fees will have on DULTC membership can now be measured, albeit by a second best approach, by comparison of the comparative statics of 1996-97 membership and predicted membership.

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A History of Value Theory

Martin Fogarty - Senior Sophister

For millennia, literally, scholars and theorists have tried to deduce how items attained their 'value'. From pre-Christian to pre-Keynesian times, various strands of thought have proposed (often divergent) explanations for this phenomenon. In this paper Martin Fogarty analyses the 'value' propositions of several prominent thinkers, loosely grouped as Pre-Classical, Classical and Neo-Classical theorists.

'He who cannot draw on 3000 years of history is living merely from hand to mouth'-Goethe

The debate on the theory of value, which was initiated in Ancient Greece and which became dormant during the Middle Ages, later re-emerged at the close of the seventeenth century to dominate economic thought for the next 200 years. Even today its primary importance is such that Schumpeter claimed that *'the problem of value must always hold the pivotal position, as the chief tool of analysis in any pure theory that works with a rational schema.'* Similar hypothetical solutions varied from time to time. Henceforth, it is the intention of this paper to trace the history of value-theories from the late 1600's to the late 1800's which is crucial to an understanding of economic thought today.

Considering that this piece is hyperbolic in scope, the analysis shall be narrowed down to the following structure. Firstly, an overview to the essay shall be created by briefly sketching Aristotelian, Scholastic and Mercantilistic views on value. Secondly will follow an analysis of the contribution of pre-classicalist writers like Petty, Cantillon, Galiani and Law to the debate. Thirdly, the supply oriented theory of value put forward by classical economists like Smith, Ricardo, Marx and Mill shall be examined. Fourthly, Jevons and Mengers' neo-classical attempt to replace the classicalists with their demand oriented theory of value will be scrutinised. Finally, both Walras' and Marshall's respective resolution to the conflict shall be investigated by individually accommodating the interactions of both supply and demand as determinants of value within their overall economic framework.

Early Economic Thought

The first great landmark in the long and tortuous intellectual struggle with the riddle of value, was laid by the philosophers of the Athenian Academy in the 4th century BC. It was **Aristotle (384-322)** who held that the source of value was based on need, without which exchange would not take place. Originally, it was he who distinguished between value in use and value in exchange- *'Of everything which we possess, there are two uses; For example a shoe is used for wear and it is used for exchange'*. Despite these novel insights, the legacy of Aristotle is minimized due to his lack of investigation in this area.

While the Scholastics later adopted and accommodated these views to Christian thought, like the Aristotelian philosophers before them, economics was not regarded as an independent discipline but merely as an integral part of ethical and moral philosophy. As a result, the debate on value was centred and henceforth retarded by a normative approach - what value should 'justly' be, instead of what actually is. During this period, utility was widely held as the determinant of value with only a minority of theorists such as **St. Thomas Aquinas (1225-1274)** and **John Duns Scotus (1265-1308)** taking note of the cost of the production side. However, historians commonly excuse the schoolmen for their lack of insight on value as *'Early medieval society was not a suitable environment for an unrestricted play of forces of supply and demand.'*

The search concerning value was continued in the direction of utility by early mercantilists during the 16th and the first half of the 17th century. The supremacy of this argument was highlighted in 1588 when **Bernardo Davanzati** unsuccessfully attempted to construct a utility theory of value in Lecture On Money. It is not surprising that they concentrated on the determinants of the demand for goods (utility), since the merchants' profits depended on the exploiting of the difference between the market buying and the selling prices rather than controlling the production process. For medieval theorists, value depended not on any intrinsic value but on utility and scarcity. Shakespeare's Richard III battle plea *'A horse, a horse, my kingdom for a horse'* epitomises the subjective approach to value of this era. Yet despite the failings and limitation of

this one-sided method, this period is viewed as embryonic with regard to value theories, and one which would spawn subsequent economic developments.

Pre-Classical Thought

It was only at the end of the seventeenth century when economists following a Cartesian philosophy of deduction, broke away from the dominant mercantilistic utility view and looked for a solution in the cost of production. **William Petty (1623-1687)** who was influenced by the scientific advances of his era, abandoned the subjective theory of value and instead objectively searched for the natural and intrinsic laws of reality - of which '*natural value*' was one of them. According to Petty, the market price ('*actual price*') of any commodity would fluctuate perpetually around its natural value ('*natural price*'). The determinants of this natural value were deduced as the factors of production - land and labour.

In keeping with his mathematical nature, Petty attempted to reduce his theory of value to a labour one only, by looking for a '*par*' value for land in terms of labour forces. In the political Anatomy of Ireland (1691), he states that the unit of measure consisted of '*The easiest-gotten food of the respective countries of the world*' - average daily diet necessary to sustain a worker. Although he successfully anticipated the classical-Marxian theory of subsistence wages and surplus, he also inherited the endless difficulties associated with a labour cost theory of value.

Richard Cantillon (168?-1734) who was another practitioner of the Cartesian approach also began with the labour-and-land theory of value. Although, similar to Petty in that he reduces the determinants of intrinsic value in terms of one factor, unlike him, Cantillon, who was influenced by French agrarian protectionists, chose land. Cantillon finds his '*par*' value by equating the value of a labourer with that of twice the produce of the land he consumes, while allowing for variations in the labourers' skills and status. Once this '*par*' value is calculated, the intrinsic values of any good can be reduced to land only. With his assumptions of constant returns to scale, Cantillon provides us with his land theory of value. He also originally shows us how resources were allocated between different markets when the market price diverges from his intrinsic 'land' value. Unfortunately, Cantillon's land theory, like Petty's labour theory, was only a true description of value in highly specific cases.

Meanwhile the medieval subjective approach to value was continued by another branch of pre-classical economists which included people like **Nicholas Barbon (1640-1698)** who thought that the natural value of goods was simply represented by their market price. For him '*the value of all wares arise from their use; things of no use, have no value, as the English phrase is, they are good for nothing*'. Furthermore, on the continent, the Italian **Ferdinando Galiani (1728-1787)** borrowed the early mercantilistic writings of Davanzati and Montanari on the subjective nature of value. He devoted his time to developing a theory of utility value and even implicitly described the notion of diminishing marginal utility. His deductions just '*lacked the concept of marginal utility*' of the neo-classical economists, Jevons and Menger.

Although Galiani vaguely accounted for the cost of production in his utility value theory, he failed to develop it into a fully-fledged supply and demand analysis. This monumental project was taken up by the Scotsman **John Law (1671-1729)**. In his Essay on a Land Bank, Law outlined the old water / diamond paradox of value, in which comparatively '*useless*' diamonds are more highly valued than the more '*useful*' water and reconciled the mystery by using a supply and demand analysis. Unlike his predecessors and his immediate successors (until Walras and Marshall), Law used both demand and supply factors in determining the value of a good which has a use in society. Henceforth any changes in the value of goods were due to a change in the quantity supplied or demanded.

Although **John Locke (1632-1704)** in, Some Considerations on the Consequences of Lowering of Interest and the Raising the Value of Money, had developed a theory of price determination earlier, it lacked the clarity, precision and understanding of Law. In Money and Trade Considered, Law corrects Locke's unpolished value by stating that '*The prices of goods are not according to the quantity in proportion to the vent, but in proportion to the demand*'. Surprisingly, Law's early solution to value theory gained little following owing probably to his failed financial operations in France. Even more surprisingly has been the reduction of Law's contributions in this area to mere footnotes in the mainstream economic history books. Unfortunately, for the development of value theory, this dualistic analysis was suppressed for almost 200 years, until its resurrection at the close of the 19th century.

Classical Thought

The publication of **Adam Smith's (1723-1790) Wealth of Nations** in 1776 heralded the rise of the classical school and swung the value debate back towards Petty's objective labour theory of value. According to J. Niehans, the classical emphasis on the labour cost was '*a step backward*' compared to the pre-classical analysis. Indeed, Smith who borrowed the water / diamond paradox from Law without acknowledging it, failed to resolve the riddle and the resulting relationship between use-value and use-exchange, by mistakenly focusing on total rather than marginal utility.

His confusion is further shown in his experimentation with three value theories. He provided a labour cost and a labour command theory of value for a primitive society and finally a cost of production theory for an advanced one. In his '*Nation of hunters*' analogy, Smith's notion of labour cost of value is determined by the quantity of labour which is measured by wages which is also extended to his labour command theory- '*Value of any commodity.....to the person who processes it and who means not to use or consume it himself, but to exchange it for other commodities, is equal to the quantity of labour which enables him to purchase or command*'. However, when he perceived that if wages were not the same proportionate part of final prices of all goods, he then realised that his labour theory of value for an advanced economy would not hold. Instead, it appears that he opted for a cost of production value theory consisting of land, labour and capital value theory .

David Ricardo (1772-1823) who adopted Smith's abandoned labour hypothesis tried to avoid his circular reasoning of measuring labour with wages. Instead he felt that value depended upon the quantity of labour necessary for production which would be calculated by time. More precise and clearer than Smith, Ricardo stated that '*Possessing utility, commodities derive their exchangeable value from two sources : from their scarcity and from the quantity of labour required to obtain them.*' Although he acknowledged that value could be determined by scarcity alone (e.g. rare documents), he felt that these were insignificant cases. His value theory therefore only applies to freely reproducible goods in competitive markets.

Discarding Smith's labour command and cost of production theories of value, Ricardo attempted to prove his labour theory of value against its inherent difficulties. To bolster his hypothesis, he used time as a measure of labour quantity, accommodated the different skills of labour by comparing wages to productivity and also assumed that capital influence on value was neutralised since it was merely stored up in labour. He also added a theory of land rent, in which he claimed that rent is price determined (not price determining) and provided reasons why profits had varying effects on value (different capital intensive industries). Despite these attempts, Ricardo in the end was forced to accept that there were other forces affecting value which prevented a pure theoretical labour theory of value. Nevertheless he still believed that it was the quantity of labour to produce goods that was the crucial element in his calculation.

Karl Marx's (1818-1883) approach to value was essentially Ricardo's labour theory of value. According to Marx, the values of '*All commodities are only definite masses of congealed labour time.*' As an advocate of Ricardo's original theory, he also followed and built on his solutions to the labour value theory's inherent deficiencies. Although Marx used the classical concepts of value he applied his vast philosophical and sociological knowledge to reach conclusions in Capital that diverged radically from them. In his labour theory, he developed his original rate of exploitation ($s'=s/v$) and its resulting critique of capitalism- '*Derriere le phenomene du profit se cache la realite du surtravail.*' Like Aristotle, exchange of value or more appropriately exchange of 'just' value had for Marx, moral and judicial implications as well as economic ones.

Despite **John Stuart Mill's (1806-1873)** claim to the continuity of Ricardo's labour theory of value, his work in retrospect was closer to Marshall and to the approaching neo-classical school. Mill gave up the classical-Ricardian search for absolute value for his belief that '*The value which a commodity will bring in any market is no other than the value which, in that market, gives a demand just sufficient to carry off the existing supply.*' Although lacking the tools of the supply and demand schedules, Mill clearly recognised the effects of demand on the supply in different time periods of a value theory. Although he acquired a more advanced comprehension on the subject of value than his contemporary theorists did, unfortunately it led him to prematurely and embarrassingly state in 1848 that '*Happily, there is nothing in the laws of value which remains for the present or any future writer to clear up; the theory of the subject is complete.*'

Neo-Classical Thought

Although the origins of modern utility theory can be traced back to Mountifort Longfield in 1834 at Trinity College Dublin it was **William Jevons (1835-1882)** with his Theory of Political Economy and **Carl Menger's (1840-1921)** Principles of Economics who both developed the new tool of marginal analysis in 1871 as a means of understanding value. For the rising neo-classical school in the 1870s, the classical cost of production theory of value seriously lacked generality - especially in determining value of goods with inelastic supply curves. Instead, Jevons and Menger separately formulated their marginal utility theory, in which it was calculated that *'Value depends entirely on utility.'* Like Davanzati in the 16th century, they felt that no matter what costs were incurred in producing a good, when it arrived on a market its value would depend solely on the utility the buyer expects to receive.

Menger used his marginal utility table to explain the old water / diamond paradox. The value of diamonds was greater than the value of water because it was marginal utility and not total utility that determines consumer choice and hence value. From this they also argued that value comes from the future and not past production. Henceforth, the factors of production are not price-determining but price-determined, as Jevons clearly states- *'Cost of production determines supply, supply determines final degree of utility, final degree of utility determines value.'* Jevons and Menger like their predecessors before, erred in trying to find a simple one-way, cause and effect relationship between value, and in their case utility. It took the intellect of Leon Walras and Alfred Marshall to see that both the cost of production (supply) and utility (demand) were interdependent and mutually determinant of each other's values.

Leon Walras (1834-1910) also independently discovered the concept of marginal utility although he went beyond Jevons and Menger's application of it to merely a utility value theory. He did not see their simple and direct causal link from subjective utility to value. Instead, he saw a complex interrelated and interactive economic system. In his Elements of Pure Economics, he created his theoretical model of General Equilibrium as a means of integrating both the effects of the demand and supply side forces in the whole economy. This mathematical model of simultaneous equations concluded that *'In general equilibrium everything depends upon everything else'.*

Meanwhile, **Alfred Marshall (1842-1924)** was also amalgamating the best of classical analysis with the new tools of the marginalists in order to explain value in terms of supply and demand. He acknowledged that the study of any economic concept, like value, is hindered by the interrelativeness of the economy and varying time effects. As a result, Marshall who differed from Walras' general schema, instead used a partial equilibrium framework, in which most variables are kept constant, in order to develop his analysis on the theory of value.

Marshall divided his study into four time periods. Firstly, in the market period where time is so short that supply is fixed, value of a good is determined by its demand. Secondly, in the short-run period, firms can change their production but cannot vary their plant size, which allows supply as well as demand to have an effect on value. In the long-run periods where plant size can be altered, the large effects of the supply side on value depends on whether the industry of a particular good has constant, increasing or decreasing costs to scale. Finally, in the secular period in which technology and population are allowed to vary, the supply side conditions dominate value.

For Marshall a correct understanding of the influence of time and interdependence of economic variables would resolve the controversy over whether it was the cost of production or utility which determines value. In general, however he felt that it was fruitless to argue whether demand or supply determines value as *'we might as reasonably dispute whether it is the upper or under blade of a pair of scissors that cuts a piece of paper, as whether value is governed by utility or costs of production.'* Any attempt to find one single cause of value as others had unsuccessfully attempted in the past, were doomed to failure.

Conclusion

From its origins in medieval times, the historical evolution of the value debate became locked into a centuries old dialectical conflict between the objective and subjective approaches. This study has traced the waves of value theories which oscillated back and forth towards each approach, until Walras and Marshall accommodated both rivaling approaches of value within their separate General and Partial Equilibrium frameworks. Yet John Law in his Essay on the Land Bank, had provided this supply and demand approach almost two centuries before which has remained unacknowledged and ignored by most conventional economic history books. This episode shows the importance and value of writings from earlier economic

theorists who may possess insights into present day and future problems. Armed with the knowledge of economic thought from various epochs, current economists who are inevitably chained to their contemporary condition can henceforth avoid the theoretical 'cul de sacs' of their ancestors. One laments the fact that if classical economists had held Goeth's appreciation, and close investigation of past theorists, economics might not have been condemned to the fruitless one dimensional (supply oriented) approach of value theory, until the end of the 19th century. In the light of this failing in the history of value theory, one should remember the biblical warning '*Those who forget history are condemned to relive it*'.

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Economics: An Obituary

Fergal Shortall - Senior Sophister

The 'recent' emergence of new schools of economic thought in economics provoke the question of whether economics is in a directional crisis. Paul Ormerod believes that economics, in its present state, has reached the end of its journey. Fergal Shortall reviews 'The Death of Economics,' and concludes that economics should not take out a life assurance policy just yet. *'The Death of Economics', by Paul Ormerod. London: Faber and Faber. 1994*

230pp plus introduction

It is difficult to come to this book with an open mind. Its title suggests a breadth of ambition worthy only of someone with a middle initial, a professorship at Harvard and a Nobel prize, and yet Paul Ormerod is not a household name, even in utility-maximising households. Furthermore it is a slim airport paperback addressed to the general public not a weighty two-volume magnum opus. In short, it seems at first glance to lack the gravitas necessary to tackle such a topic. However, let us reserve judgment for the moment. This book is divided into two parts, the first examining economics today and how it has reached its position, the second offering us Ormerod's own vision of the way forward. I propose to examine both sections in turn, followed by a more general assessment.

The Present State of Economics

Ormerod begins by painting a dark picture of the world in general, and of economics in particular. Recessions, mass unemployment, currency instability and volatile economic cycles have all gone unforecasted by economists. The failure of practitioners to predict events of major importance leads him to wonder whether the subject can be of any use at all. This has not always been the case, however. Ormerod gives a potted history of the major economic theorists of the past, Smith, Ricardo, Marx and Keynes, emphasising the scope of their talents and noting their determination to root the subject in the real world. Against this, he juxtaposes the position of modern economists, whom he says have lost touch with reality and in fact '*positively extol esoteric irrelevance.*' The profession has become more concerned with the elegance of their theories than their practical implications. Economic growth has been one of the central topics of the subject since François Quesnay and his ideas of agricultural surplus. Ormerod illustrates the strides made by the Classical thinkers in studying its determination and consequences. In contrast he highlights the inadequacy of modern national income accounting, with its reliance on pecuniary transactions and its inability to deal with externalities and the voluntary and black economies. He is scornful of attempts to rectify these problems: improvements '*would be purely definitional with no practical consequences.*' Instead, a wholesale revision of the way economic welfare and economic growth are measured is needed. This may indeed be true, but in the meantime, while adjustments in the present national accounting figures may not raise or lower true national income, they surely do increase the usefulness of the figures and help policy-makers to determine the size of the public sector or the national debt. However, the fundamental point remains. To take an Aristotelian perspective, economics is a practical science. It examines a specific area of human practice with a view to deriving certain fundamental principles to guide this practice. The associated practice of economics is economic policy. The subject is therefore useful and worthwhile only in so far as it contributes to economic policy. If economics, as it is presently carried out, is of little use in guiding policy, as Ormerod suggests, then his point is indeed a valid one.

At the core of his argument is an attack on modern economic methodology with its emphasis on mathematics, as epitomised by general equilibrium and its theoretical underpinning. The environment of the late nineteenth century was one of great scientific advance. Things worked. The success of the mechanistic view of the world, which was the foundation for much of this advance, promoted a certain '*intellectual self-confidence.*' This spirit was, naturally enough, carried over into economics, most especially the notion of *equilibrium*: the belief that left to their own devices, systems achieved a stable state. Using the concept of Rational Economic Man - a utility and profit maximiser in all cases - economists such as Walras and Jevons refined the principles of Adam Smith, and, through copying the methodology of the physical sciences, showed that there was a unique equilibrium point at which all markets cleared and which was Pareto efficient. According to Ormerod,

this general equilibrium theory has now become economic orthodoxy. He identifies three reasons why this should be so. Firstly, its emphasis on the market rather than the state suited the ideological mindset of the Victorian era, a *laissez-faire* view. Secondly, its methodology fitted in with such success with that being used in the physical sciences. Finally, as an intellectual accomplishment alone, it was worthy of the highest praise. But, according to Ormerod, it is wrong. He attacks firstly the notion of Rational Economic Man, which paints too cold and calculating a picture of human behaviour for his liking. People co-operate more than this allows for, and he gives some anecdotal evidence to support this. Furthermore, they do not order preferences in a consistent manner. In short, people do not maximise utility at all places and at all times. Secondly, he attacks the production side of the model, or, more specifically, the notion of diminishing returns to scale. History shows, according to Ormerod, that companies can achieve constant and even increasing returns to scale, his main example being that of the United States at the turn of the century. Thus the major assumptions of General Equilibrium are violated. More fundamentally, Ormerod attacks the notion of the price mechanism at the centre of the exchange process used to derive the equilibrium. Uncertainty and a lack of information on the part of consumers and producers mean that prices do not adequately reflect true values. In extreme cases, markets may simply not exist, as in the case of goods to be bought and sold at some future date. Thus, were the assumptions of the theory still to hold, *'it is still not possible to prove that a set of prices will exist which will permit demand to equal supply in all markets.'* General Equilibrium, therefore, does not hold. Furthermore, Ormerod contends, paraphrasing the Theory of the Second Best, that attempts to correct some of the assumptions may make matters worse, since if one market is not at equilibrium, it may not be optimal for other markets to be in equilibrium either.

Much of this is fair comment from Ormerod. It is certainly true that people do not and cannot always maximise their utility. Similarly, it is true that markets do not exist for all goods at all times. His analysis of the production side is questionable, however. Diminishing returns to scale do in most cases hold for a given level of technology. Ormerod is, one feels, especially in his use of America as an example, confusing increasing returns to scale with technological advance. This is however a comparatively minor point. More questionable is his notion of General Equilibrium as the holy grail of the New Right. Although the Right do have a belief in the workings of the free market, this is by no means predicated on the Edgeworth Box. Concepts such as the deadweight loss from monopoly and X-inefficiency would be much closer to their views on a micro level, while it is the flexibility of markets rather than their stability which reinforces this at a macro level. And, quite apart from this, one of the principal schools of thought, Keynesian economics and its offshoots, is based entirely within a partial equilibrium framework. To debunk the whole profession on the basis of the theory of General Equilibrium alone is simply unjust. If Ormerod is to win this battle, he needs to be better armed.

Towards the Future of Economics

What is Ormerod's alternative? He identifies unemployment as the major problem facing the world today and looks firstly at the history of employment policy. The relationship between inflation and unemployment was what concerned policy-makers and theorist in the past, culminating in the development and internalisation of the Phillips curve with the associated Non-Accelerating Inflation Rate of Unemployment (NAIRU). During the 1970s this theory broke down, and the consequent increase in the natural rate of unemployment could be explained by market imperfections, which had remained unchanged. Of course, Ormerod ignores the fact that the market had never before had to deal with such a glut of available labour in such a short period of time, and that such imperfections were only then going to make themselves felt. The resulting hysteresis was bound to push up the natural rate. However his conclusion that there is no link between inflation and the size of the unemployment stock is broadly true, though not for the reason he supposes.

He draws similar conclusions for the relationship between growth and employment: *'for any given pattern of economic growth on the basis of international experience over the past twenty years, the rate of unemployment is indeterminate.'* Instead he plots unemployment against unemployment in the previous year across a range of countries. What he notices is that in general the unemployment rate seems to move in cycle around what he terms *attractor points*. Every once in a while the system receives a shock and unemployment changes quickly and drastically before settling around a new, usually higher, attractor point. Ormerod takes this as proof that economic systems are in fact chaotic and do not tend to return to equilibrium. The implicit assumption here is that external conditions before and after the shock are the same - were they not so, then indeed the notion of equilibrium would be a false one. This is not so though. Ormerod is simply measuring structural and cyclical unemployment. The attractor point can be simply said to represent the natural rate of

unemployment for a given level of hysteresis. The movement around this level simply corresponds to the cyclical changes caused, albeit in a delayed manner, by the business cycle. After a shock, however, the labour markets are not flexible enough to cope and the structural level of unemployment rises due to increased hysteresis. Thus there is a new natural rate of unemployment and a new attractor point. This is easily demonstrated through looking at the large increase in the long-term unemployed as a percentage of total unemployment across Western Europe, showing the increased levels of hysteresis.

Ormerod ignores this, however, and proceeds to formulate a theory specially to fit in with his scatter plots. His model must settle into long periods of regular fluctuations and settle into a new pattern after a shock. He thus comes up with a relationship between unemployment and the level of profits in an economy. Simplified, it says that the proportion of profits invested in the economy varies according to expectations of the future. As investment increases, so does unemployment. The task is therefore, according to Ormerod, to increase profits. The implications of this, carried to its logical conclusion are economically absurd. It amounts to an encouragement of monopolies and a lifting of regulation to maximise profits across an economy. Patently this would hinder the efficient allocation of resources and thus increase rather than decrease unemployment. Ormerod, however, seems to be blinded by science and does not realise what his theory entails. That though, is the peril of trying to construct models on the basis of data alone, without any theoretical underpinning.

Conclusion

If there is one thing that comes across from this book, it is that Paul Ormerod is a man with a grudge. Factual inaccuracies (IBM and Microsoft have not, until recently, been in competition, for example) and petty point scoring do considerable damage to his chances of convincing economists of the merits of his argument. At every point he compares the economists of the present day unfavourably with the titans of the past. Modern theorists are grey, conforming and, above all, heartless, for Ormerod seems to be a closet Communitarian. Communitarianism is, of course, a noble philosophy, but in many places he uses this book as a vehicle for his own social beliefs, and tries to hijack his theories, as well as those of Smith and Ricardo, to this end. This is a pity, because, in spite of its many flaws, this book does have a contribution to make. Although the theory he ascribes to them is unsound, the notion of attractor points and his use of scatter plots are a useful tool in explaining cyclical and structural unemployment. General Equilibrium is indeed an untrue reflection of reality, and chaos theory may have something to offer in its place. But he is not creating a new Kuhnian paradigm. This obituary is premature. Reports of the death of economics have been greatly exaggerated.

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Can Econometrics take Economics from the Brink of History into Science?

Geoffrey Gill - Junior Sophister

Does the present day economics student ever question the fundamental nature of the subject? Where exactly does economics lie, if at all, within the realms of historical and scientific study? In this essay, Geoffrey Gill dissects the scientific credentials of economics, and finds that econometrics moves the subject away from descriptive reflection towards a more technical analysis.

'Economics is in time, and therefore in history in a way that science is not.'

- J.R. Hicks

'All too often in economics the choice is between being roughly accurate or precisely wrong.'

- Kamarek

The social laboratory that is the world and the difficulty of its analysis has called into question the position of economics as a science or not. This essay will attempt to deal with this question, and will show that economics perhaps tends towards the epistemic dimension of science i.e. the collection of knowledge for its intrinsic sake, but that econometrics has a role in drawing economics into a more non-epistemic or applied role. This will be done by first considering the question of what a science is and then whether economics fulfils the aims of science i.e. what scientific status does it have? Then, econometrics will be considered in the same light, and the analogy of meteorological practices will be drawn in. Finally it will be concluded that economics is firmly a moral science and also that econometrics can only reduce the historical and epistemic emphasis of economics, and thus push it closer to applied science.

What is a Science?

Hicks defined a science to be a body of propositions which have three characteristics: these propositions are about real phenomena; they are general propositions about classes of phenomena; and they are propositions on which it is possible to base predictions - which command some degree of belief.

Hicks goes on to consider predictions. There are two types: unconditional predictions - but scientists don't claim to predict the future - and conditional predictions. Conditional predictions are the normal type of scientific prediction of which there is a strong form, in which given the stated conditions the event will follow, and a weak form. The weak form states that the event will follow if there is no disturbance. Thus the theory cannot be categorically refuted by what happens. We are thus in the land of 'ceteris paribus' and the area of economics.

Economics: A Science?

The science of economics has a twofold aim, namely to accurately describe the economic events in both our social world and past social orders and second, to furnish scientific explanations of these events. Hempel distinguished between the pragmatic usefulness of science and its use in satisfying our intellectual curiosity. The latter he termed 'the epistemic dimension of science.' Applied science such as medicine falls within the non-epistemic dimension. According to Boylan and O'Gorman:

'Description, theory and observable causal webs are domiciled in the epistemic domain of science, and explanation is housed in the non-epistemic domain.'

Thus one can picture a 'scientific' continuum, and at one end of the scale pure epistemic science, and at the other end is the non-epistemic or applied sciences. One might now ask where economics lies on this continuum?

The relation of economics to time and its historical dimension is one reason why economics is, in the opinion of the author, to be nearer the epistemic end of the spectrum. Economic 'experiments' are merely past events and so while it can satisfy our intellectual curiosity, the pragmatic usefulness of theories derived are questionable. Does econometrics then push economics nearer the applied end, that is out of the purely historical dimension into the practical application and ability to test theory?

A role for Econometrics?

'A scientific theory is a body of reasoning with an empirical basis.' J.R. Hicks

Econometric analysis must add to the empirical basis of economics and therefore can only add to its scientific status. The British philosopher of science Popper argued that all scientific laws are inductions i.e. generalisations from observations. This basis on observations implies that no induction can ever provide a complete proof. An econometric test provides no proof of a theory as it is an induction. It does, though, provide the tools with which to formulate a body of propositions.

Hendry, Leamer and others have seriously questioned the basis of econometrics. The presence of 'priors' in the construction of econometric models is one such criticism. If one has prior expectations about the results of a study, these will be reflected in the way one specifies one's model. Econometrics may provide a false sense of certainty, purely because it is numerically based. Morganstern exposes sources of errors in economic observations:

- (i) economic data not usually secured from planned experiments: they are by-products.
- (ii) usually gathered not by highly trained economic observers but by clerical personnel or people employed ad hoc.
- (iii) the data collected are often defined by legal rather than economic categories.

Keynes sees economics as a moral science: '...it deals with introspection and with values.' McCloskey brings this further in saying that economist's criticisms are in the form of literary criticism. That is, they criticise without passing judgement on how good or bad their work is. He says the use of mathematical models does not make this any less so - they are 'non-ornamental metaphors.'

Yet in any science inaccuracies can be shrouded, the fact that there is morals in the subject does not mean that it cannot be scientific. Indeed econometrics, for all its problems, must expose some of this rhetoric by nature of its hypothesis testing framework. For Friedman, what matters in an economic hypothesis is only successful prediction, but science demands a logical reasoning as to why. Econometrics can help test if these theories are correct and can also help in prediction. To return to Popper, a critical attitude is the key. Falsification is the prime objective of the scientific economic theorist. Testability is a criterion for distinguishing science and non-science. From this we may conclude that econometrics can only push economics along the continuum towards the non-epistemic domain.

The econometrician has much in common with the meteorologist. In meteorology, the system to be coped with is in constant flux. Even if one could measure accurately the pressure patterns and frontal surface patterns over the earth at any one point in time, change can be significant within a short period of time. There is also a near to infinite set of endogenous and exogenous factors - in meteorology the ultimate force is the sun, while in economics it is the elusive 'invisible hand' of millions of decision makers. The variability of probable outcomes grows exponentially with time, thus forecasts can only be in the short term. Marshak notes that the historical nature of the data also ties the two disciplines. According to Kamarck, though, compared to the record of meteorology in predicting weather and climactic change, the accomplishments of economics are not unfavourable. The major difference between the two is probably that measurement techniques are more accurate and unbiased in meteorology, but the variables are much more volatile in most cases than economic data. Would we then place meteorology nearer the epistemic domain than economics? Perhaps not, as its practical emphasis would make it more non-epistemic than economics.

Conclusion

Econometrics is not about hiding behind a veil of numerical complexity. Yes it is a moral science, but econometrics combined with the Popperian critical view can help see through the unsubstantiated rhetoric of publication-loving economists. Economic predictions are weak predictions, and more often than not are short-term, and though predictions relate to the future, the records of the past are our phenomena. Thus economics soaks in a bath of history and this led Hicks to comment '[economics] is on the edge of science and on the edge of history.' To be confined to history is to be confined to the epistemic, but theory must use the pattern of the past to push into the applied, and econometrics can only help validate or refute these theories. Thus, while retaining the epistemic to 'furnish accurate theory-laden descriptions of the observable economic world', the applied aspects of economics are enhanced by econometrics and so the Hicksian 'body of propositions' can have predictions based on them. Thus econometrics pushes economics from the history books and out into the scientific world.

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The Mystery of the Classical Gold Standard

Allan Kearns - Senior Sophister

The classical gold standard, the method of basing a country's currency on a value of gold, is elusive in its existence and consequent significance. Can we believe that there was such a phenomenon? Allan Kearns takes the viewpoint that it existed until it conflicted with 'superior' policy prescriptions. There policy pills, then proving to be a poison in the gold standard system.

'The most remarkable aspect of the classical gold standard, therefore, is not the willingness of countries at different levels of industrialisation to observe the very strict rules but, rather, the developments which made it possible for these economies to adhere to the rules over such a long period.' (Dr Milivoje Panic 1992:117)

The classical gold standard which operated for the three decades prior to 1913 and the interwar gold standard have given rise to numerous debates, chiefly the question of the existence of a gold standard. This has arisen primarily over the disagreement expressed over how the gold standard actually worked, whether countries adhered to the rules of the standard and to why the interwar gold standard actually failed? This paper proposes to argue that the gold standard existed, and to fulfil this by noting that; 1) agreement over how the mechanism worked is not fundamentally necessary; 2) that countries, by and large, adhered to the rules and; 3) that the influence of the interwar gold standard became too much for the member countries. This approach necessarily shelve two other appropriate essay titles that can be applied to a discussion of the gold standard; the specific role of gold and the manner in which the standard operated. One will conclude, by agreeing with Panic, noting that the gold standard existed to the point where it did not conflict with national policies for the members of the club and that when such a situation arose, the system collapsed. Its demise thus proving its powerful existence.

The Origins of the Gold Standard

An international conference was held in Paris in 1867 at which most of the participants voted in favour of a gold standard. The United Kingdom stood alone in its adherence to the standard at that time, but the following twenty years were to witness a considerable number of new members. German membership in 1871 heralded the erection of the international gold standard, reinforced by United States accession in 1879. By this time many of the other European, Scandinavian and Eastern European countries were also members of the 'club'. The standard essentially grew out of the problems of bimetallism, the need for a developed financial system to support increasing industrial development. Friedman notes that *'though Britain's choice of gold instead of silver for this purpose was something of an accident, it was a major reason why the United States made the same choice roughly sixty years later.'*

What was the Classical Gold Standard?

Eichengreen states that taking an idealised view, *'the gold standard was a remarkably durable and efficient mechanism for insuring price and income stability, relieving balance of payments pressure and reconciling the actions of national monetary authorities.'* Scammell notes that there were four main rules of the game for all member countries:

- a) A gold value must be fixed for the currency of every country within the system.
- b) There must be free movement of gold between countries within the system.
- c) The monetary system of all member countries must be such that the domestic money supply is linked more or less automatically to movements of gold in and out of the country.

By following the above three rules, the adjustment function of the standard will be satisfied. However, if this is to be accompanied by domestic balance, a fourth rule is necessary:

- d) That within each country there must be a high degree of wage flexibility.

One should note that there were important differences in the manner in which member countries adhered to the central features of the gold standard regime. It is possible to differentiate countries given the extent to which (1) gold coin circulated internally, (2) whether convertibility was automatic or at the authorities discretion and (3) ultimately, the cover system which linked the quantity of currency and coin in circulation to the country's reserve.

How did the Standard Operate? - the Classical / Traditional Explanation

Richard Cantillon's price-specie flow mechanism, as later developed by J. S. Mill, is recognised as the standard explanation underpinning the balance of payments adjustment mechanism present in the gold standard. Firstly, one notes that it operates in a world where only goods and financial assets are traded internationally, and factors of production are immobile between countries. This means that trade deficits must be eliminated promptly since no country is capable of financing them for long out of its own reserves. Secondly the process by which deficits are removed is entirely automatic. It requires therefore no interference from governments or central banks. Finally, the automatic nature of the processes set in motion by trade imbalances and the movement of gold ensures that the operation of the price-specie flow mechanism is perfectly symmetrical. What is happening in a country experiencing current account deficits and losing gold, is exactly the reverse of developments in a country enjoying current account surpluses and accumulating gold.

More concisely these features translate into a system whereby a country's price level rises, in itself giving rise to a balance of payments deficit financed by exporting gold. This loss of gold causes the quantity of money in circulation to contract. As money is held for transaction purposes only, the fall in its quantity leads automatically to a contraction in aggregate demand and output. Excess capacity and unemployment brings money wages and prices down, increasing external demand for a country's exports. This increase combined with a fall in demand for imports eliminates the current account deficit. Panic summarises this process noting that *'whatever the disturbance, it is assumed to give immediate rise to changes in relative prices followed by gold movements that will quickly restore the whole system to equilibrium.'*

It is also possible to incorporate into the price-specie flow model an interest-rate mechanism. In a deficit country, as the quantity of money in circulation falls, a rise in interest rates relative to those other countries follows, which stimulates an inflow of short term funds due to the higher capital returns available. This, as a result prevents the quantity of money from declining as rapidly as it would have done in the absence of a rise in interest rates. Whatever assumption is made about the interest rate elasticity of demand for goods, the process will continue and remove the balance of payments deficit.

As noted above the price-specie model makes very definite predictions about a number of key variables:

- a) Initially one would expect any current account surplus or deficit to be reversed.
- b) The model predicts that output should either fall or grow more slowly in deficit countries than in surplus ones.
- c) Wage levels should increase in surplus countries (following the expansion in their money supply and output) and decrease in deficit countries.
- d) The model simultaneously eliminates balance of payments surpluses and deficits through changes in relative prices, with the price levels rising in surplus countries and declining in deficit ones.

Now that the origins, the rules and the manner in which the standard was supposed to operate have been defined, one is now free to deal with the criticisms levelled at the above and in answering these, prove the existence or influence of the gold standard. Four major areas of disagreement have emerged, that of the price-specie flow explanation, adherence to the 'rules' of the gold standard, the gold/money stock ratio, and the national sovereignty of member countries. We shall consider these in turn.

The Classical Loophole - Does it Matter?

It has been noted previously that the price-specie flow mechanism and the definite predictions that it makes about the gold standards have an influence on a number of variables. Panic concludes that *'had the classical*

gold standard really depended for its existence entirely on the price-specie flow and interest rate mechanisms as the traditional accounts of its operation lead one to believe, it would never have got off the ground; or alternatively, if it had been adopted and lasted, it would have been a period of perpetual stagnation in most members of the 'club'.' He continues noting that *'instead the system survived for over three decades, a period during which all these countries achieved a radical transformation of their economies.'*

Panic finds in his investigation of all of the variables influenced by the price-specie mechanism that few of these variables corresponded to predictions made by this model. It is noted how the UK managed to run current account surpluses every year 1880-1914, of the order of an average of 4.5% of GDP at current prices. Germany in a similar fashion ran consecutive current account surpluses of the order of 1.8% a year. He concludes that *'the adjustment process could not have worked in the way traditionally described by classical, neoclassical and Keynesian economists.'* Panic's quantitative estimates preclude the use of gold reserves and capital inflows as being of a large enough magnitude to finance current account deficits, of the kind that were experienced in some member countries. Thus the search for the proper adjustment mechanism has ensued. Given this, one is left with the question of whether the gold standard existed, or more explicitly did it contribute in a positive way to any important variable and is this overshadowed by the disagreement over its operation?

An initial response to this is to cite Eichengreen when he notes that *'the extent of exchange rate stability under the classical gold standard is impressive in comparison with the most recent decade.'* His conclusion is that in the absence of any obvious superiority in terms of price or income stability, the outstanding feature of the classical gold standard *'appears to have been its association with exchange rate stability.'* As evidence he points to the absence of a significant number of balance of payments crises, even in the face of the inherent financial instability of the period 1880 to 1914. Triffin would argue that this stability was at the expense of the peripheral countries. However we now have a situation where there is a smooth balance of payments mechanism to be explained as opposed to a mechanism that has to be proven to exist.

In attempting to explain the operation of the gold standard there have been many approaches. Whale proposed the spending approach. Whale (1937) and Scammell (1965) put forward the capital flows approach where the trade balance no longer equals the gold outflow from a country, but where the balance of payments deficit is the sum of the trade balance deficit and the capital outflow. McCloskey and Zecher (1976) advocated the monetary approach to the balance of payments, citing the effects of the law of one price on Hume's approach. Superficially, this would appear to cast serious doubt over the gold standards existence, if it can not be dissected and all of its influences methodically noted. However one agrees with Eichengreen as he concludes that *'these authors should not be seen as presenting alternative models but simply as attaching different values to certain critical parameters.'*

The 'Rules' of the Game

A second argument that has been proposed, is that in effect there was no gold standard because countries and more specifically their central banks, did not adhere fully to the 'rules' of the game. The violations were mostly to have been committed against the second rule of the gold standard that was noted earlier, namely that there should be free movement of gold between member countries. However, one wholeheartedly agrees with Panic in expressing the view that *'the fact that the authorities accepted these rules and allowed freedom of international gold movements did not mean that they were indifferent to changes in their monetary reserves, especially in times of crisis. On the contrary, instead of blindly following 'market forces', they frequently took steps within the limits permitted by 'the rules' to influence the behaviour of the private sector.'* Of course, some central banks went further than the bank of England, which as Scammell notes relied on discount rate changes and the use of various gold devices to alter the flows of gold. Continental banks relied more on legal impediments to the exportation of gold, France being a prime example. There are two points though that may be put forward to bolster the author's opinion that the 'rules' of the game were respected.

Firstly, Eichengreen's suggestion that *'perhaps the most popular explanation for the gold standard's smooth operation is that it was a managed system and that it was managed by the bank of England'* cannot be ignored. Secondly, Scammell states that *'the effectiveness of the Bank of England's operations during the period may be questioned. The best that can be said is that there was a steady improvement from about 1900 as the bank gained power and recognition as a central bank...Sayers draws attention to the bank's failure to deal with seasonal drains of gold each Autumn as a serious 'blot on its record'.'* Thus we conclude that any

notion that the gold standard may not have existed because its rules were not in reality adhered to, can be dismissed.

The Gold / Money Stock Ratio

'According to the League of Nations estimates, paper currency and bank deposits accounted in 1913 for nearly 9/10th's of overall monetary circulation in the world and gold for little more than 1/10th.' Triffin continues stating that *'the term 'gold standard' could hardly be applied to the period as a whole, in view of the overwhelming dominance of silver during its first decades, and of bank money during the later ones.'* Bordo states that *'working with a small gold reserve, the bank of England nevertheless avoided catastrophe in the wake of Britain's huge capital exports and general international interests. How did it achieve that result?'*

In answer to this question it is cited that *'a strategic element was involved - all the players were aware of the consequence of collectively seeking to convert sterling into gold.'* Despite the fact that there was not enough gold to convert all of the money stock under the gold standard, this in itself is not proof that the gold standard did not exist. The maldistribution of gold and the inadequacy of world gold output were reasons cited for the collapse of the interwar gold standard. This is completely different to stating that only 10% of a country's money stock was backed by gold, as with today's liquidity reserves, the fact that 10% of the money stock was convertible supplied the necessary amount of confidence in the financial system.

National Sovereignty

'You shall not press down upon the brow of labour this crown of thorns. You shall not crucify mankind upon a cross of gold.' In the introduction it was stated that it is this paper's argument that the gold standard existed until such time as it conflicted with individual members' national policies. The interwar period provides an excellent example of the existence and powerfulness of the international gold standard, when it directed countries to follow deflationary policies or to abandon the system. The members chose to leave the club and any of the advantages that resulted from membership. Earlier it was noted that exchange rate stability was as such an advantage. In this instance the 'rules' of the game could not be superseded. The gold standard had always exerted this deflationary influence but prior to the first war as Scammell notes, the economies proved themselves able to absorb the required changes. *'[In] an era of swift industrial expansion, an adjustment of the gold standard type could be achieved without deflationary effects - with little surplus capacity in the industrial countries and investment opportunities abundant, the switches of demand involved could be accomplished easily and smoothly.'* However, with reference to the interwar gold standard Eichengreen concludes that *'investors were fully cognisant of governments' growing hesitancy to sacrifice other objectives on the altar of exchange rate stability.'* Previous to this, membership *'did not interfere with the major economic changes to which they were strongly committed.'* This point is supported by Bordo when he quotes Lindert's study which noted *'that Sweden remained on the gold standard because the country grew rapidly, not vice versa.'*

It is hard to reconcile the view that the gold standard did not exist or exerted no influence when even Keynes concluded, through his 'Tract on Monetary Reform' (1923) and the Macmillan Committee (1931), that the question of whether *'adherence to an international standard may involve the payment of too heavy a price in the shape of domestic instability?'*, should be answered in the affirmative.

Conclusion

This paper has progressed through a description of the classical gold standard, its rules and its 'traditional' mode of operation. The author has always been mindful of the arguments put forward to discredit the existence of any gold standard. One has alluded to four prominent areas of disagreement: the price-specie flow explanation, adherence to the rules of the gold standard, the gold/money stock ratio and the national sovereignty of member countries. As stated in the introduction, one's conclusion is that the gold standard did exist up to the point that member countries could no longer avoid its difficult policy prescriptions, the collapse of the system in essence proving its existence. Thus Scammell's conclusion that *'there can be no doubt that the international gold standard as it evolved in the 19th century provided the growing industrial world with the most efficient system of adjustment for balances of payments which it was ever to have, either by accident or conscious planning,'* seems to encapsulate this paper.

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Mercantilism Reappraised

Muireann A. Kelliher - Senior Sophister

The classicists in part built their reputation through the denouncement of their predecessors' efforts and the depiction of a 'mercantilist beast'. In this essay, Muireann A. Kelliher revisits Mercantilism and argues that the theories and policies of the time were a rational response to the prevailing economic conditions and in fact led to the very different circumstances upon which classical theory grew.

An important aim of Adam Smith's analysis in 'The Wealth of Nations' was to direct a devastating blow to what he regarded as the fallacies of the 'mercantile system'. The nineteenth century especially did its best to obscure the evident fact that Smith was actually much more akin to his predecessors than has often been admitted. For the thinking during this period, free trade versus dirigisme became the much sought after demarcation line. This not only implied that the figure of Smith became distorted, but the points where he differed from his predecessors became blurred. *'Along with this followed that the whole tradition before him became obscure and almost impossible to understand, romanticised into a mercantilist beast, the otherness successfully defeated by Smith and the classics.'*

The purpose of this essay is to reappraise the ideas expressed by the mercantilist authors between about 1600 and 1750, in the light of such exhortations by classical writers. The English export crisis of the 1620's may be seen as initiating the body of writings which have come to be termed mercantilist. A careful reconsideration of these works in view of the immediate circumstances that prompted them may be better interpreted by understanding that the two traditions (mercantilist and classical) may be better interpreted by understanding that the two 'policies' were developed in different periods as responses to different sets of economic problems. To this end the aims of the mercantilist authors will be classified, followed by a discussion of the tools of the classicists as they have been applied in attempting to expose the supposed futility of mercantilist theory. Finally, the changing conditions which would lead to the emergence of the classical school are reviewed.

Aims of Mercantilism

Smith hailed Mun for presenting a definitive mercantilist manifesto, which claims that in order to prosper a country must export more than it imports, thereby giving rise to an inflow of specie. This doctrine of a favourable balance of trade led to the balance becoming a measuring rod for whether a certain state was successful in its foreign trade or not. The identification of wealth with treasure has been admonished as one of the most grievous errors of mercantilist thought. It seemingly represented the point of difference between Adam Smith's theory of growth conjointly among nations through trade, and the mercantilist axiom that one nation could grow rich at the expense of a rival state. That Mun's main text 'England's Treasure by Foreign Trade' was published posthumously in the 1660's undoubtedly had some far reaching repercussions. As a consequence, according to Gould, this mercantilist manifesto had been misleadingly looked upon by Smith and other commentators mainly as a political pamphlet, while its analytical and principal side was neglected. From a 1620's perspective, its main focus was in presenting some general explanations to the contemporary depression and acute trading crisis, therefore presenting also, it may be argued, a definitively new view of the economic process.

Thus the main of mercantilism came to be represented as '*an aggressive and fallacious hunt for treasure*'. It should be realised however that the period 1620-40 which marked the end of the century long inflationary process that had begun with the discovery of the Americas, also saw the beginning of another century which represented a period of depression. The flow of gold and silver from America was drastically reduced and the struggle among European countries to obtain precious metals almost became a zero-sum game. Economists and merchants were no longer worried about inflation, rather about the lack of money to drive and finance trade. An inflow of precious metals caused by a surplus in the balance of trade in a period in which it was only possible to increase internal monetary circulation by a reduction in external spending, was seen above all as the necessary condition for an increase in production and therefore in wealth. In the British case, devaluation of silver on the Continent, in the early 1620's went unmatched at home, giving rise to an ensuing efflux of silver. This bimetallic outflow was a semi-permanent phenomenon during the period, as was the

problem of a clipped and worn coinage. Moreover, the attraction of metal overseas was not necessarily on a bimetallic basis i.e. silver need not have gone only to fetch back gold. Supple argues that such a loss of silver coin coinciding with and reinforcing a drastic slump in English exports, could and did reduce supplies of effective money or 'usable currency'; gold had a much lower velocity of circulation, reduced even more by its eminent suitability as a means of holding wealth in an age which placed a premium on liquidity.

There is no doubt that it was this phenomenon which underlay so many contemporary complaints of a scarcity of money. This phrase was typically used as a generic expression for the manifestation of a typically depressed economy, '*characterised by tight credit conditions, rising interest rates, and a growth in the level of bankruptcies.*' This was made possible according to Hinton (1955) by the fact at the time, that most business enterprises employed (by modern standards) a low proportion of fixed capital and a high proportion of working capital.

In assuming however that a deflationary readjustment process would speedily occur, one is attributing to these economies a degree of flexibility they simply did not possess. A total supply of money below normal might exist for some time and the structure of society might considerably extend the period which classical economists presupposed to be one of smooth readjustment. Supple therefore argues that mercantilism seen in this light more readily takes on the appearance of a defence mechanism, rather than the previously mentioned aggressive and fallacious hunt for treasure.

Thus the mercantilist authors did not pursue a favourable balance of trade and the ensuing inflow of precious metals as an end in itself, as has been commonly alleged. Rather, it was thought of as a means to a greater end which is perhaps best and most simply described as prosperity. They did not want more silver (gold was little in question) to hoard it, but in order to have more money. Their notion of money was a simple one and is not easily reproduced in terms proper to modern economics. In fact they defined money in terms appropriate to their purpose, '*an anthropomorphic definition but nonetheless a formal one.*' Money, they said was vital spirits, blood, - the life of commerce and trade. To those writers, money, was '*not merely a passive medium of exchange, but an active stimulus to trade.*'

Such a definition absolutely and deliberately precluded a distinction between money as capital and as currency. As detailed previously, relative to present day standards, industry was extremely light. In the seventeenth century, a man accumulated money in order to invest it and in investing it, circulated it. It was really therefore capital and currency at the same time. In the economic depression of Mun's lifetime, the common cries were of decay of navigation, of trade, of clothing and rents and scarcity of money. This scarcity was, as outlined, a real phenomenon made possible by the high proportion of working to fixed capital.

Mercantilism, thus, makes more sense viewed as a strategy using foreign trade as a device to keep the domestic economy stimulated. By using the word 'trade' as the mercantilists usually did to include all economic activity, '*their designs for enlarging that trade then became methods of accessing the maximum amount of productive effort which is what full employment is also meant to provide.*' National prosperity and strength remain ultimate goals but the export balance and the accompanying increase in the money supply was the initial means, with full employment being the major operational end. This is consistent with the development of the issue by later writers who spoke of a modified balance of trade concept, in which the amounts to be compared are not the money values of goods and services, exports and imports, but, the labour inputs they embodied. Protectionist type policies, promoting value-added exports and restricting imports are consistent with this increasing emphasis on Balance of Employment argument. In exchanging goods of different productive potentials, a favourable balance of employment is obtained by exporting goods which have exhausted this productive potential in exchange for goods which still have this potential. Foreign trade becomes the means of strengthening domestic production of wealth and increasing national employment.

Tools of the Classics

While the logic of a favourable balance of trade doctrine as seen from a mercantilist viewpoint has been shown, such efforts were deemed largely futile by their nineteenth century successors. Thus the classicals and neo-classicals, reasoning with the aposterior benefits of the international balance of specie flows, the doctrine of comparative costs and Say's law of markets '*denied the mercantilist position as having misconceived the connection between exports and imports and thereby relinquished the advantages of the international division of labour for the dubious benefits of an increasing stock of monetary metal.*'

David Hume's formulation of the self-adjusting nature of specie flows demonstrated that price level differentials and therefore trade balance disequilibrium between nations tend to be corrected. Mercantilist commercial policy would therefore have been in the best of cases short lived and in the long-run, futile. It has been generally held that though these writers were familiar with the principles needed to arrive at such a proposition, they were unable to make the final integration or the self-adjusting mechanism. In their defence, the author would argue rather that it may be pertinent to cast some doubts on its validity as it applied to the early modern period.

In the first instance, only under the condition that the countries joined in trade are well monetized does the flow mechanism work effectively. The proposition ignored the possibility that an inflow of specie would affect the average velocity of circulation. In particular, the mechanism simply did not fit the important oriental trade as long as the Indies were primarily a source of merchandise imports rather than a destination of English Exports. Thus to the extent that specie constituted an exportable commodity to the East, where it was either ornamented or merely hoarded in oriental treasure chests, the mechanism was rendered largely ineffective. Moreover, even the most advanced western countries of the period were 'dual economies'. A well-monetized economy in the modern sense of the word simply did not exist. This uneven pace of monetization within countries coupled with intensification of trade between them as was the case during the mercantilist period, is likely to lead to monetary disturbances. The mechanism in its pure form relies on two equilibrating levers, namely commodity price and interest rate movements. To the extent that long term capital flows were insignificant during the period, commodity price movements became the sole equilibrating factor. However the '*conventional nature of prices, institutional stickiness, ignorance and confusion*', as described by Supple, ensured a sluggish adjustment mechanism. Since the equilibrating mechanism may at best be deemed fitful, in that prices could not be presumed flexible, the preoccupation with the balance of payments is understandable.

Secondly, though prices in some trades may have been flexible, such an adjustment through a deterioration (improvement) in the terms of trade may have represented not a rebalancing effect but rather a further increase in a trade deficit (surplus). Two important aspects to this way of thinking are, firstly the use (albeit in an approximate way) of the Quantity Theory of Money and secondly the implicit hypothesis of a low price elasticity of demand of imports and exports. Such an argument was put forward by Richard Cantillon but was already in the work of Malynes. Mercantilist theory in this regard was robust therefore from a logical point of view, although the realism of the hypotheses on which they were based should be verified. Evidence does exist however that the theoretical jump made by Hume was a real historical change. Probably in the pre-industrial period the elasticity of exports was not very high, given the marked productive specialisation of the various countries and the relative absence of competition ensured by the wars that ravaged France and the Low Countries. However, as manufacturing production later developed in the main capitalist countries, a certain amount of price competition gathered steam, at least for that type of production, increasing the elasticity of exports and imports. Perhaps at the time of David Hume, and later, of Smith, this effect had become seriously dominant.

In a third instance, it may be postulated that the quantity theory came to be seen not as a theory of the price level but rather as a theory of the level of output. As detailed earlier, the period 1620-40 ended a century long inflationary process, the new worry being the lack of availability of money to finance trade. Thus Mun, writing later than Malynes, did explicitly recognise the elasticity of exports and imports in advocating a judicious pricing policy. Gould maintains that it is in this context that we may best understand Mun's failure to formulate the mechanism in the manner of later thinkers of the classical school rather than as indicative of limited analytical powers on his part. Though perceptive of the relationship between specie amounts, price levels and the balance of payments, empirical conditions presented evidence that stable or falling prices can accompany large gold movements into a country under certain conditions - as demonstrated by contemporary Dutch experience. Under the condition therefore that an increased flow of bullion was used as liquid capital to finance a greater volume of trade, significant upward pressure on prices was avoided. For the period in question, at least, this concept is both theoretically sound and empirically supported. The conception of money, already described, as both capital and currency, facilitated such an interpretation. Where Hume's proposition required the full employment of all productive resources, mercantilists thought that money earned by foreign trade and thus circulated as currency would promote economic activity irrespective of its effect on price. That the analysis here is substantially correct seems to be corroborated by a change in emphasis of the chief function of money between the schools of Malynes and Mun. The earlier school emphasised the measure of value. The newer school attached most importance to the '*medium of exchange aspect of money*

and attention was diverted to the balance of trade and to the benefits conferred by its furnishing an increased supply of liquid capital.'

An increase in the level of economic activity after an increase in the money supply is of course only consistent with a situation of less than full employment. The great concern of the mercantilists over employment, particularly of labour, may have been forced on them by the unemployment of the sixteenth, seventeenth and early eighteenth centuries, which was quite considerable. It seems, to use today's language, that the unemployment was the result of immobility of factors, of seasonal fluctuations, of the rigidity of certain prices and wages which was produced by the monopolistic practices of the guilds and of frequent and severe deflations. In treating such issues, although they made proposals for increasing labour mobility and for enhancing price and wage flexibility, they do not seem to have placed much reliance on them, placing greater confidence in *'inflationary measures; those which by increasing the money supply would lead to increased spending and employment.'* Thus the ceteris paribus conditions in which Hume's propositions would have been a valid criticism of mercantilist aims did not exist at the time of mercantilist writing and in these circumstances, it is time that writers on the history of economic thought stopped using this proposition as though it were in itself a sufficient proof of the futility of mercantilist trade policy.

Classicals also made use of the doctrine of Comparative Costs and Say's Law of Markets as a stick with which to beat mercantilist thought. Thus they argued that even if it were possible to maintain a favourable trade balance, such attempts to interfere with international trade result in a decrease of goods available for consumption, since countries specialising in the production and exchange of those commodities in which they display the greatest comparative advantage will each end up with a greater quantity of goods than delivered by attempted economic self-sufficiency. *'The essential point is however that such a doctrine only becomes applicable in a society where labour and natural resources are fully employed.'* Synthesising the pre-Smithian awareness of these historical conditions *'Hume wrote that foreign trade plays an essential part of domestic growth, at least until a good level of economic growth has been realised, that is presumably until the domestic market is sufficiently large and diversified.'* Mercantilist exaltation of exports makes sense when thinking in terms of a society where full employment involves surplus domestic production i.e. surplus in the sense of not being disposable in the domestic market at a profitable price. Effective demand and employment were thus regarded as mutually determined.

The classical theorists were blinded to the acceptability of this idea because of their whole-hearted acceptance of Say's principle, according to which no employment problem can exist. Smith clearly indicated that this was his point of disagreement with earlier writers, where he ranks consumption and the interests of consumers as superior to production. However he implicitly assumed that the economy has no difficulty consuming its goods. Modern inheritors of the classical tradition are predisposed therefore to look upon the central economic problem as one of maximising the quantity of goods and services for consumption, without considering the relevance to that problem of *'a society so organised that there is difficulty in disposing of goods profitably.'*

Emergence of the Classicals

In the period when liberal economic doctrine developed however, circumstances were very different from those of the mercantilist period. There was no longer the problem of managing a large amount of permanent unemployment; with the obstacles to price and wage flexibility considerably less formidable than they had been in the preceding three centuries. Improvements in transport brought parts of the economy into closer connection, making competition more feasible. Finally, there was an *'expansion of British foreign trade, resulting from the decline of the Dutch empire at the end of the seventeenth century and from the increased efficiency of manufacturing and shipping which gave Britain a cost advantage in the world market.'* The relationship between foreign trade and internal development of production, which is present in seventeenth and eighteenth century literature, has generally attracted the attention of historians less than the contest between 'free trader' and supporters of government control of free trade. *'A contest between two ideas seen as having a common aim.'* Hence instead of the classical policy of laissez faire, the mercantilists proposed a policy which would utilise the market whenever possible, supplement and control it where not, having full employment as its proximate objective. There was then this difference of means between the mercantilists and the classicists. There was also a difference in emphasis on proximate ends: the mercantilists stressed the full employment of resources and the classicists, the efficiency of the use of particular resources. The difference between means was not a fundamental one, it was a difference over the amount and kinds of

control. The mercantilists did not believe in an economy wholly or mainly directed by the state and neither did the eighteenth century classicists believe in an economy entirely controlled by a competitive market.

Thus, both in international and domestic fields, the mercantilists were far from envisaging a harmony of interests such as the classical discussion was to postulate. Politics during the period held the view that power necessitated trade. Of special importance in a situation of less than full employment were the markets and profits afforded by foreign trade. To the extent in which international trade was viewed as a zero-sum game, it consisted of moving wealth from one country to another. Such wealth may be viewed either as the difference between the values or productive potentials of the commodities exchanged. If in international relations, one country's gain is another's loss, commercial policy specifically and foreign economic policy generally become beggar-thy-neighbour type instruments of economic warfare. In this sense, *'the mercantilists may be said to have considered the pursuit of national gain the solution of the economic problem as they saw it.'*

It is easy to believe that mercantilist discourse - 'the science of trade' - disintegrated as a mere consequence of the triumph of free trade opinions. Such a belief is misleading as *'later mercantilist authors successfully straddled the free trade position and that of government regulation.'* In this sense the repudiation of government controls was not the outcome of an heroic intellectual achievement. Rather it may perhaps be argued that 'The Wealth of Nations' became possible because Britain had achieved under mercantilism a hegemony in which a competitive advantage in free trade was enjoyed. By such a modification of the assumptions under which the thinking of the mercantilists are judged, the results became more flattering to the men, who after all, were engaged in practical statecraft based on the observation of effects, rather than the construction of a logical but spurious theory.

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Exhaustible Resources and Economic Growth

Michiel W.A. de Jong - Senior Sophister

Theories of exhaustibility of resources have varied from the apocalyptic to ultra-optimistic in the last 200 years. An examination of these and of the range between them is made here by Michiel de Jong, all in the context of a drive for economic growth. *'Be fruitful and multiply, and fill the earth and subdue it.'*; Gen. 1,28

Introduction

Economists assume that the fundamental principle underlying the process of all economic decision-making is that of scarcity: scarcity in means and in time. *Homo Economicus* is characterised as having unlimited desires, which, given the linear nature of time, Earth's finite resources cannot satisfy. Not only are all resources finite, many resources are also exhaustible. This implies that their existence is limited. Even though Solow demonstrated that an economy can be sustained indefinitely in a world of exhaustible resources, a major concern is if economic progress can still be made in such a world. Especially as a greater population growth rate than the economic growth rate leads to diminishing wealth per capita.

The theories dealing with economic growth, finite and exhaustible resources, and population growth date back to the eighteenth century, when Malthus, Ricardo and Mill developed their theories on these matters. Since then these theories have been elaborated, formalised, adapted and newer theories have been developed. Two main schools of thought can be identified: the conservationists and the optimists. It is not attempted to discuss both doctrines in great detail, rather to portray the fundamental lines of reasoning of two seemingly opposite theories.

Economic Growth

If one assumes well-behaved indifference curves, a Pareto-optimal income distribution, and no externalities, a higher level of real output per capita will be preferred to a lower level of real output per capita. As economic growth implies an increase in output, economic growth is of paramount importance in the attempt to meet *Homo Economicus's* unlimited desires.

Economic growth can be defined as the change in the national/domestic product of an economy over a certain period. In order to distinguish between nominal and real economic growth, the price level at the beginning and end of a period is to be taken into account. Furthermore, in order to distinguish between economic growth brought forth by higher productivity, and hence an increase in wealth per capita, and economic growth brought forth by an increase in population, economic growth per capita is to be measured.

Mathematically:

(1.1)

where stands for the real change in the national product per capita over period $t-1$ to t , Y_t , P_t , and N_t stand for the national product, the price level, and the population size at time t respectively.

Hence the real economic growth per capita rate over period t is

(1.2)

Even though equation (1.2) is used to measure economic growth, mathematical economists prefer to define economic growth differently. By taking the limit to zero of the difference in time between the beginning and end of each period, they obtain the first derivative of the real production function per capita. This is a result of them preferring to treat time not as a discrete but rather as a continuous phenomenon.

Mathematically, the real output per capita can be expressed as definition (1.3).

(1.3)

where K , L , and N stand for the amount of capital, labour and natural resources 'employed' at time t , respectively. All variables are a function of time. *Nota Bene*: the production function is also a function of time, changing as the level of technology changes. Furthermore, human capital, or human resources, are defined to be included in the level of technology, and hence in the production function, and are not part of capital, labour or natural resources.

As the first differential expresses the rate of change, expression (1.4) equates the real growth rate per capita,

(1.4)

and real economic growth per capita occurs if expression (1.4) is greater than zero.

The Production Process, Demand, and Supply

Cost minimisation occurs if the marginal return relative to the marginal cost of the factors of production are equal, i.e. the ratio of marginal return to price for each factor is to be identical.

For cost minimisation:

(2.1)

Furthermore, it is assumed that the marginal return of each factor of production is positive but diminishing, and that partial, but not total, factor substitution is possible.

So,

(2.2)

If the factors of production are assumed to be heterogeneous, the following postulate is necessary: a unit of a factor demanded is weakly preferred to its succeeding units demanded, i.e. the units of better quality will be used in the production process before units of lesser quality.

Mathematically,

(2.3)

where i denotes the factor, and j the unit in the sequence of usage.

The demand for a factor of production is therefore determined by the marginal product of the factor and by the price of the factor. As the price is the outcome of the interaction of demand and supply, the supply of a factor of production influences the utilisation of a factor in the production process. The quantity supplied is a function of the total stock of the factor and the cost of extraction from this stock. It is assumed that the supply curve (see Graph 1) is upward sloping, reflecting the higher cost needed to supply an additional product, up to the point that the total stock has been supplied (point S), after which the supply curve will be vertical.

Graph 1: The Supply Curve

Reaching the Limit: Finite Resources

In most cases the finiteness of resources is of no concern, as the quantity demanded is considerably less than the maximum quantity that can be supplied. In other cases demand is ever increasing only to be curtailed by an ever increasing price as supply is constant. For example the amount of inner-city 'land' is fixed, whilst demand for inner-city 'land' is increasing. As dictated by the market, the equilibrating price of inner-city 'land' increases.

The first economist to voice his concern with the finiteness of resources was Thomas Malthus who developed his theory on the finiteness of resources, economic growth and population growth. This theory was later elaborated by David Ricardo, and structured by John Stuart Mill.

Malthus assumed that the stock of agricultural land was finite, as it could not exceed the total amount of land within a territory. Given that the population was increasing, more land was to be employed in the agricultural process. However, once the limit of the land available to agriculture had been reached, an increase in output could only be brought forth by an increase in the 'employment' of labour and capital, i.e. an increase in cultivation through more labour and capital. This is similar to the example of inner-city 'land', in which older buildings (capital) are replaced by others that have a greater economical return. As the factors of production have diminishing marginal returns, each additional labourer will yield less return. The relative change in output will hence be smaller than the relative change in population. The result will be diminishing wealth per capita.

The most important postulates for the Malthusian theory to hold are that the technological and social framework was constant, i.e. no technological progress. Apart from the production function being static, Malthus assumed that the amount of 'tools' per worker was also constant, i.e. factor substitution between labour and capital was not possible, as each labourer could for instance only operate one plough at a time. This meant that the ratio of labour and capital was held constant. Diminishing wealth per capita would therefore immediately set in as soon as the limit of land was reached.

So,

Subject to and the production function is static.

and

Unlike Malthus, Ricardo assumed that the agricultural land was heterogeneous, but a condition similar to (2.3) ensured that land of better quality would be used before land of lesser quality. In the case of homogenous quality diminishing marginal returns would only set in once the limit of supply had been reached. For heterogeneous quality diminishing marginal returns would immediately set in.

Malthus and contemporaries therefore argued for the control of population growth, to ensure that the upper limit of supply of land would not be reached.

A Declining Limit: Exhaustible Resources

As where Malthus and Ricardo were concerned with the finiteness of resources, the first theory concerning the exhaustibility of resources was developed by Harold Hotelling in 1931. With the ever increasing reliance on exhaustible natural resources decreasing finiteness rather than static finiteness became an issue of concern.

By defining exhaustible natural resources as the extracts of a *structurally* declining physical stock which are 'consumed' in the production process, the stock of resources, the extraction and replenishment rate are taken into account. If the extraction rate is structurally greater than the replenishment rate, the stock will decline.

The aggregate of all the future extracts cannot be greater than the total stock of resources and the aggregate of all future replenishments.

(5.1)

where stands for the stock at time t , and for the replenishment rate at each respective period.

(5.2)

And for an exhaustible resource the extraction rate is greater than the replenishment rate, so

(5.3)

(5.4)

where stands for the excess extraction rate at each respective period

This gives a dynamic element to a stock. Even if *Homo Economicus* could limit population growth so that the limit of a resource would not be reached, a decreasing stock would eventually lead to 'too high a population level', and hence diminishing wealth per capita. However, where Malthus and his contemporaries did not take the level of technology into account, the theories of the twentieth century do.

Exhaustible Resources: A Problem or No-Problem?

From (1.4) it can be seen that economic growth can also be brought forth by an increase in technology. As long as *Homo Economicus* can increase the level of technology the marginal return of the factors of production will increase through a shift of the production function, i.e. due to a higher level of technology the return of the factors of production are increased. Nevertheless, this does not solve the problem of exhaustibility; or does it?

In answering the above question, two different schools of thought can be identified: the 'conservationists' and the 'optimists'. The conservationists, echoing Malthus, argue that technology will never be able to totally substitute exhaustible resources. In the apocalyptic case, it is not inconceivable that once the last of a resource has been used, the production process will grind to a halt. Hence, measures should be imposed to preserve exhaustible resources, or to utilise resources according to an optimal depletion plan.

The optimists, on the other hand, voice little concern over the exhaustibility of resources. Some even claim that there are no exhaustible resources. One of the most optimistic 'optimists' is Julian Simons, whose line of reasoning is worth discussion.

The Optimists: No-Problem

Simons argues that exhaustible resources do not exist. They are merely a fiction created by *Homo Economicus's* pessimistic 'scarcity-driven' mind. Simons argues that scarcity is, among other things, a function of the estimated time remaining before total depletion occurs. Depletion in a hundred years time is less of a concern than depletion next year. A resource that will deplete in a million years time can hardly be called exhaustible, as, to put it in Keynesian terminology, in the long-run we are all dead.

Mathematically,

$$(6.1)$$

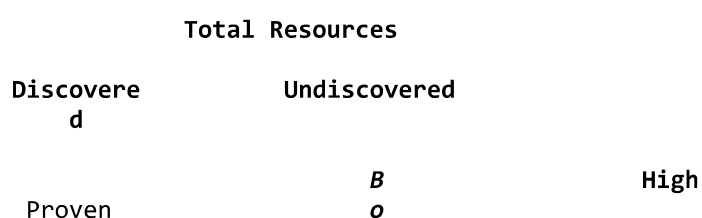
$$(6.2)$$

where t is the point in time when the stock of resources is exhausted.

This point of time can be estimated either through economical or technical forecasting methods. Technical forecasting methods estimate the present total stock and the rate of depletion. Scarcity is then measured by subtracting extrapolated future extraction rates from the 'inventory'. A point in time can then be calculated at which none of the resources are left.

$$(6.3) \text{ where } t_0 \text{ is the point in time at which the estimation is made.}$$

The optimists' critique on this estimation technique is twofold. Firstly, equation (6.3) is irrelevant as the stock of resources has more than one dynamic element, i.e. the stock of resources cannot be described by equation (6.3). The level of technology, economical conditions, and various exogenous factors (such as the element of chance for instance) determine the size of proven reserves over time. As Vincent McKelvey's diagram below shows, 'Proven Reserves, (R_0 in equation (6.3)), is only a small part of the total resources present on Earth, and should hence be replaced by R_t .



Economic	Reserves	Hypothetical	<i>u</i>	
		and	<i>n</i>	Inconceived
		Speculative	<i>d</i>	Resources
Sub-Economic		Resources	<i>a</i>	
mic	Resources		<i>r</i>	
			<i>y</i>	

Boundary of Potential Economic Threshold

Non- Resources not likely to be economic in the foreseeable future

Economic *Boundary of Mineralogical Threshold*

Material Resources in earth but not obtainable with present technology

Geologic Assurance

Vincent McKelvey's Box

Technical forecasts are therefore not a valid estimation technique. Economic forecasts on the other hand extrapolate trends of past costs (prices) and therefore incorporate - to a certain degree - trends of technological progress and economical change. Economical forecasting methods should therefore be preferred to technical forecasting methods in the field of resource economics. For is it not more realistic to estimate the measurement of scarcity than to estimate the factors that cause scarcity?

How, though, should economic scarcity be defined? Scarcity can be defined in terms of prices or costs. The greater the scarcity for a product is, the higher its price will be. For exhaustible resources it is to be expected that their prices will increase at a higher rate than the inflation rate.

(7.1)

where stand for the price of resources at time t and the cost of extraction at time t , respectively.

When function (7.1) is empirically tested it can be shown that scarcity defined in terms of the above economical variables has been declining significantly over time. The prices of resources such as copper, iron ore, oil, coal, aluminium and many more have nominally increased, but in real terms they have declined. This implies that there are no exhaustible resources.

The Answer: Innovation

The paradoxical result of exhaustible resources that are becoming less scarce can be explained in several ways. Firstly, innovation leads to a greater amount of resources being found and becoming suitable for extraction, as explained by the McKelvey Box. Secondly, innovation leads to an increase in the marginal return of resources due to a change in the production function, i.e. the factors of production are used more efficiently. Thirdly, innovation leads to substitutes for 'exhaustible' resources, e.g. with the introduction of fibreglass the demand for copper has been significantly reduced.

Recapitulation

Empiricism have proven the optimists right in claiming that *Homo Economicus* has been able to outrun exhaustibility through innovation. The conservationists do not disclaim this, but point out that may be one

day *Homo Economicus* will not be able to do so, as running away from a problem does not solve a problem. The crucial issue is therefore if innovation is an indefinite phenomenon.

Furthermore, let it be said that *Homo Economicus* remarkably resembles *Homo Sapiens*, but as where *Homo Economicus* can afford to ignore ecology, *Homo Sapiens* cannot.

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The Problem of Time Inconsistency

Myles H. Clarke - Senior Sophister

The policy 'poker game' poses real problems for the maker of policy on whether to cheat or not. The dilemma reaches beyond that of a moral one; whether a policy-maker 'shows his cards' can have real effects on the outcomes of decisions due to the private sector being rational. Myles H. Clarke, using examples, analyses how the private sector can punish the policy maker, and thus decisions originally thought to be 'optimal' may in fact be sub-optimal. Thus, policy-making is not a static once-off 'game'.

The purpose of this essay is to discuss the core readings of the time inconsistency school of economic analysis. Accepting the coherent structure in which the theory is presented, the essay will then go on to analyse the power of the policy which it derives by considering four areas in which time inconsistency is observed to arise. The next section of the essay is a brief discussion of the seminal papers of Kydland & Prescott and Barro & Gordon. While the problem of time inconsistency is a general one in every day life, this literature was particularly concerned with the time inconsistency of monetary policy. Hence, while the author has tried to present this topic in as general a context as possible, this is an area of policy to which it is inextricably linked. Section two is divided into three subsections, each of which consider the problem of time inconsistency with respect to the particular economic issues of tax policy, wage bargaining and fiscal policy. In each case the problem is set up as a non-co-operative game between two independent parties. Exactly how the time inconsistency is arising is identified and the question of whether the theory can suggest a possible solution to the problem is addressed. The third and final section concludes the essay.

Theoretical Background

There are four equilibria associated with the time inconsistency literature. The first three were outlined by Kydland & Prescott in their 1977 seminal paper. The last outcome is nested within the first three and was introduced by Barro & Gordon in 1983. While the author has attempted to outline these equilibria in as general a context as possible, the reader can view them in terms of the time inconsistency of announced monetary policy. The problem is presented as a non-co-operative game between the wage setting private sector and the policy maker who administers monetary policy, i.e. the Central Bank (CB). The private sector's wage bargaining is contingent upon the inflation expectations it derives from the monetary announcements of the CB. When the wage contracts are subsequently agreed upon, there remains the incentive for the CB to exploit the short run Phillips curve trade off by creating surprise inflation.

The first best outcome is the time inconsistent equilibrium. Policy makers renege on their announced commitment due to its suboptimality after the private sector has made certain decisions on the basis that the announced policy will prevail indefinitely. The ex post suboptimality of the announced policy arises even though the information set has not changed. The policy maker's constrained maximum is reached by cheating on the private sector. This corresponds to the CB creating surprise inflation, and so reducing real wages. In the case of a policy maker acting with perfect discretion in the absence of commitment technology and with agents forming expectations rationally, the third best outcome occurs and is the time consistent equilibrium. Here, the private sector knows that the policy maker has an incentive to deviate (or 'cheat') from the policy to which it has announced a commitment and expects that this is what will happen. The private sector makes decisions such that the costs of being cheated are avoided and so the policy maker is denied the benefits derived from cheating. Returning to the monetary policy problem, the consistent outcome occurs where the private sector's inflation expectation is set at the level which it believes the government has no incentive to add to the inflation rate: this is likely to be at a relatively high rate. Moreover, there is no output gain associated with this inflation rate. However, if the appropriate commitment technology is available, then the second best outcome may be achieved. Although the policy maker could be placed on a lower value of its loss function by cheating, the private sector employs an enforcement mechanism which prevents it from doing so. This result is known as the optimal rule equilibrium. It would amount to the CB legislating the rate at which the money supply was to expand over the period of the wage agreement. However, strict rules such as these are suboptimal when monetary policy needs to be used with discretion to alleviate the adverse effects of unanticipated economic shocks. The main point is that given rational expectations and without the required

commitment technology, the time consistent equilibrium is the worst equilibrium. This occurs because in attempting to reach the first best outcome the economy is pushed to the third best one.

The final equilibrium is arrived at when reputational factors are considered in the context of the same game played an indefinite number of times. This equilibrium exists somewhere between the second and third best outcomes. Even if the policy maker is allowed to cheat, this involves a reputational cost. This cost is measured in terms of the private sector's scepticism over future announcements. Wage setters would punish the CB by attaching no credibility to the next policy announcement. The policy maker discounts this loss and makes announcements such that the expected benefit of cheating is at least as big as the associated expected reputational cost. Given the private sector's ability to punish the policy maker, it is rational for it to expect policy announcements to be credible. The reputational outcome is one of multiple equilibria equal to the weighted average of the consistent (discretion) and optimal rule outcomes. The proximity of this outcome to the second best equilibrium is inversely related to the rate at which reputational costs and cheating benefits are discounted, and to the duration of the punishment interval.

Kydland & Prescott's solution to the inflationary bias of monetary policy is to impose strict rules on the rate of monetary expansion. This policy prescription is similar to that suggested by Milton Friedman in his presidential address to the American Economic Association in 1967. However, they stress that it has been arrived at for reasons very different to Friedman's: '*... unlike Friedman's argument, it does not depend upon ignorance of the timing and magnitude of the effects of policy.*' In Friedman's adaptive theory of expectations, agents would reduce their inflation expectations faster if the rate at which the money was contracting was fixed. The faster expectations are revised, the sooner the economy will return to its natural long run equilibrium where prices remain stable.

Barro & Gordon argue that an optimal punishment mechanism is in place and that no intervention is necessary. However these results only apply in a world of no shocks. In general, as is recognised in this literature, it is suboptimal for policy to remain unresponsive to shocks.

The most celebrated suggested solution to the problem of monetary policy time inconsistency combined with the need to respond to negative economic shocks with discretion is to make the CB independent of the government with the overriding objective of price stability. The CB's reputation as an inflation fighter would be bolstered by its independence as it would not be in its best interest to create surprise inflation. Hence, the private sector would attach a high degree of credibility to any announcements that the CB intended to reduce inflation. Rogoff proposed that a similar result would emerge by appointing a CB governor who does not share the social objective function, but instead places '*too large*' a weight on inflation rate stabilisation relative to employment stabilisation. In the case of a small open economy, Giavazzi & Pagano (1988) point out that many inflation prone economies in the EU joined the EMS specifically to link their monetary policies to those of institutions such as the Bundesbank in the hope of improving their reputations as anti-inflationary strategists. These anchoring tactics eliminate part of the inefficiency that arise from the lack of credibility of the monetary authority. Finally, Minford (1995) shows that a modern democracy combined with the self-confessedly discretionary behaviour of monetary authorities, e.g. the Bundesbank in Germany, can reach an optimal outcome with discriminatory punishment. This requires only that the power of the median voter be revealed by the process of democracy. Thus voters are able to punish government by the withdrawal of support at the next election. In this model, the government's best strategy is to react purely to shocks. However, it also requires that the consequences of all relevant shocks be realised before an election, something which can never be guaranteed.

Economic Issues

Tax Policy

Setting tax policy is an area where time inconsistency can be a problem. It has been discussed in detail by Rogers (1987). Her analysis is interesting for two reasons. Firstly, the efficiency consequences of time inconsistent tax policy are very significant given the important role played by tax rates in so many decisions. Secondly, these consequences can be particularly acute if we consider how easily tax rates can be changed. The problem itself reads as follows in a two period framework.

In the first period, the government sets tax at an optimal rate. However, after households have made saving decisions on the basis that these rates will prevail indefinitely, the government realises it could raise more

revenue by exploiting those decisions and increasing taxes. The government secures a higher level of revenue with what amounts to a lump sum tax. Thus, the optimality of taxation depends on the elasticity of savings with respect to the second period tax rate. While Rogers does not proffer a solution to this problem, she uses the power of the time inconsistency literature to good effect. While traditional analysis would show expenditure taxation to dominate income taxes by a welfare ranking, this domination is reversed in Rogers' analysis. However, this paper also highlights a significant weakness in the general approach of proving and solving problems of time inconsistency. The time inconsistency of taxation is highly sensitive to the function chosen as the government's objective. Because Rogers uses a Cobb Douglas utility function in her analysis, savings are found to be perfectly inelastic with respect to the second period rate of taxation. Thus there is no welfare gain to be earned by the government by deviating from its ex ante policy, hence the optimal tax is time consistent. This author believes the results of such theoretical surveys are so tenuous to the chosen assumptions as to be viewed as no more than a guide to the general problem of time inconsistency in everyday life.

While this example did not present a possible solution to the problem, the following case of time inconsistent wage bargaining fits in very well with the theories referred to in the previous section.

Monopoly Trade Union Bargaining

Workers are usually portrayed as the victims of policy makers' ex post deviations from bilateral agreements when there is a temptation to create surprise inflation. However, in the following example of a monopoly trade union, the incentive to deviate is in the worker's hands. This issue is presented as a non-co-operative game between a monopoly trade union and one of many atomistic firms.

The trade union commits itself to lower wages in the future. Believing this, the firm makes optimal capital investment which requires extra workers. After the fixed costs are sunk, the trade union threatens industrial action unless higher wages are granted. The firm has no alternative but to pay its workers - old and new - higher wages. This is a problem of time inconsistency in the absence of binding contracts. Adding the assumption of rational expectations brings the game to a consistent and worst equilibrium where the firm does not respond to the promise of low wages and so does not invest in capital. This accentuates the inefficiencies of monopoly trade unions and reduces output, capital and employment. It suggests that long term wage contracts are essential for weakening the unemployment consequences of a monopoly trade union.

In a dynamic context binding contracts may not be necessary. The importance of reputational effects means the firm (Stackleberg follower) can prevent the union (the leader) from cheating. The dynamic result differs depending on whether the game is played a definite or indefinite number of times. Played a definite number of times, backward induction shows how if there is an incentive to deviate in the final round of the game, that this incentive will permeate every round back to the first. Thus, the consistent and worst equilibrium in the case of no contracts in a one shot game holds. However if the game is played an indefinite number of times, it may be worthwhile for the union to develop a reputation for sticking to its announcements. The outcome is one of multiple equilibria as in the case of the Barro & Gordon model. Whether this result coincides with either the consistent (third best) or the optimal rule (second best) equilibrium in the one shot game again depends on the discount rate and the duration over which the firms punish the trade union. The best enforceable announcement arises when the punishment for deviating is at least as big as the benefits derived from cheating. It defines a rational equilibrium in which the union never reneges on announcements and expectations are never falsified.

This is a highly theoretical approach to analysing a situation in which time inconsistency may arise. Hence, its results are perfectly in line with the literature outlined in the first section. However, in practice situations are not as simple and results are certainly less clear-cut. The final example considers the credibility problem faced by governments who wish to reduce debt ratios by means of fiscal policy. While the time inconsistency aspect of this example is easily identified, the prescribed policy solution is quite different from the solution that the theory has led us to expect.

Fiscal Policy

The motivation in this instance is provided by the recent attempts at fiscal stabilisation of Ireland in 1982 which failed because it relied on an increase in future taxes. The time inconsistency of this policy is that it is unlikely that any government will deliver on the promise of higher taxes given the nature of the political

business cycle. In contrast, the second Irish fiscal stabilisation of 1987-89 attempted to correct the fiscal deficit and reduce the debt/GNP ratio by reducing government spending. This policy was more credible as far as fiscal consolidation is concerned, as the cut in spending signalled to the private sector a permanent cut in government consumption. This meant lower future taxes and led to higher private consumption and investment. A recent model proposed by Fountas (1994) explains the time inconsistency of fiscal policy in relation to Ireland outlined below. The issue of fiscal policy time inconsistency is particularly poignant given the increasing impotency of monetary policy in a small open economy such as Ireland which is committing itself to a centrally controlled single currency mechanism like the EMU.

Time inconsistency arises due to the availability of only one policy instrument - fiscal policy - yet the desire to achieve two policy objectives - current account target and a fiscal deficit target. The government in the first period announces a reduction in the budget deficit. In the presence of precommitment, the private investors will consider it credible, thus depreciating the domestic currency which in turn will increase the current account. Ex ante it is optimal for the government to announce a reduction in the budget deficit to achieve a stronger current account balance. However, ex post there is an incentive for the government to improve upon the announced policy and exploit the decisions made by the private sector and not alter the size of the budget deficit. If the government maintains its commitment to lower the deficit it reaches an equilibrium which can be improved upon by ex ante deviation. The current account will still be strengthened given the expectations of the currency markets while the government allows itself to spend more money than it announced. Given the policy maker's temptation to reach the first best outcome, any attempts at doing so will be unsuccessful as private agents anticipate such behaviour and push the equilibrium towards the time inconsistent outcome, which is worse.

In Ireland's case fiscal policy was set to achieve a lower debt ratio, assuming a certain stability in the current account. After a shock to the current account, ex post the temptation to allow for fiscal policy changes to alleviate the adverse effects of the shock to the current account are at the expense of the fiscal policy target, thus leading to the time inconsistency of fiscal policy. Fountas does not offer a specific solution to the problem of fiscal policy time inconsistency, but rather uses his model merely to highlight its importance in the context of an emerging EMU.

However, Evans (1990) does suggest a possible solution in a similar model of fiscal policy. He considers the problem when a government promises to reduce debt by increasing taxes while maintaining a deficit which preserves current consumption levels. There is obviously the temptation for the government not to increase taxes when necessary and place the burden of higher debt on future generations and possibly a different government. The unspectacular solution suggested by Evans is to promise only moderate increases in taxes. He admits that any promise regardless of its moderation will be subject to the criticism that it is inflexible to shocks and meets this criticism with the following retort. While it may seem reasonable for the government to anticipate losing all credibility if a change in policy is engineered purely to delude the public, it may not be if the public can be convinced that the switch was desirable given an unanticipated change in circumstances - such as an exogenous shock to the economy. However, in view of the obvious incentive to mis-report, the public will view these 'explanations' with some scepticism unless the true impact of a change can be independently verified. The independence aspect of this analysis, is equivalent to the idea that an independent CB adds credibility to announced monetary policy. Finally, the author believes there is a need to find an appropriate punishment mechanism to incorporate into a model of fiscal policy credibility. Inspiration could be derived from Minford's model of monetary policy where the power of the median voter is enough to keep the actions of authorities in line with announced intentions by the threat of voter withdrawal.

Conclusion

This essay has analysed the topic of time inconsistency in both a theoretical and policy context. Time inconsistency arises when there is an incentive for an agent to deviate from a contract made with another agent even when no news has emerged. Three results were arrived at when examining the theoretical literature. First, in a static model policy rules are time inconsistent but if legislated may allow the economy to avoid the worst case scenario when policy is conducted with discretion. Second, a dynamic model reveals that the threat of punishment in the shape of a damaged reputation may be enough to dampen the incentive for an agent to deviate from an announced policy. Finally, these results only apply in a world of no shocks. Policy needs optimal discretion to respond to negative economic shocks. When applied to the areas of

monetary policy, tax policy, wage bargaining and fiscal policy, the advised solutions seem no more than common sense.

The author has found this area of macroeconomics most stimulating. In particular the important role it has played in the development of the New Classical economic thought by incorporating the tools of game theory and rational expectations. In a modelling context, however, it suffers the usual criticism that its results are too sensitive to their assumptions. Nevertheless, given that articles on this topic are still being published, it seems an area that will continue to develop as long as economic issues requiring analysis within its framework arise.

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Game Theory - Can We Play?

Carol Boate - Junior Sophister

The effect of agent interactions can all too often lead standard economic models into difficulties. The existence of 'cheats' in the 'economic game' is plausible. Carol Boate leads us through an analysis of Game Theory and goes on to develop some interesting twists in the story.

Game theory provides a unifying framework with which to analyse any question involving the behaviour of rational decision makers whose decisions affect each other. One of the most researched areas is that of oligopoly theory. *"Until game theory came along, most economists assumed that firms could ignore the effects of their behaviour on the actions of others."* (1)

This discussion will concern itself exclusively with non-co-operative game theory in oligopoly. In non-co-operative game theory, individuals cannot make binding agreements and the unit of analysis is the individual, who is concerned with doing as well as possible for (him)herself, subject to clearly defined rules and possibilities. The essay will also examine the usefulness of game theory in the analysis and understanding of oligopoly. In order to do this we require a standard by which to judge its usefulness. Kreps (1990) suggests that a useful theory is one which helps us to understand and predict behaviour in concrete economic situations. Hence studying the interactions of ideally rational firms should aim to help our understanding of the behaviour of real firms in real economic situations.

The Theory

The methodology of game theory consists of taking an economic problem, formulating it as a game, finding the game theoretic solution and translating the solution back into economic terms. So how do we formulate an economic problem as a game?

A game is defined by a number of players each facing a set of possible actions, called strategies, and consequent payoffs. The games in oligopoly theory involve some mutuality of interests and so we will only concern ourselves with the solution of non-zero-sum games. If each player in the game has the same information and each knows that the others have this information, then the game is one of common knowledge. If one player has private information, or even if they think that others might, then we have an asymmetric information game. Such games are much more complex to analyse and so the focus here will be on common knowledge games. A critical piece of common knowledge is that all players are rational, in the sense that when presented with the same information they will come to the same conclusion: in particular, they can duplicate each other's thought processes.

Now, how do we find the game theoretic solution? 'Nash equilibrium' (NE) is the most frequently applied solution concept in economic examples. A NE occurs when each player chooses his optimal strategy given their rivals' (expected) choice. A NE is also known as a situation of 'no regret'. That is, neither player has an incentive to deviate from their chosen strategy. For example, consider the payoff matrix below:

		Player B	
		Left	Right
Player A	Top	3, 2	0, 0
	Bottom	0, 2	1, 2

The outcome (top, left) is a NE: if player A chooses 'top', B will choose 'left', if B chooses 'left', A will choose 'top'. There is no incentive for A to switch to 'bottom' or for B to switch to 'right'.

Though there is some debate over the validity of Nash Equilibrium, it does have the useful property that there exists at least one NE for every game. In the example above, the players chose a 'pure strategy' and had to stick to it forever. If a NE does not exist in such a game - one can always be found using 'mixed strategies'. That is, if we allow the players to randomise their strategies - assign probabilities to their possible strategies and then play them according to those probabilities - then it can be shown that a NE may be found.

Applications to Oligopoly Theory

The three main models of oligopoly will be discussed here, restricting our attention to duopoly for the sake of simplicity. We assume that the firms are producing a homogeneous product.

Cournot's Analysis

Cournot proposed a model whereby firms compete against each other in terms of the quantities they simultaneously choose to produce (q_1, q_2). Their respective payoff functions are their respective profit functions: each firm's payoff, and thus each firm's strategy, depends on their rival's strategy. Cournot showed that there exists a unique solution of this model when the demand functions are linear. For example:

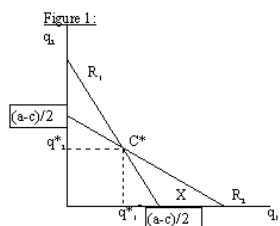
given $p = a - q$

and assuming constant marginal cost, one can derive the following equations:

$$q_1 = (a - q_2 - c) / 2 \quad (R1)$$

$$q_2 = (a - q_1 - c) / 2 \quad (R2)$$

R_1 and R_2 are called the reaction functions for firms 1 and 2 respectively. They show the optimal level of output for each firm given their rival's (expected) level of output. While the term reaction function may be misleading, since the firms act simultaneously with no chance to reply or react, they are useful in imagining what each firm would do if the rules of the game allowed the firm to move second. Plotting these reaction functions:



Where the functions intersect, point c^* is the Cournot NE. Algebraically, it is found by solving the reaction functions which, in this case, yields the result $(q_1^* = (a-c)/3, q_2^* = (a-c)/3)$.

In the Cournot game, the NE has the desirable property of stability: we can imagine how starting from some other strategy profile the players might reach the equilibrium profile. If the initial profile is point X above, for example, firm 1's best response is to decrease q_1 , (q_1), and firm 2's response is to increase q_2 (q_2), which moves the profile closer to the equilibrium, c^* . However, we might still be dissatisfied with the Cournot NE. The main objection is that the strategy sets are specified in terms of quantities when, in reality, firms often set their prices and then sell as much as they can at those prices.

Bertrand's Analysis

Bertrand realised that the focus on quantity competition was unrealistic. He proposed an alternative model whereby firms simultaneously choose prices (p_1, p_2) based on their expectations of each others' prices. In our example with linear demand and constant marginal cost, the payoff function for firm 1, (and analogously for firm 2) is:

$$H_1 = \begin{cases} p_1(a - q_1) - cq_1 & \text{if } p_1 < p_2 \\ (p_1(a - q_1) - cq_1)/2 & \text{if } p_1 = p_2 \\ 0 & \text{if } p_1 > p_2 \end{cases}$$

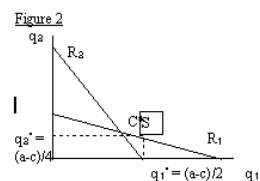
And so each firm always has an incentive to cut their price to just below their rival's as this would mean capturing the entire market. The Bertrand NE must therefore be $p_1 = p_2 = c$. Then, for either firm: a higher price would mean zero market share and to charge a lower price would mean losses.

This is the Bertrand paradox. We know that in reality firms do compete in prices and make profits. What it tells us is that duopoly profits do not arise simply because there are two firms. These profits arise from something else such as multiple periods, incomplete information or differentiated products.

Stackleberg's Analysis

Stackleberg proposed a basic derivative of the Cournot model: the leader-follower model. Firm 1 chooses what quantity it wishes to produce, q_1 , and after this choice is communicated to firm 2, q_2 is chosen. Firm 1 is the Stackleberg leader, firm 2 is the Stackleberg follower.

In our example, the Stackleberg NE, S, is as shown in figure 2 below.



All three models can be seen as the application of the NE concept to games which differ in their strategic variables and timing. The Cournot and Bertrand models are simultaneous moves games where the strategic variables are quantities and prices respectively. The Stackleberg model is a sequential game where quantities are chosen. We can conclude from this that the outcome of an oligopoly situation is very sensitive to the details of the model.

Multiple Periods

All of the above models were one-shot games. In reality, firms compete against each other repeatedly, and the outcome is not always as these models predict. In the example of the Cournot model (a similar analysis may be carried out for Bertrand), if the firms could co-operate with each other, they would produce the monopoly level of output, $q^* = (a-c)/2$. Thus they would be maximising the total payoffs and would both receive higher profits. So, $q_1 = q_2 = (a-c)/4$ is the pareto optimal outcome from the firms' perspective.

However, since we have excluded the possibility of making binding contracts there is always an incentive for each firm to cheat. That is, say firm 1 believes that firm 2 will 'co-operate' and produce $q_2^* = (a-c)/4$ [$= 1/2H_m$], then firm 1 could 'cheat' by producing a quantity consistent with its reaction curve [$> 1/2H_m$].

The 'dilemma' can be represented by the following payoff matrix.

		Firm 2	
		Co-operate	Cheat
Firm 1	Co-operate	$1/2H_m, 1/2H_m$	$<H_c, >1/2H_m$
	Cheat	$>1/2H_m, <H_c$	H_c, H_c

(where $1/2H_m > H_c$)

(H_c, H_c) is a NE, and so the outcome is (cheat, cheat) and Cournot NE profits are made by both firms. The only way out of this dilemma, usually called a 'prisoner's dilemma, is if a firm can punish another for cheating. This requires that the game be repeated by both players. Reinhard Selten found that whether or not firms co-operate in repeated games depends greatly on whether or not there is a known fixed end to the repeating.

A Finite Number of Plays

This situation is best analysed through 'backward induction'. That is, we should look ahead to the final play. At this last play there is no future to consider and so, this play is simply a one-shot prisoner's dilemma game and the outcome is (cheat, cheat). Since this outcome is a foregone conclusion, we must turn our attention to the penultimate play, as this effectively becomes the last play. The same logic applies here and once again the outcome is (cheat, cheat). This argument unwinds all the way back so that there is no co-operation, even in the first play. While this logic is impeccable, the argument is severely criticised due to the many real world examples of successful co-operation in such situations. One explanation for this is that the real gains to be made by co-operating for a while may be very high. Thus there may be an initial phase of mutually beneficial co-operation while each side is waiting to take advantage of the other. (p.101)

Indefinitely Repeated Games

Consider a situation where two firms start off on a basis of trust. If one firm cheats now, there are immediate gains to be made ($> 1/2H_m - 1/2H$) followed by losses ($1/2H_m - H_c$) while the trust has collapsed. If the value of these gains exceeds the value to the firm of the subsequent losses, then this firm will cheat. Of course time is money and the value of the future losses will depend on how much weight the firm places on the future. Therefore we must use a discounting technique. In our example, the two alternative profit streams would be:

Co-operate = $1/2H_m + a(1/2H_m) + a^2(1/2H_m) + \dots$

Cheat = $> 1/2H_m + a(H_c) + a^2(H_c) + \dots$

Thus the decision of whether or not to cheat will depend on the magnitude of $H_m, H_c, > 1/2H_m$ and 'a' the discount factor. As the game is repeated indefinitely the decision to cheat now is identical to the decision to cheat in any subsequent period. Thus, given that each firm faces the same $H_m, H_c, > 1/2H_m$ and has knowledge of each other's discount factor, the outcome for both firms will be to co-operate forever, or cheat forever.

Once again reality does not conform to the theory and leads us to question the assumption that each firm will punish the other's cheating by playing 'cheat' forever. For example, what if firm 2 cheated once and then made a (credible) promise never to cheat again - regardless of the economic gains to be made. Surely it would be foolish, and more importantly irrational, of firm 1 to play a strategy of 'punish forever'? A more appropriate strategy for any firm to adopt would encourage co-operation while avoiding the possibility of exploitation.

Dixit and Nalebuff identify three criteria which a punishment strategy ought to meet(p.105):

- 1) it should be easy for one's rivals to calculate the costs associated with the punishment.
- 2) the rival must perceive the punishment to be certain - that is, the threat of punishment must be credible.
- 3) the punishment ought to be severe enough to deter cheating but not too severe in the case of mistakes or misperceptions. One strategy which meets these criteria is the famous 'tit-for-tat' strategy. This strategy co-operates in the first period and from then on mimics the actions of its rival in previous rounds. Robert Axelrod conducted a computerised tournament of game theorists' punishment strategies, which tit-for-tat won outright. At best, it ties its rivals, at worse, it is exploited only once. Despite this encouraging evidence, tit-for-tat is still disliked by game-theorists since once taken outside the realm of economic models, the slightest possibility of misperceptions can lead to disastrous results for the players.(p.108)

Thus we must return to our criteria for a good punishment strategy. Most game theorists focus on the second criteria, that of credibility. By making it impossible for the firm to reverse its decision, the firm can commit itself to its threat of punishment and so encourage co-operation. Alternatively, if the firm could change the payoffs of the 'game' they could make it more costly for their rivals to cheat and this too would promote co-operation.

A well known way of guaranteeing punishment is through, 'beat-the-competition' advertisements. For example, if our two firms compete on prices and firm 2 is running a campaign which reads: 'If within X days of purchase you find the same product on sale at a lower price, we will refund you double the difference, subject to written proof.' Then if firm1 decided to 'cheat' and lower its price by say £10, rather than attracting more customers, these customers would purchase the product from firm 2 and claim their £20. Eventually firm 2 will also have to lower its price by £10 and so firm 1 would in fact be worse off than before. Thus this advertising campaign is effectively a punishment strategy which guarantees that firm 1 will not lower its prices, and so both firms can enjoy the profits of an implicit cartel. Perhaps then such a strategy might be better analysed in the framework of co-operative game theory? This question has been addressed by game theorists and has been used by governments to break up such (illegal) cartels.(Dixit, p.103)

Evaluations and Conclusions

Game theory is criticised for its lack of use in predicting the outcomes of many real world oligopolies. Rather, its use lies simply in explaining the past. This feature is due to the sensibility of the outcomes to the details of the situation and to the rules of the game. However, when we compare this to the traditional approach of Sweezy's Kinked Demand Curve we find that game theory has much in its favour in the analysis of oligopolistic industries. Sweezy proposed that the oligopoly market demand curve is 'kinked' at a particular price and so the quantity produced by each firm will depend upon its marginal cost curve. The analysis does not explain or predict where the demand curve will be kinked or what quantities will be produced. Thus game theory's apparent weakness, in its attention to detail, is really a strength. Using game theory enables us to pinpoint a starting position and tells us exactly how, in microeconomic terms, a certain end position will be reached. One must therefore echo Kreps' words that we ought to be "*happily dissatisfied*."(Kreps 1990) Happy that progress has been made, and dissatisfied that we cannot yet predict real world economic behaviour. That said, game theory is being increasingly used by governments, management lecturers and firms world-wide. It is a tool that no economics student can afford to be without.

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The EMU Illusion

Fraser Hosford - Senior Freshman

The biggest economic event on the European Union's immediate horizon is unquestionably the proposed Economic and Monetary Union. Ireland as a small open economy must carefully evaluate the potential costs and benefits of joining such a union. In this piece, Fraser Hosford systematically discusses possible gains and losses from an EMU and concludes in a way which will be like a red rag to Irish Europhiles.

The quest for a United Europe has stepped into a new dimension. The final stage of an economic and monetary union (EMU), 'the irrevocable fixing of exchange rates' to form a single and stable currency across the European Union is progressively getting closer. This concept forms the backbone of Chancellor Kohl's idea of a federal union. Does this mean that economic reasoning has been overlooked or is the EMU, as often implied, an economic utopia?

Economists generally refer to the EMU as an economic trade off between perceived costs and benefits of joining. There is strong and sometimes emotional disagreement on the extent of these costs and benefits, and therefore, ultimately on the decision whether to participate or not. This short paper aims to outline the economic reasons for monetary union before analysing the main objections to the concept.

Benefits of a Monetary Union

The main perceived advantages are a reduction in transaction costs, consolidation of the Single Market, an end to destabilising currency shifts within Europe, price convergence and price stability (assuming a 'hard-nosed' European Central Bank). An estimated \$30 billion a year is spent on foreign exchange transactions and exchange rate hedging. The elimination of these costs will be particularly relevant to a country like Ireland which exports a considerable amount of its output to the European Union. It will also be especially helpful to small and medium sized enterprises which may not be able to reap sizeable economies of scale. Furthermore, the consolidation of the Single Market is important in itself. It will increase efficiency in production because of increased specialisation and economies of scale, thus increasing the European Union's level of GDP.

Assuming the EMU delivered the end of currency shifts, this would bring increased certainty to business. This should result in foreign multinationals being more willing to set up in Europe. There will also be savings to national monetary authorities through the lowering of international reserves. This may result in the lowering of Irish interest rates, thereby encouraging more investment and reducing the cost of national debt service, ultimately increasing national income. The reason behind this is that interest rate premia compensate investors for the possibility of devaluation, which is why Irish interest rates are above Germany's.

A single currency highlights price differentials. The subsequent enhancement of competition will increase economic efficiency and should cause price convergence, thus ending any market discrimination. A European monetary policy will aim for, and largely succeed in, price stability assuming there is no politicisation of the European Central Bank. This will mainly be due to the influence of the Bundesbank upon the new European Central Bank. The Bundesbank's 'loathe' for inflation and success in limiting it, makes the German Central Bank an ideal role model for a low inflation regime.

Further advantages as regards free trade should emerge. At the 1996 Inter Governmental Conference discussions regarding further trade liberalisation with the USA will be held. Also recently an agreement between the EU and the four countries of the Latin America free trade zone was signed establishing summits every two years and closer trade links between the two blocs. Monetary union will give the EU increased bargaining power in such negotiations because a common position could be put forward. Some observers also predict dynamic benefits as the credibility and visibility of a single currency lead agents to modify their wage and price setting in a more disciplined way. This will increase business confidence, investment and the rate of economic growth in the community.

Costs of a Monetary Union

The strongest economic argument against monetary union is the obvious diversity of the economies involved. Problems will emerge when economies with different fundamental economic structures, levels of efficiency, productivity and inflation are integrated under a single currency. If all economies were the same and had similar objectives they would possibly adopt the same policies and respond in the same way to changing circumstances, thus eliminating many of the advantages of fixed exchange rates. The main rationale behind fixing exchange rates is because economies are not all the same and it is necessary to constrain national monetary authorities from short term political aims for the sake of overall efficiency gain.

The Maastricht criteria were drawn up in an effort to bring convergence to the participating economies. However, this was an optimistic objective and does not really account for the costs a loss in sovereign monetary policy can entail. Economic policy would become very rigid within an EMU as governments lose the option of devaluation, and monetary policy would be set by a supranational European Central Bank in Frankfurt. In the event of a detrimental asymmetric shock that puts the economy in recession, the government would be very limited in its policy response options in a EMU. It could not devalue to restore competitiveness or decrease interest rates, and fiscal policy is also likely to be severely restricted especially in the light of Theo Waigel's proposed stability pact which would limit the yearly budget deficits of the EMU countries to an average of 1% of GDP. Basically the government would only be left with microeconomic options to boost the economy which may help to increase employment and output in the long run but would do little in the short run during a recession. This problem would be exaggerated in Ireland because of the long time period associated with the 'short run' due to the inflexibility of prices and wages and the rigidity of the labour market in general.

Sir Alan Walters, economic adviser to Margaret Thatcher in the 1980's, was particularly concerned with this problem. He observed that a high inflation regime might be burdened with centrally dictated low interest rates thus exacerbating its economic problems. Conversely, countries with high unemployment may be unable to reduce interest rates. This dilemma surfaced in 1992 when the German authorities employed restrictive monetary policy to combat inflation after reunification, while Britain was experiencing a recession and pursuing expansionary monetary policy. If the EMU was in place then, the existing British recession may have been exacerbated given an absence of monetary policy flexibility. However, it could be argued that the Bundesbank already has a certain level of control over European interest rates, so national monetary policies are controlled anyway.

Conclusion

It has been proposed that integration among the European economies will lead to convergence and therefore make asymmetric shocks less likely to occur. However, according to classical trade theory integration entails more specialisation due to comparative advantage and thus core economies may benefit at the expense of less efficient peripheral ones.

Is it really worth sacrificing independence on policy making for advantages which are hypothetical at best? The benefits are difficult to quantify and might not even accrue. As Alan McCarthy, chief executive of Bord Trachtala said *'competitiveness is the key to winning more business.'*

With the consolidation of the Single Market and the resultant economies of scale, many firms will have to increase in size to compete. Such large firms are likely to locate in the core of the EU, near the main markets and with sound infrastructure, advantages not present in peripheral regions. Firms in the peripheral region not gaining the same efficiencies may become less competitive and probably go out of business or be forced to relocate to the core. The ultimate result being decreased national income and increased unemployment in the peripheral economies.

To conclude this author believes the present format for proposed monetary integration is flawed. Having said that however, the author asserts that if the larger economies participate in the EMU, Ireland will be left with little option but to follow as its economy is so dependent on exports to such countries. If the UK utilises its 'opt-out' clause and retains its sovereignty then Ireland faces a dilemma with regard to joining the EMU, as an estimated 50% of Irish employment is dependent on British trade. Ultimately the author cannot accept the loss of devaluation as a policy option, or the concept of a European monetary policy aimed at price stability. Foreign policy makers are not in a position to govern Irish monetary policy. Every government is entitled to make its own value judgement as regards policy objectives and each government is best positioned to dictate the needs of its national economy.

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Structural Funds : Success Or Failure?

Cormac Halpin - Junior Sophister

Can the EU Structural Funds help to cement a 'new Europe' with low regional disparities? Or are they merely smoothing over fundamental cracks in the face of Europe? Cormac Halpin assesses this question and finds the system at best faulty.

The Development of Structural Funding

The European Union's (EU) Structural Funds are now clearly established as a key tenet of European level policy initiatives. The Funds consist of four separate funds, namely the European Regional Development Fund (ERDF), the European Social Fund (ESF), the European Agricultural Guarantee and Guidance Fund (EAGGF)- though only the guidance section comes under the ambit of the Structural Funds - and the Fishery Guidance Finance Instrument. In this essay, a brief outline of the development and rationale for Structural Funding will be given. Then one will proceed to examine the effects of the funds, detrimental and beneficial. Finally one will conclude that while the Structural Funds were intended to reduce integration-engendered socio-economic disparities, various problems have hindered their effective implementation, and to this end they must be considered at best a very limited success.

The Rome Treaty, being mainly a statement of economic efficiency intent, placed no great emphasis on the disparity issue. The document propounded 'harmonious development' in the proposed community, and laid out embryonic plans for a Social Fund, but explicit proposals for comprehensive disparity-reducing funds were absent. Between 1955 and 1972, regional policy was discussed within the Council of Ministers, but concrete legislation was not forthcoming. The Guidance section of the EAGGF, aimed at restructuring agriculture, was developed over this period, but was a pale shadow of the Guarantee section, and largely inconsequential. Social policy was still seen as a side issue in a mainly economic community, though tentative moves were made in the 1968 Hague Summit towards increasing workers' occupational and geographical mobility. 1975 saw the creation of the ERDF, subsequently the most important component of the Structural Funds. It was created at Britain's behest, as a mechanism to compensate the United Kingdom for its significant budget contributions. Between 1972 and 1983, the Social Fund was allocated 1500 million ECU, with emphasis on redistribution to disadvantaged groups throughout the community. The moves towards the Single European Market (SEM), gave the three main Structural Funds new life. The Single European Act (SEA) of 1985 codified the Community's commitment to reducing the regional and social imbalances which either existed or would be occasioned by the opening up of the markets. The ERDF was earmarked to invest in economic infrastructure in disadvantaged regions, the Social Fund was targeted at youth and long-term unemployment reduction, and the guarantee fund of the EAGGF, took up the role allocated to it in the Mansholt Plan of the late 1960's, namely the modernisation and restructuring of farm practices. 1989 saw the three funds bound together officially under the ambit of the 'Structural Funds'. The three funds were allocated 10,000 million ECU per annum between 1989 and 1994, and five objectives were designated to them, alongside a new integrated approach to their implementation. The Maastricht Treaty in 1991 further underlined the EU's commitment to the Funds, with 25,000 million ECU per annum allocated to the Funds' objectives between 1994 and 1999. This sizeable increase was mainly due to the feared disintegrative effects of Economic and Monetary Union.

The Structural Funds, as stated, are aimed at reducing regional and social disparities in the EU. A cursory examination of figures justifies this. In 1990, the 25 best off regions in the EU had an unemployment level average of 3.1%, whereas the 25 worst off regions had an average of 17.8 %.([El-Agraa](#)), given an EU average GDP per capita of 100%, GDP per capita in Luxembourg in 1990 was 123.7%, while it was 47.1% in Greece. Among the theoretical rationale proposed for the distribution of the Funds includes the moral issue of such discrepancies, the inability of some states (e.g. Ireland and Greece) to correct their own internal economic imbalances for financial reasons, and the fact that EU level funding would be far more co-ordinated and organised than fifteen separately operating national structural funds. Furthermore, it has been suggested that the integrative process of the SEM and EMU will engender further disparities (though neo-classical theorists debate this point), through the incidence of economies of scale, agglomeration and localisation of economic activity and selective migration of labour from poorer to core areas. The EU

wishing to maintain cohesion and confidence in its own progress, therefore, sees the Structural Funds as diminishing differences and heterogeneity in the community, and thereby enhancing the efficient economic allocation of the integrative process.

The Effects of Structural Funds

The effects of the Structural Funds belie the 'noble' intentions behind them. There are several criticisms which may be levied against them, and this discussion will firstly examine the level of funding allocated to the programmes. As already stated, the three main Structural Funds were essentially of secondary importance in the incipency of the EU. Regional and Social policy came under the national aegis, and overall economic improvement was the Community's aspiration. The Community instigated the funding as it became apparent in the 1960's that the completed Customs Union was prohibiting member states from protecting their regions, and labour was beginning to migrate away from poorer areas, followed by capital migration. Up to the early 1970's, the funding was very small scale and, as will be examined, was allocated in an inefficient way. The first major injection into Structural Funding came in 1975, when approximately 1,000 million ECU per annum was allocated between the three funds, and this amount was maintained up until 1984. However, an examination of the Community's 1985 budget shows that the ERDF, the largest of the Structural Funds comprised a meagre 0.08 % of EU GDP. This was mainly because the Community was plagued by the problem of spiralling Common Agricultural Policy funding, with the Guarantee Fund eating into expenditure, and leaving little to be allocated to other programmes. As part of the SEA restructuring of the funds, it was decided to increase their allocation to 5,000 million ECU per annum. While this represents a large proportional increase on the previous few years' funding, it was still a trivial sum given the CAP expenditure, and the methods in which it was dispensed.

The 1989 reforms of the Structural Funds outlined five objectives upon which the Funds would be targeted. The Objective regions were defined as structurally backward areas, which had a GDP per capita of less than 75% of the Community average. These were to be allocated 38,300 million ECU until 1993, which comprised 70 % of the ERDF's allocation. This sum represented a sizeable increase in funding and was one notable success of the Structural Funds. Objective regions came to rely heavily on the funding, and in some cases like Ireland, the increased funds represented a substantial augmentation of National Income. Significant funding-level problems can be seen in examining the Social Fund's operation, however. While its allocation increased from 2% of 1977 expenditure, to an estimated 8% between 1994 and 1999, this is clearly insufficient to withstand the tide of unemployment in the Community. The Social Fund's allocation of resources is not high enough to allow the authorities to tackle the underlying causes of unemployment. The Social Fund has been targeted at training and education and limited job creation, but fails to address the rigidities and barriers in wage markets and labour mobility. The fund's sheer lack of financial clout has entailed that it has failed to redress the fact that there are currently 20 million people unemployed in the EU, with 10 million of these classed as 'long-term unemployed'. An even more scathing criticism of the lack of funding provided comes in the revelation that, of the several targeted Objective 3 and 4 areas which target youth and long-term unemployment, by 1993, only two had seen employment growth substantially above the EU average.

While the dearth of funding to the Structural Funds is a cause of their relative deficiency, perhaps the key inadequacy has been the area of allocating, organising and implementing the funds. Up until 1989, the Funds were essentially seen as a welcome supplement to national policies on regional and social programmes, and in many cases seen as a substitute for national governmental funding. This attitude is perhaps best epitomised in the stance of the British government at the 1973 Paris Summit, in demanding the establishment of the ERDF to compensate Britain for its expected huge outlay on CAP. Britain saw the ERDF not as an instrument to aid in the rectification of its regional imbalances, but as a flow back into the exchequer to replace 'loaned-out' sterling. The problem of 'additionality' was one that plagued the EU for years until the mid-1980's. Fundamentally, this problem stemmed from member states' view that Structural Funds were a EU handout, to be dispensed as national governments saw fit. Until 1979, the ERDF was allocated on a strictly state-per-state quota system, with each country given a fixed proportion of that year's regional funding. This allowed national governments to do as they wished with the money, safe in the knowledge that the following year, it would once more receive its 'dues'. The EU espoused the hope that the funds would be spent on enhancing, or adding to regional and social integration, but governments often would replace national assistance for regions with European funds, or even devote the European granted funds to another area of the economy altogether.

The mid-1980's and the advent of the SEA saw the Community attempt a revision of the planning and implementation of the Structural Funds. Previously, funding had been allocated to member states on a mainly quota basis. The non-quota aspect was enlarged progressively throughout the 1980's and, in 1985, a decision was taken to allocate non-quota funds on a project-by-project approach to ensure the funds went to their intended targets. The EU required the members to submit proposals for the funds' usage and dispensed the money to the most viable plans. One bulwark of structural policy of the mid-1980's was the Integrated Mediterranean Packages (IMP's), which epitomised the new, non-quota, project approach. In what is termed the 'IMP debacle' , glaring failures of the funds and their implementation are apparent. Two thousand five hundred million ECU were envisaged for the IMP's to Greece, Spain and Italy, but planning defects minimised their effectiveness. The official EU review cites a minimal co-ordination between instruments and actions as the main reason for the limitations of the IMP's. As with other structurally funded projects, there was simply too little interaction between the European level dispensation of the funds, and the regional level implementation. Plans went awry as local governments misused the funding and designated projects failed to benefit from the money. Another key deficiency cited was the overlap of the Funds. The ERDF, Social Fund and EAGGF at times overlapped with the IMP funding, a clear planning inefficiency leading to a malappropriation of funds. The local governments in the Mediterranean areas also bewailed the lack of input they had in designing the plans, which ultimately led to the chasm between EU design and actual implementation. Delegation of responsibility was vital in these plans, but the EU's insistence on engaging in the complexities of each stage, thoroughly frustrated the plans. In an attempt to rectify this situation, the European Committee of Regions was established in the late 1980's to help regional level orientation of the funds.

The main problems of additionality and fund-overlap were addressed in a 1989 reform of the three funds. To signify the new unified, complementary nature of the funds, they were collectively dubbed the 'Structural Funds', along with the aforementioned Fisheries Guidance Finance Instrument. As already indicated, funding was increased to the programmes, and new planning initiatives were pursued. Amongst these were so called Operational Programmes (OP's), co-ordinated packages of several goals and projects, and Community Initiatives (CI's), programmes for several members. The EU stressed the involvement of national, regional and local government in the Structural Fund's allocation, and introduced the concept of 'matching funds'. The 'matching funds' concept was intended to counter the additionality problem, the EU only willing to co-fund programmes for which national governments were already providing at least 50% funding. Five 'Objectives' were designated, incorporating regionally backward, industrially declining and agriculturally over-dependent areas as well as seeking to reduce long term and youth unemployment. A prominent MEP, John Hume, once claimed that the '*Regional Fund operated on a red-cross basis*', and this was the main catalyst behind the 1989 rethink. Funding was to be targeted at stimulating economic activity directly, and not through solely investment in the economic infrastructure. Ten thousand million ECU were allocated to the funds yearly from 1989 to 1993, and monitoring agencies were to be established to ensure the effective implementation of the Funds. To this end, the supranational nature of the EU was very beneficial. Again, however, the good intentions of the reform have been severely limited by the actual funding level, by 1992, only 3% of EU GDP going to the Funds. The benefits of the new funding system have, however been crucial to several regions. Increased industrial activity, improved infrastructure, better farm structures and training of unemployed labour have all boosted regional economies around Europe.

One final drawback of the Structural Funds has already been alluded to. This is the notion that the Funds are 'swimming against the tide' of other EU policies, and thus doomed to failure. The Guarantee section of the CAP tends to concentrate farming activity in the areas of efficient, wealthy farms, clearly against the dispersion aspiration of the Structural Funds, and given the huge commitment of funds to the Guarantee section of the CAP, the Structural Funds have clearly an uphill task to dislodge the concentration tendencies. EU industrial policy, though not as fully developed as the CAP, is another significant barrier to the Structural Funds' goals. Policies such as ESPRIT serve to increase economic activity by processes such as funded industrial research and development, and this tends to concentrate economic activity in core areas.

Conclusion

A cursory glance at the raw data proves that the Structural Funds have not combated the problems they were created to tackle to a significant level. As has been stated '*Various elements of this stage of European Social Policy have drawn mostly unfavourable critiques*' , and '*Regional Policy measures do not seem to affect the spatial distribution of economic activities in a big way*'. Twenty million people are still unemployed in the

EU, and in 1990, GDP per capita in Ireland, Greece and Portugal was still 50-60% of the EU average. While it is true that many worthwhile and indeed vital projects have been developed by the Structural Funds, the overall impact on the EU has been mitigated by a combination of planning, implementation and lack of funding difficulties. The Structural Funds were designed to reduce the tendencies towards divergence in the EU, but these largely remain, and in the absence of an ameliorated financial and developmental basis, the Structural Funds will continually fail to address their targets.

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An Examination of the Japanese Trade Surplus with the European Union.

Kai Kaufman - Senior Sophister

Japanese imports - for many European consumers a source of high quality competitively priced goods. It is no surprise to hear that Japanese imports consistently exceed European exports to Japan. Kai Kaufman explores this issue and finds that the protectionism / no protectionism debate is once again at the forefront of policy options.

Japan's rise to the status of economic superpower, technical giant and financial juggernaut over the past 25 years has created a lot of uneasy feelings in Europe. On the one hand there is admiration and respect for the country's miraculous achievements; on the other hand, there is envy and rancour stemming from its trading practices. The relationship in recent years has been characterised by an increasing anxiety in Europe about the level of Japan's trade surplus with the European Union. This essay seeks to cast light on the extent, causes and implications of the EU's trade deficit with Japan.

The Extent

Since 1970, Japan achieved the longest period of consistently high economic growth ever achieved by any nation. It overcame two oil shocks, modernised its structures and developed new industries. It pursued a strategy of minimising its reliance on imports while developing a powerful export machine. It is this combination which led to the Japanese trade surplus with almost all its trading partners, most prominently with the United States and the European Union.

The magnitude and composition of the trade surplus

While the American deficit is higher than that of the European Union, theirs is rapidly shrinking whilst the EU trade loss is dramatically rising. In April and May of 1991, Japan's trade surplus with the European Community was, for the first time ever, even larger than its surplus with the US over the same months. The European Community began to develop consistent trade deficits with Japan in the late 1960's. Europe's deficit has increased ever since with the exception of only two years (1981 and 1982), rising from \$659 million in 1970 to \$37.2 billion in 1992.

What is in fact the major worry for the Europeans is not so much the existence of a deficit or its size - Japanese goods account for just about 11% of total imports into the EU - but rather its composition as shown in table 1.

Table 1

	EU Exports to Japan	EU Imports from Japan
Food	655.1	63.0
Beverages/Tobacco	375.1	5.5
Crude Materials	206.0	103.2
Fuel Products	20.7	12.7
Chemicals	1775.6	1210.9
Manufactured Goods	1901.7	3033.7
Machinery &	3829.1	19250.8

Source : Basic Statistics of the Community, Foreign Trade, 1992

Japan sells high value-added goods, especially machinery and transport, to Europe while the Europeans tend to sell to Japan a wider range of low value-added items. Japan's overall trade surplus is a result of its exports in the rubric machinery, scientific and optical equipment, telecommunications equipment, and semiconductors and electronic parts.

Foreign Direct Investment. (FDI)

The counterpart to Japan's surplus in merchandise trade has been the country's massive increase in overseas investment, in Europe in particular. At first glance, the Foreign Direct Investment picture looks alarming. The total amount of Japanese direct investment in the European Union is 14.5 times larger than vice versa. The reason for this is not an overwhelming amount of Japanese investments in Europe, but rather very low European investments in Japan. In 1992, Japanese direct investments in the European Union totalled some \$42 billion, just about one quarter of the direct investments from the US. In the same year, total foreign investment in Japan represented only about one per cent of Japan's GDP.

The attention given to the European Union's trade deficit with Japan seems disproportionate when one considers that it comprises only 7% of total extra-EU trade. The main problem is the Japanese pressure on specific sectors of the European industry as shown in table 1. Over 80% of Japanese exports to the EU consist of engineering products (mostly machinery and transport equipment).

The Causes

The imbalance of trade was caused in part by the success of Japanese exports and in part by relatively low Japanese imports of consumer and industrial goods. Japan's success in exports is related to its focus on a few selected products. Concerning Japan's imports, European economists and policy makers claim that the Japanese market is closed for imports of manufactured goods, whereas Japanese representatives stress the difference of their culture and the lack of willingness and capacity of the Europeans to take this into consideration. This section is subdivided into separate analysis of the export and the import sides of the Japanese trade surplus with the European Union.

The Export Side

The successful Japanese export strategy is based on three characteristic industrial and financial strategies and on the country's exact analysis of European needs. Japanese manufactures have established and maintained a direct cost advantage as a result of three inter-related industrial and financial practices, namely : 'laser-beaming', 'dumping' and 'preferential financing.' These practices are sanctioned by government and sustained by Japanese banks, trading houses and manufacturing firms, designed to maximise Japan's share on export markets, establish long production lines based on deferred profits, and increase prices once market dominance has been secured. 'Laser-beaming' describes the very rapid increase in exports of particular products or groups of products to selected target countries or regions. Based on building up excessive production capacity, products may even be priced below their costs of production ('dumping'). Extensions of preferential loans to major businesses, which help to finance both 'laser-beaming' and dumping, together with repeated efforts of the Japanese authorities to systematically undervalue the Yen, result in a structural price advantage in foreign trade for Japanese manufacturers.

After World War II, Japan learned much from Europe. Many young Japanese studied in Europe, and Japan sent many study teams and task forces to Europe. Japan has long been trying hard to know Europe, adopt its strong points, and study European needs in detail. The success of Japanese efforts to make products which sell well in Europe is remarkable. However, why should Europeans not be able to acquire the same knowledge about the Japanese market? This is one of the questions which will be addressed in the following reflections about the import side of the Japanese trade surplus.

The Import Side

Many Japanese economists, such as Ryutaro Komiya (1993) in his 'Some Thoughts on the Future Development of Japan-Europe Economic Relations', take the view that the Japanese market is very open and that today's difficulties are stemming rather from the differences in life-style and taste of the Japanese and the Europeans. Despite official Japanese statements, however, Japan remains the most import-impervious advanced economy in the free world, blocking potential importers with trade barriers of different kinds.

The Japanese Culture

Japanese customs, tastes and business practices are different from their European counterparts. Japanese economists and policy makers frequently state that Europeans have never shown much interest in Japan. If Europeans want to enhance their trade balance, they have to learn more about Japan, and develop high quality products catering to Japanese needs and explore Japanese markets. Or, as Komiya puts it: '*Most of the complaints by ... Europeans are like saying 'Why do Japanese have black hair? We want them to have blond hair.'*' However, also in those sectors in the Japanese economy which are inefficient, such as households appliances, furniture, food, footwear, and clothing, and where Western countries would be happy to sell their high quality products, imports do not really manage to come through. To say, therefore that foreign imports will be successful if the importing firms consider the Japanese tastes and offer high quality products, is oversimplistic.

Formal and Informal Barriers

The general resistance of the Japanese economy to imports is reflected by a complex series of formal and informal obstacles tailored to limit the entry of foreign goods. Formal barriers, sanctioned by the government, include tariffs, quotas, taxes, customs procedures and technical standards of various kinds. Tariffs, quotas and taxes are the most obvious, although probably the least important, of the barriers that have to be overcome by importing firms. They apply most of all for traditional products where Japanese manufacturers are less efficient than competitors abroad, such as cigarettes, footwear, textiles, wood, rubber and most processed agricultural goods. Concerning these formal barriers, the Japanese market is at least as open as other industrialised countries.

Highly effective non-tariff barriers to trade, however, are created through obscure and discriminatory standards and certification procedures together with strict public health and environmental regulations which help to exclude, obstruct or delay the entry of competitive foreign products in a number of sectors such as foodstuff, pharmaceuticals, chemicals, medical equipment and household appliances. James Moorhouse gives the example of a British biscuit shipment. The British exporter made a mistake in spelling 'sodium metabisulphite' which describes an additive listed on the label. Japanese customs officials banned the import, claiming that it contained an unknown substance which is inconsistent with health standards.

The Japanese industrial culture is frequently described by the subordination of self to employer, flexibility towards change, no class feeling or significant industrial discontent, the commitment of the worker to excellence and his understanding of the commercial needs of the firm in which he works. This reflects the Japanese tendency to emphasize the 'vertical' aspect of social relations rather than the 'horizontal'. The uniqueness of Japanese economic institutions and the comparative advantage they confer upon Japan in international markets and in its own domestic market are very much related to this industrial structure. Once a foreign product has officially entered Japan and overcome the various formal tariff and non-tariff barriers imposed by the government, the importing firm will realise that the highest barrier lies in the vertical industrial network of closed linkages. The following two issues illustrate the point. People in Japan have always been grouping together in hierarchies of dependence, the so-called *Oyabunkobun* relationship; whether traditionally between patron and client, landowner and tenant, master and disciple, or today between company and employee. Companies group together in exclusive business families, the so-called *keiretsus*, each having its own bank, insurance company, heavy industrial firm, trading company and perhaps chain store, so that they do not require the services of others. These conglomerates represent a network of interlocking directorates and, additionally, create significant opportunities for lateral membership across industry *keiretsus*. Such conglomerates are able to engage in very far sighted strategic planning, because of the readily available capital and because of comparatively lower costs. This enables them to withstand the vagaries of business cycles far better than their competitors. They are able to launch strategic alliances with ease to penetrate overseas markets. Nothing is comparable to *keiretsus* in the West, and the concept is clearly not

compatible with the anti-trust practices in the West. *Keiretsus* are certainly not attractive to imports and are especially helpful in order to protect their domestic market.

The second issue is Japan's antiquated and inefficient distribution system. It is extremely difficult for foreign firms to break into the vertical network of closed ties between wholesalers and retailers all being members of the *keiretsus*. Newcomers looking for just one retail outlet may have to negotiate with up to four layers of intermediaries before. This type of distribution system promotes what many Europeans consider price-fixing and denies market access to outsiders. It is said that with the step by step removal of tariffs, it is the distribution system which has taken the functional task of excluding non-Japanese sellers from the home market. In other words, products not produced and distributed by members of a *keiretsus* are essentially barred from the regular Japanese market.

The following section seeks to describe the implications resulting from this identification of causes thereby presenting possible reactions of the European Union.

The Implications

Policy makers in Washington and Brussels see that massive Japanese bilateral and multilateral trading imbalances are having a destabilizing effect on the world economy as a whole. Although there is a generally accepted policy to keep the market open, there is a danger of a declining confidence in the free trade system as it has developed over the last decade or so.

There is, in fact, no inherent reason why Japan should run a large, ever rising trade surplus with the European Union. Without it, Japan would still have the highest overall trade surplus in the world. Representing less than one per cent of Japan's GNP, its surplus with the EU is marginal to Japan's overall economic well-being, so that this bilateral imbalance could shrink to nothing without major repercussions on the domestic economy. As shown in the previous section and supported by the data presented in section one, the European Union's trade deficit with Japan results from the combined effects of the strategic targeting by Japanese firms of specific markets and by Japan's unwillingness to open its market to European products. This section identifies three major fields of action for policy makers in the European Union: (i) increasing European exports to Japan, (ii) tailoring Japanese investment in the European Union to meet European needs and (iii) restricting Japanese products entering the European market.

Increasing European Exports to Japan

The European Union must exert strong pressure on Japan to open its market. In addition it is crucial both to improve and expand export promotion schemes.

The first objective must be to remove the remaining formal and informal barriers to trade which were identified in section two, especially its discriminatory standards, its time-consuming customs and certification procedures and its unwieldy, inefficient and impenetrable distribution system. Beside all European efforts, most of all, this necessitates a commitment to free trade on the Japanese side. Conscious government policy is needed in order to increase Japan's actual propensity to import targets and the major purchase of European civil and military hardware on the basis of open public-purchasing arrangements (including the use of 'administrative guidance' in order to induce major corporations to do so.) A major opening of the Japanese market, matched by a significant increase in import propensity, underpinned by continued appreciation of the Yen should be in the centre of Europe's set of demands towards Japan.

Assistance for European firms aiming to export to the Japanese market could be expanded. Export-promotion schemes have been developed in order to guarantee that European firms are in a position to make maximum use of improved access to the Japanese market. For example, market research surveys have been designed to provide basic information to potential exporters. In addition, young Europeans are sent out to Japan to learn Japanese and gain some practical business experience in Japanese firms. Finally, Foreign Direct Investment (FDI) by European firms in Japan has to be supported. It is commonly argued that Western firms need to be in Japan in order to integrate Japan into the operations of a fully open and free trading system. However, given the current operation of cultural, governmental and market barriers to imports, the task to penetrate the Japanese market on any major scale seems to be virtually impossible.

Tailoring Japanese investment in the European Union

The priority should be on getting import substituting and employment-generating Japanese investments that, so far as possible, involve fully integrated research, development, and manufacturing operations, with high levels of local value-added and sourcing from components with significant local content. Europe must avoid investments that have the counter productive effects of both job destruction and rising of imports. Even seemingly beneficial investment, however, is not undisputed. Many observers see the competition from Japanese subsidiaries as a danger for the established local industry rather than an appropriate answer to the accusation that Japanese imports are destroying jobs in Europe.

Restricting Japanese products entering the European market

How should the European Union react in cases where imports have negative consequences for its markets? Should it close its markets to outsiders in such cases, hence becoming a 'Fortress Europe', or should it remain open even at the risk of losing some of its markets to non-member countries or their companies? Although there is a generally accepted policy to keep the market open, there are still those who think that in the case of threat to whole branches of industry and the respective jobs, the community should have the option of protecting its economy against such massive disruptions. Such measures include voluntary export restrictions (VERs), tariffs and anti-dumping duties in specific sectors.

In recent years various models in International Trade Theory have expressed a new view concerning the case of protection. These theories show that there can be a justified case for protection and that government action can improve on market outcomes. As Paul R. Krugman (1987) puts it : '*There is still a case for free trade as a good policy, and as a useful target in the practical world of politics, but it can never again be asserted as the policy that economic theory tells us is always right.*'

It is the essence of the Strategic Trade Policy concept that by intervention a government can raise national welfare at another country's expense. Following this concept, protection works like an export subsidy, deterring foreign entry and allowing the domestic firms to capture the excess returns. The second basic idea which is important in these circumstances states that it may be desirable to deviate from free trade in order to encourage activities that yield positive external economies. This argument is well known and based on the inability of innovative firms to appropriate fully the knowledge they create.

However, it is generally accepted that those strategies aiming to raise European exports to Japan are far superior to protection (on economic grounds). The gains to European consumers stemming from their access to Japanese cars and the related jump in overall automobile quality serve as an impressive example.

Conclusion

As the analysis of the Japanese trade surplus shows, many criticisms brought forward by European policy makers and economists concerning Japanese trade practices are well justified. However, the fingerpointing at Japan's unfairness should not blindfold the Europeans to their own deficiencies. Structural adjustments in Europe are badly needed to keep pace with, or to catch up with Japan's technological innovation and industrial flexibility. There are many voices in Europe, as well as in the USA, pushing for protectionist measures as a reaction to the Japanese 'threat'. As shown in section three, however, there exist other, non-protectionist strategies, which may reach the desired result, i.e. a well-balanced trade relationship with Japan, which does not threaten the benefits of free trade in Europe.

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The 1992 - 1993 ERM Crisis

Moniek Wolters - Erasmus Student

Turmoil in the currency markets of Europe has had widespread repercussions. After the initial shock, Moniek Wolters turns to question why it occurred and consequently what the options are for the future of the ERM. The 1992-93 Exchange Rate Mechanism crisis created a huge strain between countries in the E.U. - both economic and political. This paper will analyse this period by first considering the background to the crisis. The upheavals that occurred in 1992-93 will then be outlined, followed by a consideration of four possible factors behind the crisis. These include competitiveness problems, German unification, inevitable policy shifts and the occurrence of self-fulfilling speculative attacks. Finally, the options currently available will be addressed, concluding that to narrow the exchange rate bands requires a change in the ERM.

Background to the Crisis

In 1979, the European Monetary System (EMS) was founded. Twelve countries now take part in the system: The Netherlands, Germany, Belgium, Luxembourg, Greece, Denmark, France, Ireland, Italy, Spain (since 1989), UK (since 1990) and Portugal (since 1992). The EMS was not designed to act as a fixed rate system, but it was hoped that exchange rate stability could be achieved through the convergence of economic performance. Within the EMS existed the Exchange Rate Mechanism, which contained ten currencies (Greece is not a member of the ERM, while the Luxembourg franc is set at par to the Belgian franc). Between May 1979 and January 1987, there were twelve realignments of ERM-parities, largely due to cost - and price - differentials.

The need for realignments reflected the persistence of inflation differentials across ERM-countries, but no realignments took place between 1987 and 1992. After 1987 the inflation differentials narrowed, though substantial differences remained between Italy, UK and Spain on one hand and Germany on the other. The last realignment in 1987 led to revisions of the EMS arrangements in the Basle-Nyborg agreement. This agreement was based on two assumptions:

- (i) Germany would continue to have low inflation and interest rates.
- (ii) The Bundesbank would defend exchange rates, provided that members of the system made the necessary interest rate adjustments to protect their currencies.

The first assumption seemed reasonable, who knew that the Wall would be pushed down in two years? The second assumption overlooked the fact that at some point the Bundesbank could be faced with a situation in which its obligation to intervene would be incompatible with control over German monetary conditions. Another part of the agreement was the extension of credit facilities for longer periods. For the first time it was permitted to draw on credits before a currency reached the limit of its EMS band. These innovations led to much confidence, so that the policymakers discarded the realignment option.

Following the Delors report of 1989, the Maastricht Treaty (1991) laid down four convergence criteria for a country to qualify for participation in European Monetary Union (EMU). In the first transition stage, capital controls were eliminated in 1990 to complete the internal market (see appendix 1 for the convergence criteria and the three stages to EMU). This convergence between EMS-countries (on top of the stability of the EMS), strengthened the confidence in the system, and increased the commitment to exchange rate stability. For a time, the no realignment - no controls strategy seemed to work, even in the face of persistent inflation differentials.

The Upheavals in 1992 and 1993

Everything seemed to be going well in the EMS. It not only survived after 1979, but grew and prospered. During the process of ratifying the Maastricht Treaty, strong public doubts about the EMU began to be voiced. In the Danish referendum in June 1992, the result was a small majority against the Treaty. Meanwhile the expectations regarding the French referendum were very uncertain. Indeed, the EMU became a very

contentious issue in the French referendum. At the same time, the Bundesbank raised its key interest rate, the discount rate, because of inflationary tendencies resulting from a large fiscal deficit, caused by the unification. This happened at a time when other EMS countries needed lower interest rates to get them out of recession.

Tension within the ERM began to build up from mid-July 1992, concentrating initially on the lira, then on sterling and then on a variety of other currencies. The pressure on the Finnish Markka was so strong that it abandoned its peg with the ECU. Italy raised its interest rates, but still the lira weakened repeatedly. The Bundesbank did not cut its interest rates enough and speculation continued. The pressures on both lira and sterling became so large, that both were suspended from the ERM (and depreciated rapidly afterwards). The foreign exchange markets remained disturbed for the rest of the year, with a renewed outbreak of speculative pressures leading to the abandonment of Sweden's peg to the ECU, devaluation of both the Portuguese escudo and the Spanish peseta in November and the abandonment of Norway's ECU-peg in December. In January 1993, Ireland witnessed pressure (mostly because of the loss of competitiveness vis-à-vis the UK, that devalued in September 1992) and finally devalued by 10%. Germany reduced interest rates in February, March and April and the pressure was eased a bit for the currencies that had not yet been realigned. Particular in the countries with relative moderate increases in costs and prices, though, the calls for further reductions in interest rates intensified.

The second Danish referendum on Maastricht produced a small majority in favour of the treaty. The new government in France made clear its commitment to the 'franc fort' policy, that is keeping the franc at its existing parity. The government also wanted lower interest rates to relieve the recession, and it appeared willing to challenge the German economic authorities publicly. On 18th June the French money market intervention rate was pushed below the German rates, which received some scepticism in the markets. Speculative pressures within the ERM and against the French franc in particular, developed strongly during the course of July. The Banque de France was forced to raise its interest rate to prevent the franc from falling through its ERM lower band. The Bundesbank did not lower its discount rate, and massive sales of the French franc, Belgian franc, Danish krone, Spanish peseta and Portuguese escudo occurred. Massive intervention was necessary to keep these currencies just above their ERM floor. On 2nd August, EC monetary officials and finance ministers finally agreed that the ERM bands should be widened from 2.25% to 15% (except for the Dutch-German one), though no central parities should be changed. With the wider bands, the system would be less vulnerable to speculation.

The Factors Behind the Crisis

Competitiveness Problems

According to this view, certain countries experienced persistent inflation and rising labour costs. The inflation differentials against Germany were declining, but remained positive. This undermined competitiveness of the traded goods sector. The markets identified the countries with these competitiveness problems and attacked their currencies once devaluation was overdue. The countries whose exchange rates have been under pressure fall into three categories:

- (1) Italy, which shows clear signs of deteriorating competitiveness. Italy's labour costs rose progressively through the 1980's and was the first country under attack.
- (2) Spain and the UK, which had some competitive difficulties particularly in rising relative labour costs in the period 1987-1991, but evidence is unclear.
- (3) Denmark, France and Ireland had no competitive difficulties.

Since only Italy has evident deteriorating competitiveness, the conclusion can be drawn that the divergent movement of prices and labour costs played a limited part in the crisis.

German Unification

German unification generated a real exchange rate (RER) appreciation of the Deutschmark (DM). RER is the exchange rate weighted by the relative price level between other ERM countries and Germany. i.e.

$$RER = E \times (P^*/P)$$

P^* : price level in the other ERM countries

P : German price level

So how did this real appreciation occur?

First, the East German wages increased (because of one-to-one conversion) and raised the costs and price of East German output and reduced its quantity. As can be seen in figure 1, the East German wage explosion shifted the German supply curve upwards (from S_0 to S_1). Second, the large transfers from West to East Germany after the supply shock caused a public sector deficit. The result was a rise in real interest rates in Germany, and the net capital export turned into net capital import. The net capital import caused more world savings being spent on German goods, so that the relative price of German goods had to rise. This expansionary demand shock is reflected in the upward shift of the demand curve (from D_0 to D_1). (See figure 1).

Figure 1

$P/(ExP^*)$

= S_1

$1/RER$

$1 \ S_0$

0

D_1

D_0

$q_1 \ q_0$ German output (q)

The demand shock was merely designed to compensate partly for the supply shock, so the shift in demand was less than the one in supply. As a result, there is a decline in German output, and both shocks resulted in a real appreciation, so that $1/RER$, that is, the relative price of German goods compared to foreign goods (i.e. $P/(E \times P^*)$) has gone up. When you look at the RER (in terms of changes):

$$Er = En + P^* - P$$

one can see that real appreciation of the DM ($Er < 0$), without a nominal adjustment ($En = 0$), has to result in higher prices in Germany ($P > 0$) or lower prices in the other ERM-countries ($P^* < 0$). As a result of the German aversion to inflation, though, much of the burden needs to be in the form of deflation in other countries. The required decline in inflation was largest in the UK and Italy and they were also the first under attack and the only ones that stepped out of the ERM. The Maastricht Treaty strengthened the Bundesbank's determination to reduce the German inflation rate. The reduction in inflation would be attained by a rise in the nominal interest rate. The other ERM currencies had to follow to be able to attract investors in their currencies. This rise in interest rate was a detrimental thing for the countries that did not have significant inflationary problems, but were experiencing unemployment and were in recession.

Inevitable Policy Shifts

Even if currencies were consistent with the maintenance of ERM parities, the markets could have been anticipating a shift in future policies. They noticed that the policies to defend the existing parities (with the interest rate instrument) gave rise to growing unemployment. The markets therefore expected a relaxation of future policy and the speculators attacked the currency and tested the governments on how much of its potential reserves it was willing to use. The speculators are faced with a 'one way option'; they do not lose by speculating against the currency, even if fears of abandonment of fixed rates proved unjustified.

This explanation can be analysed more systematically by using a one-country version of a model in the tradition of Mundell-Fleming.

Figure 2 : One-country version of Mundell-Fleming model

(1) $m - p = ay - bi$ (money market equilibrium)

(2) $y = h(e - p) - kr$ (goods market equilibrium)

(3) $i = r + p$

(4) $p = cy$ (naive Phillips-curve)

(5) $i = i^* + e$ (uncovered interest parity)

The model reduces to:

(6) $e = [ah(e - p) + (1 - kc)(p - m)]$

(7) $p = c[bh(e - p) - k(p - m)]$

(assumed is that $[b + k(a - bc)] - 1$ is positive, so that the system is a saddle-path stable)

e S1

45

S0

M1

$e_0 = M_0$ S1

S0

M_0 M_1 p

This figure represents the long run equilibrium with a money supply M_0 and an associated stable convergence path S_0S_1 .

When one looks at figure 2 above, it can be seen that the system stays in A with a pegged exchange rate $e_0 = m_0$ if policy is not expected to change. If there is an expectation of a future relaxation of policy (from M_0 to M_1), the new long run equilibrium will be in D. When markets realise this, they attack the currency, exhausting the government's reserves, forcing them to abandon the peg. The period of floating begins with a jump depreciation from A to B. Following this depreciation, the exchange rate continues to depreciate (in C, the money supply is increased to M_1). In this view, the crisis is explained as a consequence of market anticipation of an inevitable shift in monetary policy, provoked by rising unemployment. When governments decided to shift to less restrictive policies, though they were presumably looking at the costs (unemployment) as well as at the benefits (qualifying for monetary union) of the restrictive policies. When the benefits seemed to become less and less (Denmark's initial rejection of the Maastricht Treaty), the governments were more likely to shift their policies, and the markets anticipated these shifts.

Self-fulfilling Speculative Attacks

According to the previous argument, balance of payments crises (this is when speculators acquire a large portion of the Central Bank's foreign reserves as the bank attempts in vain to support its currency) represent an entirely rational market response to persistently conflicting internal (lower unemployment) and external (exchange rate stability) targets. In that view, the exchange rate is only attacked if there already exists a balance of payments problem implying the eventual exhaustion of reserves. The model has a unique equilibrium. According to Obstfeld (1986), though, balance of payments crises may be purely self-fulfilling

events rather than the inevitable result of unsustainable macroeconomic policies. In this model, markets do not anticipate the crisis, but provoke it. Without the attack, there would be no balance of payments problem.

For illustration, the single-country model in figure 2 can be used again. The result of an attack depends on the Central Bank's reaction. The Central Bank can be 'wet' (CB cares more about unemployment than inflation) or 'hard-nosed' (CB is inflation-fighter). So, when the CB is 'wet', the money supply will increase from M_0 to M_1 (see figure 3 below). In case of a speculative attack, the exchange rate would jump to C (overshooting depreciation) and over time, the exchange rate would appreciate towards point B along the stable path S_1 . This attack is self-fulfilling. The currency is weak because of the lack of credibility of the monetary authority. The depreciation will be just what the speculators wanted. A possible strategy can be the forward sale of the threatened currency. If the speculators sell the weak currency now on a specified date in the future, for the present value of the currency, they will make a profit if the currency depreciates. After the depreciation, they can buy the currency for the new, low price and sell for the high price, as agreed in the forward sale contract.

Figure 3

e S1 45

S0

M1 S2

M_0

M_2

S1

S0

S2

P

M_2 M_0 M_1

If the CB is 'hard-nosed', there will be a contraction of the money supply (from M_0 to M_2 , see figure 3) in case of an attack. Now, the currency will immediately appreciate to E (overshooting) and will over time depreciate to D, along the stable path S_2 . The contraction of the money supply thus results in an appreciation, and if speculators know this is going to happen, they will never attack the currency (if one looks at the forward sale strategy, one can see that the speculators will lose when the currency appreciates after an attack).

The events of 1992 confirm that self-fulfilling speculative attacks can occur in practice. There was/is uncertainty about the exact date of the initiation of stage three and the EMS-countries did not know how much time they would get to recover from the 1992 attacks. If they're not sure about qualifying for EMU anyway, then what is the use in defending the currency by a decline in the money supply (i.e. rise in interest rate), if it hurts the economy for sure but the EMU qualification is not certain. These circumstances created scope for self-fulfilling attacks.

Options for the EMS

A Reconstructed ERM

A narrowing of the bands would be dangerous if it would take place at misaligned rates. A re-narrowing on the basis of existing parities remains a prospect that should be resisted until recovery is well under way and fiscal positions are improving. One easily assumes that any change would be likely to be in the direction that central parities would fall, i.e. that other currencies should devalue against the DM. A variant of this would convert the 15% band into a DM float by reinstating narrow bands first for the non-DM currencies. France would then be the anchor for such a concerted float. This is not so surprising, since France has notably low

inflation and quite a good control over its fiscal position. The damage to France (and the other countries involved) with respect to floating down against the DM would be minimal. But the two obstacles here are the Netherlands (stays tied to the DM) and of course the Bundesbank.

If countries succeed in reinstating narrow bands, whether around unaltered or new ones, the management of the ERM has to change, so that the system works in a way which does not invite further crisis. One can distinguish at least two distinct types of reform: capital controls and increased symmetry.

In the early period of the EMS, capital controls played a central role in the successful management of the system. The reimposition of capital controls is again being spoken of. A proposal is the imposition of a 'Tobin tax' on foreign exchange market transactions, designed to reduce speculation. The administratively most feasible option appears to be the incremental reserve requirements on financial institutions taking open positions in the foreign exchange market. However, the political and economic objections to the reimposition of controls are considerable.

If a more symmetric system is to develop, the Bundesbank must be persuaded to set a more 'European' policy. There are two possible routes to achieve this. The first one is that, in the light of the close links of the goods markets, the monetary aggregates in Germany's EMS-partners are likely to prove informative for German inflation. Correcting policy implementation by Germany would lead to more efficient outcomes. The other one is more political, that is for the Bundesbank to accept more often the recommendations of the European Monetary Institute. After all, in stage three the Bundesbank will lose all its power to the European Central Bank (ECB). Without more symmetry, a re-run of the crisis is more likely.

Monetary Union

A monetary union would remove problems like exchange rate stability, monetary asymmetry, speculation and intervention obligations. Currencies cannot fluctuate and a ECB would substitute European monetary policy for a German one, aimed at price stability in Europe and not in Germany alone. To qualify for monetary union, though, the member countries should have participated in the 'normal' bands of the ERM without 'severe tension' for a period of two years. The normal band used to be 2.25%, but the present participants now simply wish to declare the 15% band as normal. The wider band offers no targets for speculation and does not affect the basic criterion of the long term interest rate. However, the necessary framework of the ERM cannot be created overnight. More importantly, Europe is not an optimal currency area in terms of wage and price flexibility, labour mobility and cross-border investments, so it might not be so wise to rush into a monetary union.

A Federation of Central Banks

There are concerns about EMU on the grounds of national sovereignty. Under the gold standard though, it was also possible to stabilise exchange rates within narrow bands. The reason for this was that government's commitments to gold parity were supported by the prestige and the independence of the Central Banks. This is a feature which might be possible to reconstruct. For any restoration of the ERM, the independent status of the Central Banks might be necessary, and it is the case that the Maastricht Treaty requires Central Banks to become independent during the course of stage two.

Floating Exchange Rates

A period of floating rates could be seen as a way of putting the EMS back together with more certainty. It would give Germany time to sort out reunification and overcome its domestic problems in order to resume delivering low inflation and interest rates. Other countries would have the opportunity to loosen tight monetary policies which are pushing up unemployment and aggravating the fiscal situation. There is the worry, though, that floating rates might undo some of the integration that has already been achieved. In Europe, a more co-operative arrangement could be sought to stabilise the behaviour of floating rates, via the co-ordination of monetary policy. This, in fact, is what the European Monetary Institute is designed to do.

Conclusion

Since its initiation in 1979, the EMS has had some notable successes. The absence of realignments between 1987 and 1992 created much confidence in the system, which even increased after the proposed intensified

monetary co-ordination ratified in the Maastricht Treaty in 1991. Nevertheless, despite the apparent success, underlying factors were still diverging, and market participants understood what was going on. The factors behind the crisis have been assessed in this paper: competitiveness problems, German unification, inevitable policy shifts and self-fulfilling attacks. The crisis eventually led to a widening of the bands to 15% (except for the Dutch-German one, that stayed at 2.25%). For the future, a re-narrowing of the bands is an option, but in this case, the management of the ERM will have to change, so that the system will work in a way that it will not invite a further crisis.

Appendix 1

The convergence criteria for a country to qualify for participation in EMU are:

- inflation within 1.5% of the best three of the European Union for at least a year
- long term interest rates are required to be within 2% points of the best three in the European Union for at least a year
- being in the narrow band of the ERM 'without tension' and without initiating a depreciation, for at least two years
- a budget deficit/GDP ratio of no more than 3% and a government debt/GDP ratio of no more than 60%.

The Treaty specified a transition in stages. The first one, beginning with a removal of capital controls in 1990, was meant to reduce inflation and interest rate differentials and the stability of exchange rates. Stage two, beginning on 1st January 1994, was to prepare for monetary union (creation of the European Monetary Institute) and stage three will be marked by the inauguration of monetary union and the establishment of the European Central Bank.

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The Threat of Money Laundering

Mark Kehoe - Senior Sophister

Ireland's Criminal Justice Act of 1994 provides that any employee of a financial institution who assists in the laundering of illegal moneys, intentional or otherwise, may be liable for criminal prosecution. Mark Kehoe discusses the money laundering industry and the risks it poses to the financial sector and calls for the world-wide implementation of consistent anti-money laundering legislation.

After foreign exchange and petroleum, money laundering is the world's largest industry in terms of turnover and yet little academic or empirical research exists on the matter. This essay attempts to counter this in some way. Firstly, a definition of money laundering is offered, before attempting to justify its study and estimate its size. Second, the risks money laundering poses to the financial system will be assessed in the wake of the new anti-money laundering laws being implemented across the EU budget and beyond. The final section discusses the policies adopted for the prevention of money laundering and the problems associated with them.

What Is Money Laundering?

Money laundering is all about deception. Its aim is to deceive the authorities as to the origination, existence and/or application of illegal sources of income and the subsequent processing of that income to make it appear to have been legitimately earned. Money laundering plays a fundamental role in facilitating the ambitions of the drug trafficker, the terrorist, the organised criminal, the inside dealer, the tax evader as well as the many others who need to avoid the kind of attention from the authorities that sudden wealth brings from illegal activities. This 'facility' is the placing of the proceeds of such activities beyond the reach of asset forfeiture laws.

Why Study Money Laundering?

Governments are now realising that the pursuit and confiscation of illegal monies from crime is as effective a way of attacking crime as arresting the felons, perhaps even more so given that many drug barons are able to continue to conduct business from their prison cells e.g. Pablo Escobar. So by seizing the rewards from crime it is hoped that such rent seeking activity is discouraged. The extent to which money laundering enables criminals to engage in activities harmful to the economy validates its study so as to prevent such activity.

A second reason for studying the economics of money laundering is that most financial institutions are unaware of the extent to which the world financial markets and banking system are being used to process illegal monies. Banks and financial institutions are at risk from being used for such activities as failure to observe their new legal responsibilities in combating money laundering leaves many of them open to criminal prosecution and the subsequent adverse publicity.

Therefore the study of money laundering as a means to countering crime, which imposes huge economic resource costs on society and threatens the proper functioning of the economy, as well as threatening the stability of the banking system, is a fully justified area of research.

However, it should be noted that money laundering is not merely confined to criminals. Many governments and their agencies engage in money laundering activities to provide a cover for various covert operations. The Central Intelligence Agency (CIA) is known to have used money laundering to forward money to support the Iran-Contra Rebels, while the British Government use of it in the Matrix Churchill Affair is widely known. However the size of such activities are dwarfed by illegal ones.

The Magnitude of Money Laundering

By its deceptive nature, the full extent of money laundering is unknown; estimates range from \$100 billion to \$300 billion. The main bulk of monies to be laundered originate from the narcoeconomy and so by estimating the size of the narcoeconomy a good approximation of the size of global money laundering may be achieved.

The Financial Action Task Force, (FATF), established in 1989 by the G7 and European Community to assess the problem of money laundering and prevent the financial system being used for its purposes, estimated in 1990 that in the US and Western Europe drug trafficking generated \$85 billion annually from laundering and investment. Thus almost \$233 million in drug money is available daily for laundering. The task force concluded in 1990 that, in the US and Western Europe, drug traffickers' profits probably yielded \$232,115 per minute. One can get a feel for the size of the narcoeconomy by the fact that in 1990 approximately 20 per cent of Peru's Gross National Product was generated by narcotics, whereas legitimate exports accounted for only 14 per cent.

Combining these monies with the monies from insider dealing, tax evasion, kidnapping, and corporate extortion, yields a figure likely to be in excess of \$100 billion. It is surely inconceivable that such flows of money can enter the banking and financial systems without someone questioning their provenance.

The Method

There is no one method of laundering money and those methods that are the most successful are of course unknown to the authorities. Methods of money laundering range from the purchase and resale of yachts and antiques to the transference of money through a purposefully complex system of legitimate international businesses: shell companies and banks, which may be held by a holding company, usually registered in a jurisdiction where no annual accounts need be filed, foreign or domestic nominee directors may be appointed and bearer shares are permitted, (e.g. the islands of St. Kitts and Nevis in the Caribbean). As most money being laundered comes from street level drug deals, a cash intensive business by nature, this source will be the main area of focus.

Money laundering has both macro and micro levels. The macro level has three distinct stages, that of placement, layering and integration, and innumerable micro phases depending on the size of the operation and the degree of deception required.

Placement

The first stage in the washing cycle is the placement of the monies into the financial system or retail economy or smuggling them out of the country. The aims of this stage are to remove the cash from the location of acquisition so as to avoid detection from the authorities and the attention of other criminals and then to transform it into other asset forms.

This is perhaps the most difficult stage of the cycle, for the launderer is faced with converting small denominations of cash into more manageable monetary instruments or assets. If one imagines a weekly drug revenue of \$1 million in \$50 notes as a ten foot high stack launderers must deposit, some appreciation of the launderer's problem can be gained. One could not simply deposit such money into a bank account weekly without raising some suspicions or, as in the US, being required to file Cash Transaction Reports (CTRs) with the Internal Revenue Service (which must be filed for all currency transactions over \$10,000). To overcome these problems, launderers engage in smurfing - structuring their deposits to avoid having to file CTRs. Or, more likely, have an accomplice in the bank or securities/commodities brokers to help them dispose of the funds. Alternatively, the money may be laundered through legitimate businesses which under-report invoices and over-report sales. Eighty to eighty-five per cent of drug sales monies will find their way into the legitimate economy through these channels, the remaining fifteen to twenty per cent will be smuggled out to be deposited with offshore banks which have bank secrecy laws, [i.e. making it a criminal offence for the banks to reveal any information about their client] e.g. Switzerland. It is estimated that one and a half tons of foreign currency arrives at Zurich airport daily, destined for Swiss banks.

Layering

Once the cash is transformed into another asset the second stage can begin: the layering or 'the heavy soaping'. The purpose of layering is to disassociate the illegal monies from the source of the crime by purposefully creating a complex web of financial transactions aimed at concealing any audit trail as well as the source and ownership of funds.

Typically layers are created by moving monies in and out of the offshore bank accounts of bearer share shell companies through electronic funds transfer (EFT). Given that there are over 500,000 world-wide transfers a

day representing over one trillion US dollars most of which are legitimate, and that not enough information is disclosed on a transfer to reveal the source of the money (and hence whether it is clean or dirty), these provide an excellent way of moving dirty monies. An alternative form is by engaging in a complex set of transactions with stock, commodity and futures brokers. Here, the unnatural degree of anonymity provides ample room for layering as the likelihood of the transactions being traced is negligible given the sheer volume of daily transactions.

Integration

The final stage in the process is integration or the 'spin dry' of the illegal funds. Integration of the 'cleaned' money into the economy is achieved by making it appear to be legally earned and so safe from probing officials as to its source. One method of integration is by companies falsely overvaluing exports and undervaluing imports so as to move money from one company and country to another. Another simpler method is to transfer the money (via EFT) to a legitimate bank from a bank owned by launderers, as 'off the shelf banks' can be purchased in many tax havens.

More worrying is the increasing use of the financial markets by money launderers to integrate and layer their funds. For example, a new company may issue a large number of shares, which the launderer director will own through various offshore agencies, and these shares will then be aggressively marketed and sold to an unsuspecting public, while the launderer receives clean cash.

Ironically though, perhaps the most efficient way to launder money is to 'pay' the relevant tax due on it, for it becomes very difficult for agencies of the state to claim that a sum of money represents the proceeds of crime when the beneficial owner has declared tax on it. The main pillar of money laundering is the role that the financial system plays in the laundering. The money laundering industry poses certain risks to financial institutions, risks that are reinforced by the increasingly hard stance of governments around the world about bank complicity in money laundering.

Risks To The Financial Sector

The Financial System

Given that the size of the global money laundering industry is unknown, the extent of the risks to the financial system can only be estimated. However, the ruination of some financial institutions by money launderers in the past, indicates that the risk is a potent one.

On a macro level, money laundering poses a risk to confidence in the financial system and in its institutions. *'The soundness and confidence in the financial system as a whole could be seriously jeopardised thereby losing the trust of the public,'* if the financial system is seen to be laundering criminal proceeds. The Bank of England is at pains to ensure that the City of London maintains its reputation as a 'clean' financial centre. It would not be difficult to imagine the decline of a reputable financial centre were it to become synonymous with laundering criminal proceeds, given the emphasis on name and reputation in attracting and maintaining business in the financial industry. Therefore the importance of confidence and the need for transparency in the financial system cannot be understated, especially as it makes a significant contribution to certain countries' GNP.

Financial Institutions

Not only is the financial system likely to be at risk, but the individual financial institutions that either, intentionally or unintentionally launder money are too. This discussion will focus on banks and note that a similar predicament applies to other financial institutions such as stock brokers, life assurance companies etc..

Banks are susceptible to risks from money launderers on several fronts. There is today a very small step between a financial institution suspecting that it is being used to launder money and the institution becoming criminally involved with the activity. Banks that are discovered to be laundering money are most certain to face costs associated with the subsequent loss of business as well as legal costs.

At the very least, the discovery of a bank laundering money for criminals is likely to generate adverse publicity for the bank. (E.F. Hutton, a US brokerage house, received a great deal of negative publicity for laundering criminal funds.) A lack of confidence in a banking institution is likely to result in declining business as clients move elsewhere.

Banks also face the risk of criminal prosecution for money laundering whether they know the funds are criminally derived or not. The 1990 United States of America Depository Institution Money Laundering Amendment Act puts the legal onus of reporting suspicious transactions on the bank directors. If it finds a bank flouting these laws, the US Government has the right to take-over the running of the financial institution as well as imprison the directors and fine the bank. This applies to all financial institutions in the USA. All can be indicted if they are suspected of money laundering anywhere in the world. A similar law applies in the EU. If a financial institution in Ireland is found to be assisting a money launderer and has not followed the appropriate course as laid out by the EU, the individual employee and their supervisors (right up to the company directors) are personally liable to imprisonment or a fine or both.

More often than not, bank directors are unaware that their institution is being used to launder money. Typically an employee colluding with a criminal will circumvent the bank's depository procedures to launder money. However, the bank is still liable for the actions of its employees. It is therefore essential that banks adopt and enforce the new legal procedures in deposit taking and keep tight controls on staff likely to be useful to money laundering.

Two conflicts of interest arise here that may dampen the enthusiasm of banks in complying to such laws. The first is that bank officials are under increasing pressure to bring in new business and drive up profits. Bosworth and Saltmarsh note that many western banks remain afloat due to money laundering services. In the case of the Bank of Credit and Commerce International (BCCI), the bank needed to earn profits so as to cover up the huge losses from loans and trading and laundering money provided an easy way to do so. The second conflict is that certain banks and countries have a competitive advantage in providing private banking services, i.e. client confidentiality. Bank secrecy laws exist in fifty nations world-wide and for such banks these are important in attracting customers. Any moves to abolish or continually override such laws are likely to be strongly opposed.

The Securities Markets

The final area of risk to the financial system is the risk posed to the securities markets, notably the derivatives markets. As a result of the degree of complexity of some derivative products, their liquidity and the daily volume of transactions, these markets have the ability to disguise cash flows and hence are extremely attractive to the professional money launderer. However, their activities pose huge risks to these markets.

Firstly, the brokers used to execute orders on behalf of money laundering clients may be criminally liable for aiding and abetting money launderers. A worrying situation is the money launderers' skilful manipulation of the futures markets. On local futures exchanges, individuals have colluded to take correspondingly short and long positions so as to clean money debts being paid with dirty money-while profits now being clean money. Such a case was uncovered in the New Orleans futures market. Due to their capital, and collusion in positions they have also in the past purposefully manipulated market prices. Unless markets are seen to be transparent and the price system exogenous of individual agents' actions, participants may retire from the market and so make the market's allocative efficiency diminish.

Secondly, another major risk created is through the use of offshore banks who may wash money using derivative markets. As these banks are foreign, they are not required to abide by the same regulations as those of domestic investors as regards overexposure to uncovered risk, they are able to take on huge risk relative to their institutional size. Should losses result from such positions the debts may not be fully paid as the contracts purchased may be only one step in the course of a complex laundering chain that is untraceable. Thus potentially huge losses could be incurred by legitimate investors, causing damage to the derivatives markets.

It is therefore essential that policies be enforced to ensure money laundering is prevented from using the financial system as a means to an end and in turn discourage the original crimes from occurring.

Policy Relevance

A fundamental prerequisite to any policy designed to attack money laundering must have strong international co-operation as otherwise professional money launderers will simply move operations to countries with lax money laundering laws. Thus to counter the global problem of money laundering, global policies that are generally consistent must be adopted and enforced. This will require the establishment of a world-wide organisation along the lines of the FATF.

The areas where the authorities are likely to be most effective in combating money launderers are where they have large sums of cash in their possession. This usually occurs at the placement stage. A policy of 'know your customer' where banks know the exact nature of business of their client, maintain records of all transactions and accounts for several years and report all suspicious transactions and those over a certain limit needs to be introduced. Parallel to such policies must be the continued training and education of staff to be aware of money laundering by clients and colleagues so as to prevent bank complicity. Finally, it must also be permissible for banks to report suspicious client account activity without being liable for infracting bank secrecy laws.

All of the above are currently laws implemented across the EU, following the EU directive on money laundering (1989). A more drastic solution was that supported by the US Treasury Secretary, Donald Regan, in the 1980's: a sudden and unanticipated week's notice that the colour of all dollar notes would be changed, rendering all old colour dollar notes useless, and that individuals could change old dollars for new ones at the bank, but that any transfers over \$1000 would be recorded. As the US black economy functions exclusively on cash the vast bulk of a money launderer's cash would become useless. However for such a policy to be effective, it would require continual implementation along with significant transactions costs. The ultimate solution may be of moving to a cashless society, as the registration of all transactions would create significant problems for the professional money launderer. Whatever the policies adopted, they need to be consistent.

Conclusion

Money laundering is a global problem that poses serious risks to the financial sector of every economy. While the above outlined policies are promising solutions, they are rendered almost useless unless their implementation is consistent and on a world-wide basis. Lack of consistency is an unfortunate feature of current EU anti-money laundering policy. While the EU directive was specific about the areas to be tackled by the member countries - 'know your customer' policies, staff training and exemption from secrecy laws - it was not as precise in outlining the appropriate 'punishment' of breaking the new laws. This has given rise to intra-industry problems among the member states whereby in the same countries the financial institutions are simply fined while in others they face imprisonment. The effect of failing to implement such policies world-wide is similar: carrying out interrogations of clients of foreign banks is hardly conducive to good international trade. Furthermore, if the many launderers simply switch the site of their money laundering activities to a more favourable legal climate, the risks posed to the financial sector will not be completely eliminated.

In order to rid the international financial sector of the international problem of money laundering, governments must implement possible policy solutions on an international level. The benefits of these 'solutions' are greater stability in the financial sector and, hopefully, lesser gains for the main laundering criminal.

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Stock Market Volatility - A Psychological Phenomenon?

David Barrett - Senior Sophister

The volatility of stock prices is a well known phenomenon to all investors. Why, though, is this volatility so pronounced? Can the Efficient Market Hypothesis account for such major market realignments as the stock market crash of October 1987? David Barrett assesses these questions and concludes that some 'herd-like instinct' seems to be undeniable and that self-fulfilling prophecies are not altogether figments of the imagination. These psychological factors *can* then live alongside standard economic influences in determining stock prices.

This essay examines the whole issue of stock market volatility. It is apparent that there are extremely wide day-to-day changes in the prices quoted on most stock exchanges. Many people have tried to put forward theories to explain this phenomenon and more still have tried to use these theories in order to predict future changes in prices. However, most economic theorists have ignored the fact that there is no universally accepted body of work explaining what is behind these day-to-day price changes. Instead they have concentrated on market details in the mistaken belief that the question has already been answered. This is not the case. In this essay the author will attempt to critically examine the two main schools of thought on the subject and, hopefully, will find evidence to support one of them. As it stands theorists cannot agree on whether or not it is economic or psychological realities which are the major cause of price fluctuations in the stock market. This is an important issue in the study of investment analysis as it brings into question the whole realm of fundamental and technical analysis, something on which millions of pounds are spent every year. If it could be proved that there are no sound economic reasons for price changes in the stock market then these two forms of analysis could be rendered worthless. Initially, the author will discuss the readings that have been found relevant to the topic of the essay. Then the author will explore his own thoughts on the subject with the help of an analysis of the greatest period of market volatility in recent times - 'Meltdown Monday' or the stock market crash of 1987.

Amongst the literature of most relevance to the whole volatility issue is Robert Shiller's 'Market Volatility'. Shiller is a firm advocate of the popular model explanation of stock market volatility. Popular models are a qualitative explanation of price fluctuations. In short, it proposes that investor reactions, due to psychological or sociological beliefs, exert a greater influence on the market than good economic sense arguments. It should be noted however, that Shiller does not totally disregard the work of economists before him who proposed the Efficient Market Hypothesis (EMH). In fact, he admits that the EMH can be substantiated by statistical data but he believes that investor attitudes are of great importance in determining price levels ([Schiller](#)). His book provides statistical evidence that excess volatility exists in the stock market and therefore volatility cannot be totally explained by the EMH. Excess volatility is the name given to that level of volatility over and above that which is predicted by efficient market theorists. In Shiller's eyes this excess volatility can be attributed to investors' psychological behaviour. He claims that substantial price changes can be explained by a collective change of mind by the investing public which can only be explained by its thoughts and beliefs on future events, i.e. its psychology.

The popular models theory, according to Shiller, proposes that people act inappropriately to information that they receive. Thus freely available information is not necessarily already incorporated into a stock market price as the EMH would have one believe. Shiller examines in some detail the underlying assumptions which form the basis of the EMH and attempts to discredit them. He says that investor behaviour depends on ex-post values, which is the value of an asset taking into account the future dividends. By definition though, ex-post values cannot be known ahead of the payment of dividends and so if future dividends are expected to be high then the ex-post value today will also be high. So if investors knew the future dividend then forecasting the future price (P_t) would present no problem, according to the EMH, using ex-post values (P_t^*):

$$P_t = E_t P_t^*$$

In other words price equals the best possible forecast or expectation of ex-post value. It should, however, be noted that that capital gains or losses in a share (i.e. price fluctuations) have no effect on ex-post values as true ex-post values only reflect the payoffs that the investment itself produces. If the efficient market is a reality these gains or losses are just related to changes in information about ex-post values. If the EMH does not hold, then these gains or losses have nothing to do with ex-post values and may simply be a reaction to other investors' actions.

The question mentioned earlier of excess volatility is addressed fully in an article by Shiller in the 1981 June issue of 'The American Economic Review' entitled, simply 'Do Stock Prices Move Too Much To Be Justified By Subsequent Changes In Dividends?'. The efficient market theorists claim that the EMH can be used to explain sudden movements in price. For example, new information about dividends could be released. Shiller's argument is that the fluctuations are far too big to be accounted for by mere changes in information. He provides statistical evidence to suggest that fluctuations in dividends, (which determine ex-post value) due to their nature of being calculated on a moving average, would have to be quite substantial both in terms of size and length of a trend to resemble the fluctuations in price. Even during the great depression of the 1930s dividends were only significantly below their IR growth path for four years([Schiller](#)) The mathematics of a moving average would smooth this out.

In the article Shiller also addresses the debate as to the use of dividends or earnings in calculating ex-post values. It has been argued that the use of dividends in this calculation does not accurately reflect the simple efficient market model. These theorists claim that the price should be the discounted present value of expected future earnings. Shiller claims that earnings are only relevant to the share price insofar as earnings are indicators of future dividends. He says that earnings are, in reality, only an accounting concept and, as has been proved, can thus be easily manipulated to reflect whatever the accountant wants to show about a particular stock. Earnings bear no relationship to revenue which is what the average investor is concerned with. By contrast this is exactly what dividends do. Another argument which has been put forward to discredit the use of dividends in ex-post calculations is that they are an arbitrary figure. A firm simply decides, for whatever reason, to pay out a certain level of dividend. Thus dividends are only a fraction of earnings and are not representative of the value of a stock. Shiller admits that this argument is a valid one but only in the case where no dividends are paid. If any level of dividend is paid one can support their use. Over time, according to Shiller, earnings are so heavily discounted that they contribute very little to the value of a stock. As such, dividends form the highest value to the shareholder as all that the investors are concerned with are the terminal price of a stock and the intervening dividends.

In the conclusion of his article, Shiller puts forward two explanations as to how the EMH can still hold with the excess volatility argument. It has been proven that stock market volatility in prices is five to thirteen times higher than the volatility which would be explained by the EMH and new information. Some efficient market theorists try to attribute this excess volatility to changes in expected real interest rates. Shiller claims though that the movements needed in expected real interest rates to explain this excess volatility are far larger than the movements in nominal interest rates over a sample period. The other argument in support of the EMH is that perhaps the fears of the investors are greater than the actual changes in price. There is no statistical evidence to support this and the behaviour of investors during the 1930's depression would seem contrary to this argument. Shiller does however admit that because this argument is an academic one based on 'unobservables' it can neither be supported nor discredited.

In support of Shiller's work is the fact that, at the same time as he was writing his article and totally independent of him, two economists, Stephen Le Roy and Richard Porter were conducting a study which had virtually the same conclusions as those of Shiller. They published their work in 'Econometrica' of May 1981 under the title 'The Present-Value Relation: Tests Based on Implied Variance Bounds'. In this study, which was an in-depth statistical study of excess volatility, Le Roy and Porter observed that based on aggregated and disaggregated data, stock prices are more volatile than the efficient capital markets model would suggest. This conclusion differs greatly from all previous work on the subject by such noted economists as Fama. The importance of the conclusions of this article, the author would suggest, is that it revealed very similar results of studies on stock price movements as Shiller and so neither articles' findings can be dismissed as statistical accident. This again lends more weight to Shiller's theory of the importance of popular models.

In John Dalton's book 'How the Stock Market Works' he suggests that in theory the market is indeed efficient. However, it is undeniable, he claims, that there are in practice several inefficiencies which are open to

exploitation for profit. He cites two examples where this might be the case: Not all investors are equally well informed and so insider information can be used to one's benefit as long as no one else is in receipt of the information. This is at complete odds to the strong form of the EMH which claims that all information, both publicly and privately known is incorporated into the stock price. Dalton also says that investors react differently to the same information. Risk averse investors might sell as the market becomes bearish, more speculative investors might sell short to gain high profits while long term 'buy and hold' investors might see a market downturn as a chance to indeed buy low and hold. This, as Dalton sees it, is definite evidence that inefficiencies do exist in the market. Arbitrageurs are those who make a living by exploiting these inefficiencies but if we were to use chartism to predict optimal investment behaviour we would see that the optimum investment strategy would be to buy and hold as the market has risen overall since chartism began. However Dalton says that indices such as the Dow Jones cannot be used to indicate market trends as it is concentrated on big companies and does not reflect the more responsive small businesses ([Dalton](#)). This is in contrast to Shiller's insistence on using indices as market indicators in his book 'Market Volatility'.

Dalton also addresses the issue of fundamental and technical analysis in his book. He says that fundamentalists examine the environment surrounding companies and markets while the technical analysts feel this is not necessary as price movements can be predicted by historic movement. Thus while fundamentalists seem to be at odds with the theory of efficient markets (as information is the key to their actions), technical analysts do not try to beat the efficient market, they simply examine its past to predict any future trends.

At this point one feels that it would be worthwhile to examine the situation of extreme market volatility to test the theories outlined above. As such one chose to study the 1987 stock market crash in both Dalton's book and a special paper written by Mark Mullins on the subject. Dalton basically outlines the events of October 1987 and is therefore a good place to gain a basic understanding of the events surrounding the crash. He claims that by October 1987 the market had been bullish for so long that in peoples minds a bear period was unavoidable. So, in line with a 'self-fulfilling prophecy' brokers began to sell heavily, so much so that a meeting was called to decide whether or not to close the market for the day. Eventually it was announced that the exchange would remain open but this announcement prompted investors to think that the market was in danger of closing! There was a headlong rush to sell and by the end of the day it was clear that the market had performed badly. It wasn't until later that it was to become apparent how badly. The Dow Jones had fallen 508.32 points, that constituted 22.6% of the value of the entire stock exchange. Over 600 million shares had been traded (a record) and the value of the stock on the New York Stock Exchange had fallen by over \$750 million. It is clear from Dalton's account that he considers the cause of the crash to be irrational investor behaviour, just as Shiller claims. The whole sequence of selling was started due to a psychological belief that things could not go on as they had been. According to Dalton there was no economic explanation for the high levels of selling which occurred. This is something which Mark Mullins does not agree with in his paper on the subject.

In his article 'Meltdown Monday or Meltdown Money: Consequences of the Causes of a Stock Market Crash' Mullins claims that the Meltdown Monday explanation is incorrect. This is the name given to the theory that technology and 'herd-like' behaviour of investors was the cause of the crash. He says that on the contrary, investors were reacting rationally to changing economic circumstances. He also cites government intervention in the financial markets as a cause of the crash. Mullins points out that leading up to 1987 there had been a five year bull market due to the economic recovery in the US and falling interest rates. From August 25th 1987, it can be seen that prices began to fall at a slow rate until they accelerated into a sheer drop on October 19th. The important point to note is that is that Mullins sees this crash as a rational reaction. This is in contrast to the 'Meltdown Monday' approach. The author, however, suggests that it would be inaccurate to view the crash as a bubble bursting. Price movements from 1982 to 1987 have been shown to be random in the US so there was no bubble to burst. If a bubble were to burst surely it would have occurred on August 25th when prices were at their highest. Thus, this argument has no grounding in statistical evidence ([Mullins](#)). However, an important point to note is that Mullins accepts that perhaps the crash could be explained by investors believing that a bubble existed and fearing that it was about to burst! Indeed, 38% of normal investors felt that the market was overvalued in the week October 12th to 16th, 1987. Thus we can see that although Mullins is a supporter of the EMH, Shiller's popular model argument can be applied here. Mullins defends the EMH by claiming that the assumptions about investor rationality, preferences and ability to act are too restrictive. If one relaxes these assumptions one can then examine the fundamentals within the context of the EMH.

Evaluation and Conclusion

In addition to the thoughts the author has expressed already while examining one's readings on the subject, one feels it is worthwhile to summarise the arguments put forward and this author's opinions of them. The author found Shiller's work to be by far the most convincing. Shiller established several inarguable points supporting his belief that the EMH cannot be the complete story. Excess volatility is an accepted phenomenon and cannot be adequately explained by fluctuations in real interest rates. In this essay the author has already shown that it is more likely that capital gains or losses can be attributed to the actions of individual investors, rather than movements in ex-post values of which the ordinary investor would have very little knowledge. The readings detailed above concerning the 1987 stock market crash serve to support this theory. The independent work of Le Roy and Porter shows that Shiller's work holds weight, in that two independent studies had almost identical results. One has found that there do exist unquestionable market inefficiencies and the simple fact that there are so many arbitrageurs in the market who profit by these inefficiencies proves, to this author, that the market cannot be fully explained by the existing theory of efficient markets. Even the work by Mullins (who was the only supporter of the EMH) can be interpreted as supportive of some of Shiller's findings.

However it must be recognised that the author, like Shiller, does not totally reject the EMH. There are substantial tomes of work by such noted economists as Fama which show statistical evidence to support the theory. The author would postulate that the theory is only an extreme of certain limited markets. While it does hold to a certain extent in all markets, it is not the full explanation. The excess volatility which has been examined has been adequately explained by the theory of popular models, seems to be totally logical in its assumptions and is well supported by several texts as the author has demonstrated. For this reason one's answer to the question posed by this essay 'Stock Market Volatility - Psychological Phenomenon?' would be that volatility is a function of both economic variables and psychological factors. The assumption though that the economic variables should be concentrated on to the detriment of research on psychological factors, is something the author has tried to oppose with this essay.

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Speculative Bubbles, Irrationality & Chaos

Niamh Brodie - Junior Sophister

Has the bubble of belief in rational markets burst? The existence of speculative bubbles throughout history makes Niamh Brodie tend towards including psychological models as a contributory factor for these anomalies. Although, an alternative economic model, that of Chaos could well provide the answer. *Res tantum valet quantum vendi potest.*

(A thing is worth only what someone else will pay for it.)

The stock market is generally considered to be a rational and efficient animal. However throughout history, episodes of mass hysteria have occurred periodically, when shares or products have been massively overvalued by the 'experts' and public alike. These have resulted in claims of 'economic fundamentals' being ridiculed, and the intrinsic value upon which shares are supposedly based becoming increasingly uncertain. Such overvaluations have usually been 'corrected' by the market. These revaluations have resulted in some of the most disastrous stock market crashes in history, with devastating consequences.

This essay will begin by defining 'bubbles', and then outline two conventional investment theories which are inconsistent with the occurrence of bubbles; fundamental analysis and the efficient market hypothesis (EMH). Two explanations will be offered for the existence of speculative bubbles. The first hypothesis is that markets act irrationally during speculative bubbles due to changing expectations, and emotional decisions. The alternative explanation is that market actions are not determined by traditional economic models; they are determined by a Chaotic model. These explanations will be examined in turn.

Speculative Bubbles

A speculative bubble (a '*self fulfilling prophecy*') exists if '*the reason that the price is high is only because investors believe that the selling price will be high tomorrow - when 'fundamental' factors do not seem to justify such a price.*' Holland in the late sixteenth century is the earliest example of the havoc which 'irrationality' can play with valuations. The infamous tulip bulb craze occurred when tulip bulbs became more valuable than gold. People sold their land and jewels to buy a single tulip bulb in the expectation that the price would rise yet higher, and capital appreciation would make them rich beyond their dreams. Inevitably, however, tulip prices fell until the bulbs were worthless, and a prolonged depression followed in Holland. The UK had a similar crisis, in the form of the South Sea bubble, in which the stock of a company which traded in the South Seas experienced exponential price increases, leading to 'bubbles'; ingenious and occasionally fraudulent investment opportunities became the craze of the day. The shares plummeted due to a liquidity crisis. The British government consequently passed the Bubble Act, forbidding companies to issue stock certificates.

These events appear to be unusual, surely occurring infrequently? Unfortunately, this is not the case. Similar speculative crazes have occurred in Florida real estate, London real estate, stock markets in the late 1920's, American Blue Chip stocks, commodity markets (silver in particular), growth stocks, concept stocks, junk bonds, conglomerate stocks, New Issues, Biotechnology stocks, and most recently in the stock markets across the globe in 1987. How can such events occur in a supposedly efficient and rational market? Is there no fundamental basis upon which shares are priced?

Fundamental Analysis

Fundamental analysis, broadly speaking, values shares according to three factors; the state of the economy, the state of the industry in question, and the earning power and potential performance of a particular company. Fundamental analysts then look for shares which are, in their opinion, overvalued (undervalued), and then sell (buy) these shares in the hope of making a profit when the rest of the investing public realises the truth of their conclusions. In short, fundamental analysis should ensure that all firms have equal price-earnings ratios. Now, given that arbitrage (that is, the ability to simultaneously buy and sell a commodity in order to make a profit), coupled with abundant amounts of information, should ensure that firms will be

priced proportionately, for their expected future dividend yields, can we not assume that prices are therefore generally correct? *'The essence of a correct price is not that it predicts the future, but that it fully captures the uncertainties of the future.'* An efficient market should, by this definition, ensure that share prices are correct at all times. It is obvious with hindsight that this has not always been the case. To examine why, we shall first review the efficient market hypothesis.

The Efficient Market Hypothesis

Market efficiency infers that market prices reflect all publicly available information. This includes information about confidence amongst investors and consumers, as well as information regarding the likelihood of future events. Prices react immediately and correctly to new information. Furthermore, changes in share prices will be completely random unless new information is received and assimilated. Speculative bubbles involve persistent deviations from a share's 'correct' value and cannot be deemed random. Are efficient markets consistent with Wall Street crashes? EMH implies that share prices should not increase on the whim of the crowd. To examine how delusion in the stock market can occur, we must thus assume that EMH does not always hold, and examine the basis upon which investors value shares, the efficiency of their actions, and the role of expectations.

Stock Market Valuations

Earnings and returns are the key factors in the market value of an asset. Rational estimates of future earnings are made on the basis of such factors as present earnings, growth potential, industry performance and the current phase of the business cycle. On the basis of all presently available information about a firm, fundamental analysts estimate its future earnings and dividends. On average, according to rational expectations, they will be correct, and they can force the market price to converge with the average opinion. Stock Market crashes may appear to make rational expectations derisive. *'Only a week earlier (Before Black Monday, Oct. 19th, 1987), virtually every big Wall Street firm had been bullish about the market.'* On average, Wall Streets' expectations were wrong.

The Effects of Changing Expectations

Why do persistent deviations from a share's (or market index's) fundamental value occur, and why do they take so long to correct? When examining the future return on an investment, common shares offer the prospect of an uncertain stream of income, in the form of dividends, coupled with capital gains. The fundamental value of a share is the expected value of the company's dividends per period, forever. The stock market will ensure, through arbitrage, that the following relationship holds:

$$r = e(d)/p + p/p \dots \dots \dots (1)$$

p : expected change in the price of the security

p : price of the security

r : interest rate on fixed yield bonds

e(d) : expected future dividends

Subsequently, this security is looked upon more favourably, for no better reason than that other investors are buying the security, or that a tip sheet favours its prospects. The price of the security is expected to rise, which would provide capital gains. Expectations have changed; p has increased to p*.

Assuming that interest rates and dividend expectations are fixed in the short term, the price of the security must increase to maintain the equality:

$$e(d)/(p+x) + p/(p+x) = r = e(d)/p + p^*/p$$

p* : revised expected change in the price of the security

x : the amount by which the price of the security must change to ensure that the relationship (1) still holds.

The price of the security must increase by amount x to accommodate the buoyant expectations. Merely by increasing the expected future value of the security, the price increased. This is obviously a self-fulfilling prophesy. Is the price of the security 'correct'? If the change in expectations is based on the rational interpretation of new information, suggesting a favourable future state is more probable than was previously believed, then such a change in price is indeed 'correct'. If however, such a change in expectations has occurred without any new significant information appearing on the market, the price either was originally incorrect, is now incorrect, or both. The market is acting irrationally.

Rational Pricing

Rational pricing of securities is of primary importance in economics not merely to indicate the correct wealth of shareholders; it is also *'of critical importance for resource allocation,'* and to ensure that prices eventually correspond to their long-run competitive equilibrium. Speculative bubbles indicate that the pricing of securities is irrational. The obvious culprit for such irrationality is the role of expectations in the pricing of securities. Eugene F. Fama, in analysing the 1987 crash from a rational pricing perspective saw that all explanations were *'driven by a change in expectations about conditions.'* No reason has been found for expectations to change initially.

In reality, investors are more concerned with the behaviour of their colleagues than with market fundamentals. *'If an ordinary rational investor had good reason to believe that other investors would not behave rationally then it might well be rational for him to adopt a strategy he would otherwise have rejected as irrational.'* Stock market crashes could easily result from similar behaviour; if an investor perceives panic, or impending hysteria, he himself will panic. If such behaviour occurs during the building and bursting of speculative bubbles, can we have confidence in security prices in general? Is the determination of security prices truly a 'speculative and anticipatory phenomenon'? During the 1987 Wall St. crash, when \$1 trillion of paper money was wiped out in a day, *The Economist* blamed the 'madness of crowds', and 'mob psychology' for the bull market, and the subsequent crash. As for the belief in fundamental values - *'Just before the stock market crash, commodity analysts were saying that metal prices were rising because of 'market fundamentals'. Come the crash, they threw their fundamentals out of the window, and indulged in old fashioned panic instead.'*

We must assume that the irrationality prevalent during speculative bubbles is exceptional, despite the fact that one can construct simple and plausible models of bubbles that never break. One of the greatest problems for economists is that *'there is no scientific way to show that security prices are rational or irrational.'* A fundamental assumption of economic theory is that all economic agents act rationally. In the case of speculative bubbles, (and perhaps in many other cases) rationality breaks down, and economic theory goes out the window. This is why nobody will ever satisfactorily explain the Great Depression, Black Monday, or the craze for tulip bulbs.

Chaos Theory

Is there any other theory which could possibly shed some light on the subject of speculative bubbles? Chaos theory may be the answer. Chaotic models, despite the name have a pattern behind the chaos. These models are deterministic mathematical models, (usually non-linear), which explain every nuance of the behaviour of the variables in question. The observations which result from Chaotic models have the following properties.

- 1 - They appear random (even when subject to sophisticated statistical analysis).
- 2 - No pattern repeats itself. Thus even with infinite data, no two patterns will ever be exactly alike.
- 3 - The time series is subject to sharp and substantial breaks in the usual pattern or trend, which are completely undetermined by what went before. Thus, a series of observations with a high degree of volatility and an upward trend can be suddenly replaced by a flat downward trend.
- 4 - The qualitative behaviour of a Chaotic time series is subject to complete upheaval in response to the most microscopic change in the values of the underlying parameters.

Despite the appearances conveyed by such properties, Chaotic models are non-random, and (given the model) completely predictable. Let us examine the explanative power of such properties in relation to

speculative bubbles:

- 1 - Stock market prices have been found in some empirical studies to be completely random.
- 2 - Technical analysts cannot systematically beat the market, despite their in-depth study of past patterns.
- 3 - 'Sharp and substantive breaks'... : The events of 1929 and 1987 fall into this category.
- 4 - 'Microscopic changes'.... : This could well be the reason why a true cause for Black Monday cannot be found. Could a farmer in New Zealand increasing prices possibly be responsible for a crash in Wall Street? Chaos theory suggests that this is possible.

As we have seen, Chaos theory appears to have strong explanatory power regarding the behaviour of share prices. It is an model of economics which is consistent with historical events, but too complex to be of use in predictions of the future. These sentiments, however, are as yet untested and further empirical research into this area is necessary.

In conclusion, behaviour during speculative bubbles appears to be outside the scope of traditional economic explanation. Although agents may have rational beliefs, they do not always behave in such a manner. To understand the actions of economic agents during bubbles, psychological analysis appears to have greater explanatory power. Alternatively, perhaps by replacing established economic models with a Chaotic model, these events will appear logical. These results portray an unkind picture of the stock market; it is either irrational and inefficient, or ruled by chaos.

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Porter's Diamond and its Relevance to Irish Trade

Barbara J. O'Toole - Senior Sophister

Porter's 'Diamond' proposes several basic elements which govern a country's trading competitiveness. The theory propounds demand, factor and inter-firm conditions as the rudiments of a healthy open economy. Barbara O'Toole's analysis finds the theory inapplicable to the 'emerald isle' which has implemented industrial policies more like millstones than gems. **Introduction**

The conventional wisdom of international trade is challenged by Porter's Model. He argues that the factor endowment theories of Heckscher and Ohlin are too simplistic to determine a nation-state's competitive advantage. Comparative advantage can no longer be seen as 'divine inheritance'. Porter states that international success in a particular industry is determined by four broad mutually reinforcing factors which create an environment which enables these firms to compete. The four include factor conditions, demand conditions, related and supporting industries and firm structure, strategy and rivalry. These determinants also being influenced by the nation's government and by chance events. In theory, to apply the model one should look at the Irish export statistics which indicate the industries in which the country has a competitive advantage and then when analysing the competitive environment using the four determinants one should find an environment which fits the industry and is conducive to its success. The export statistics indicate that Ireland has a national competitive advantage (NCA) in both the manufactures of automatic data processing and office machines and in chemical and pharmaceutical products. However this paper will attempt to argue that the model fails in an Irish context because the competitive environment does not in fact 'fit' these industries. To illustrate this argument this paper will discuss each determinant of the model in an Irish context, however, before doing so it is necessary to provide a brief background of Irish industrial policy.

Irish Industrial Policy

The key features of industrial policy in Ireland have, for the most part been the same for four decades. The three key elements of direct investment incentives and tax concessions to stimulate industrial activity; the focus on foreign direct investment (FDI); and the transition to free trade were all part of the First National Plan. The rationale behind the attraction of FDI through grant and tax concessions was first to remove the weaknesses in technology and marketing evident in the indigenous sector for decades; second to upgrade Irish industrial skills; third to supplement the lack of Irish entrepreneurial initiative and finally (and most importantly) to contribute to the development of the indigenous industrial sector. It was assumed this could be achieved through the positive spillover effects from profit reinvestment and through the establishment of supply linkages between foreign and indigenous companies.

In the early 1970's most effort was concentrated on attracting the 'high tech' sectors which included the electronics and chemicals industries. It was assumed that Ireland would have a comparative advantage in competing for FDI because of her relatively well educated workforce aided by a 10% corporation tax rate for the profit of manufacturing industry until 2010. In the 1970's and 1980's it appeared this strategy was paying off as the country witnessed a substantial growth in Irish based pharmaceutical, electronics and machinery sectors. Also, there was a dramatic change in the sectoral composition of Irish industry as the engineering, metals, chemical and pharmaceutical sectors replaced food as the largest employer. Currently approximately 75% of Irish manufacturing exports come from the subsidiaries of foreign firms and they account for 86% of production compared to 33% for indigenous firms ([O'Hagan](#)). One may argue that the growth of modern high tech sectors is not surprising and is a positive feature of most industrial economies, however, the aggregate trade statistic figures conceal the '*dualistic nature of the Irish economy*.'[\(O'Hagan\)](#) Alongside a modern foreign owned sector with high levels of productivity coexists a traditional indigenous sector with low productivity which has been in decline since the 1970's. It is with this background in place that the author applies Porter's Diamond to Ireland's trade statistics.

Factor Conditions

Porter states the traditional factor endowment argument of standard trade theory is too simplistic. He argues that the factors most important to comparative advantage are not inherited, as Heckscher-Ohlin argue, but are

created and that the broad categories of land, labour, and capital are too general. He divides factors into basic and advanced, generalised and specialised. Basic factors such as natural resources, climate and un/semi-skilled labour are 'passively inherited' while advanced factors are those whose development demands large and substantial investment in human and physical capital. The distinction of generalised versus specialised is based on their ability to perform tasks. Generalised factors are available in most nations. They can be sourced on global markets and their activities can be performed at a distance from the home base, whereas specialised factors are developed with considerable investment from the generalised factors. Porter argues that sustainable competitive advantage exists when a nation state possesses the factors necessary to compete in particular industry, which are both advanced and specialised.

Given that the statistics indicate that Ireland has a NCA in the 'high-tech' industries it would be logical to assume that both advanced and specialised factors were both present in Ireland and used in these industries. It can also be assumed that because these industries are dynamic that these factors must continuously be upgraded. However, in Ireland, this is not the case as basic and generalised factors are predominantly used. Despite the fact that the products produced are increasingly 'high-tech', the tasks that Irish employees perform in these industries are predominantly low skilled and the percentage of skilled workers used in the subsidiaries of multinational companies (MNC) compares unfavourably with other developed countries. This seeming anomaly can be explained because MNC's base most of the advanced specialised factor activities in their home country, therefore technology, marketing, innovation and industrial expertise are imported into Ireland from the parent country. The investment in the continuous upgrading of factors also takes place outside Ireland and there is little incentive for these companies to conduct similar investment in Ireland. This lack of interest in investing in or creating Irish advanced and specialised factors is evident from financial behaviour - repatriated profits, royalty and dividends have left Ireland at a fast and rising rate since the 1980's. Their contribution to the positive macro performance of the economy is based on the capabilities which are embedded in their own economies rather than those present in the domestic economy. These enterprises have also made little direct contribution to the learning process which Porter cites as being essential to NCA, therefore Irish factors are not generating knowledge and skill to form the foundations for a more sustainable NCA which is indigenous rather than foreign owned. Overall it is not necessary for Ireland to possess the advanced and specialised factors to compete in the 'high-tech' industries which dominate the trade statistics and yet the country appears to have its NCA in such industries.

What factors are actually present in the Irish economy? At the time of the Telesis Report in the 1960s the low level of skilled factors was identified, but since then indigenous companies have continued to concentrate on low skill, low value added activities with only modest improvement in marketing and technological sophistication. This dependence on basic-generalised factors has not necessitated reinvestment on the part of indigenous firms to upgrade these factors, nor has it necessitated their lobbying pressure on the Government to provide them with more advanced-specialised factors to use. The large successful Irish companies have grown due to their 'defender-like strategies' ([Miles](#)) i.e. they stick to what they know best, do not innovate and do not reinvest. In short if they prove successful at one activity they remain with it. One must remember that a key rationale behind FDI was its positive spillover effects to the domestic economy through impacting on the activities of domestic firms - it would appear this has not occurred. However, the model states factor conditions cannot be relied upon solely to generate national competitive advantage as demand conditions, related and supporting industries and firm strategy, structure and rivalry must reinforce each other.

Demand Conditions

Porter argues that local demand is at the root of national advantage. In this he has the agreement of S. Buterlino-Linder who theorised that countries were 'myopic' in the sense that they first supply their domestic market and then export to markets with similar demand patterns. Linder argued that countries will not think of an idea unless domestic demand forces it to, therefore need domestic demand to get a comparative advantage in these products. Porter himself sees this as occurring through a number of channels. First through the pressure placed on producers by buyers to innovate; second through sophisticated domestic buyer needs providing a window into more advanced buyer needs and finally through economies of scale. This argument falls down in Ireland's case on three key points. First, the home market segment in Ireland is too small to reap significant economies of scale benefits and there is little incentive to invest aggressively. Therefore, it is unlikely that a large percentage of Irish firms develop products with only the Irish market in mind. Demand conditions in the UK market are as, or more important, given the close proximity of the UK market and the historical links between the two countries. This is evidenced by the close trade linkages between the

economies. This heavy dependence on the UK market has fallen dramatically over the last 35 years but it is still Ireland's largest customer. Second, are Irish buyers truly sophisticated? In Ireland it is considered poor performance on the part of the buyer rather than the seller should he complain about a defective product, a complaint being more a reflection of his poor character than the poor product quality. Porter found something similar in his New Zealand study where the British 'stiff upper lip' attitude prevented complaints. In Ireland's case this reduces the pressure on producers to continuously upgrade or improve their products or production because buyers, for the most part, accept what they are given. Finally, it seems highly unlikely that the dramatic shift (late 1970's early 1980's) in the composition of Irish sectoral output from low value added uncompetitive food products to machinery, chemicals and pharmaceuticals was driven by local consumers switching their consumption from beef to organic chemicals! Therefore the demand conditions in Ireland do not fit those required for 'high-tech' industries in which Ireland has a NCA.

Once again Porter states demand conditions alone are unimportant as they depend on other parts of the diamond such as strong domestic rivalry. He states without this rivalry, rapid domestic demand equals complacency.

Related and Supporting Industries

If there exists a close working relationship between companies within an industry an *'ongoing coordinating process of innovation and upgrading will result where access to information, new ideas, insights and innovation will occur'*. Also if competitive advantage exists in related industries then *'opportunities abound for positive interchanges and new opportunities are continually perceived'* ([Porter 1990](#)). This part of Porter's argument has strong support in advanced industrial economies where 'industrial cluster' exists and a cumulative learning process is the result.

In essence this was the reason for the attraction of FDI to Ireland. The 'hands off' industrial policy assumed that once the correct financial incentives were in place 'industrial clusters' would evolve. This would occur because the positive spillover effects would cause greater demand for inputs and the establishment of strong supply linkages, thus forcing indigenous firms to become more competitive. The Culliton Report recommended the actual promotion of industrial cluster - but this interventionist stance was not adopted.

However 'industrial clusters' did not evolve and the low level of linkages between the indigenous and foreign owned sector is a trend which has continued from the time of the Telesis Report. In the office machinery sector, which is the highest growth sector of the foreign group, linkages in the late 1980's and into the 1990's were particularly low as this group sourced just 4% of their input needs in Ireland. For its counterpart, the electrical and chemical sector, this figure ran less than 7%. This absence of the positive spillover effects was noted in the OECD Report of 1993, in particular the disappointing private service sector employment growth levels as they had been the main engine of job creation in most other OECD economies. The report noted that *'because these firms receive capital grants they use less labour per unit of capital and rely heavily on foreign affiliates of their inputs'* ([OECD 1993](#)), there has been limited spillover effects.

It would appear that the 'high tech' industries do not have, nor need, a strong support network in Ireland and because a close working relationship does not exist they do not put pressure on indigenous firms to innovate and to become competitive. Therefore the pressure for competitive advantage in related industries are absent and opportunities for positive interchanges and the perception of new opportunities do not occur. The two sectors operate, for all intents and purposes, in two separate economies.

As an aside there are those who argue that the benefit of employment creation of MNC's outweighs the costs. It must be borne in mind that these jobs are not created without costs. Between 1981 and 1986 Ireland had one of the highest levels of Government aid to industry among EU countries and research conducted at DCU revealed that just under 50% of foreign firms grant aided since the mid-1970's are no longer in business and that the number of jobs provided by foreign firms typically peaks a few years after their receipt of grants ([Sunday Tribune](#)). From the author's perspective this creates three problems. First, it induces a 'grant mentality' in indigenous companies and takes the pressure off them to be innovative and competitive in international markets. Second, it acts as a 'quick-fix' approach to industrial policy and employment creation. Finally, the opportunity cost of this investment includes investment foregone to indigenous industry to make it more competitive, possible tax reform measures to facilitate employment creation or greater R&D expenditure, to name but a few. To embellish on the final point of R&D expenditure, Ireland ranks well below other advanced industrial economies ([1991 Stats](#)) despite improving since the late 1960's, therefore the

continuous innovation which is necessary to compete in these high technology industries is not occurring in Ireland. Continuous innovation to Porter is *the* source of sustainable competition, but is not viable in Ireland at the rate of other advanced industrial economies thus entailing that it remains a low value-added country. Once again this conflicts with the statistics as a NCA in 'high-tech' industries require heavy R&D expenditure and the ability to innovate.

Firm Structure and Strategy and Rivalry

Due to the scale of this determinant, this paper will concentrate on the first component of structure and deal briefly with the other. Porter argues that vigorous domestic rivalry is strongly associated with competitive advantage in an industry and that success does not grow from one or two firms experiencing economies of scale due to their dominance of the market - only in a closed economy will dominance be profitable. He goes on to say that domestic rivalry creates pressure to innovate and upgrade NCA as local competitors imitate new ideas and the whole industry benefits from overall industry innovation.

However in the very open Irish economy the subsidiaries of the MNC's are highly successful while dominating certain industrial sectors. They do so in the technologically sophisticated industrial activities where no significant rivalry exists and where indigenous firms are far too weak to compete. Their dominance is aided by the structure of indigenous industry which is predominantly small autonomous manufacturing companies. Nearly 65% of the private industrial sector is concentrated in enterprises of less than 100 employees and little co-operation takes place between them.(IDA). However, apart from these structural barriers which make the competitive environment prohibitive there are other disincentives for Irish firms to imitate MNC activities and compete in these sectors. Foreign subsidiaries have the backing of their large parent corporations who benefit from significant learning and scale advantages, advanced and specialised factors and a stock of financial resources for investment in the same.

Imitation of ideas is also constrained not only by the above, but also by the absence of a concerted attempt by the government to gain access to the technologies these companies develop and utilise in order to diffuse it to their indigenous counterparts. The Irish 'hands off' policy stands in stark contrast to the policies of other countries, in particular, the rapidly growing East Asian nations. In these countries the governments have set up agencies in order to learn about the technologies which MNC's bring with them in order to integrate them into indigenous industry.

Porter also states that new business formation will create new competitors and '*feed the process of innovation*'(Porter 1990). But new business formation is not a significant threat to competition in the Irish case. In a recent report by Forbairt it was found that over 60% of new businesses will fail within 5 years and each year about 600 companies are officially liquidated - this despite the favourable economic climate and the generous grant aid available(IDA). Data compiled by the Department of Enterprise and Employment indicated that 57% of Irish companies fail while only 43% of foreign companies failed. If this trend continues foreign companies will continue to dominate.

Therefore, Ireland appears to have a competitive advantage in industries in which there is no vigorous domestic rivalry and where success has grown out of a small number of firms experiencing economies of scale due to their dominance, despite the openness of the Irish economy. There are no domestic pressures to innovate as local competitors are constrained in their ability to imitate ideas. Overall this determinant is inapplicable to the Irish economy based on the trade statistics.

Porter also states that countries will succeed where the goal and motivation fit the source of competitive advantage and that these goals are strongly determined by ownership structure. The goals of MNC's are evident from their financial behaviour and they have spin-off effects on the national prestige of their industries - thus affecting the quality of human resources (HR) attracted to them. If MNCs are perceived as using predominantly low skilled labour with little investment in the skills of the domestic labour force then the young educated segment will look elsewhere for employment. Thus Ireland's advanced specialised factors become mobile and emigrate to where investment in human resources is fundamental to organisations. This problem is compounded by the historically low HR investment levels of the indigenous sector and the significant '*skill gap between Irish and best practice companies*'(Culliton). Therefore, even if the young possess the skills there is no incentive to stay in the country as there are no benefits to be reaped in the long term and opportunities are limited. In contrast, one of Japan's key sources of NCA is its high percentage of engineers per capita. This mobile advanced factor is made immobile because of the Japanese engineering and

innovative culture which creates the incentive to stay. Once again in the Irish case this does not support the argument that Ireland has a NCA in 'high-tech' industries.

Government

The role of Government in Porter's model is to influence the four determinants through its policies. It is this factor which is the most relevant and applicable to the Irish experience and, in fact, it appears that Government policies have influenced the four determinants to such an extent that it alone could be used to analyse trade patterns. Porter argues that Government policies which artificially create a NCA and/or 'help' that removes the pressure on firms to improve and upgrade is counterproductive. He states these policies will fail because they create a competitive advantage which is unsustainable in the long run due to the pressures of the market and continuous innovation. Governments' role, he states, is to reinforce determinants not to create competitive advantage.

The Irish Government could do well to heed Porter's advice, in the author's view, for a number of reasons. First, the reliance on FDI from the early 1970's as a key element of industrial policy is fatally flawed as it is an increasingly unlikely foundation to achieve sustainable competitiveness in the long term. The 'no ties' financial incentive approach to FDI relied upon in the past provides fewer benefits due to the competitive pressures for mobile investment. However, this cannot be 'tied' now as to do so would cause FDI to locate elsewhere. The fierce competitive environment for mobile investment has seen Ireland's share of FDI fall significantly over the last 15 years. This competition comes from Eastern European countries, China and India - the latter offering labour in abundance and access to high growth markets, France with its more liberalised inward investment rules and the Netherlands and other European countries increasing their tax incentives. There has also been a switch in FDI away from manufacturing to services and a switch from wholly owned sites to strategic alliances and joint-ventures with strong indigenous partners. When strong indigenous partners are not available in Ireland the country has little leverage to compete. As in all markets when competition ensues the price falls and the buyer benefits. In selling Ireland as an industrial location, incentives to the FDI must be increased to compete, investment can be tied to an even lesser degree and overall the 'margin' to benefit from FDI falls. Overall it would appear that the country is too heavily dependent on FDI.

Second, Government policies create a 'grant mentality' among the indigenous sector when it offers a generous grant environment to firms, as is currently the case. This removes the pressures to innovate and to reinvest in human and physical factors. In the history of industrial development the significant feature of the process of innovation, once begun, is its source of capital funding i.e. retained earnings. This feature is evident across successful companies in different countries. In Ireland successful companies which have built up large reserves have not reinvested that money to upgrade the innovative capabilities of the sector, '*where there has been reinvestment it has been in low skilled sheltered activities in which these companies have already proved successful*' (O'Sullivan in O'Hagan 1995). This 'defender type' strategy aims to minimise risk and relies on grants and government subsidies as sources for investment funds.

Through these policies and others, Government has impinged on the dynamism needed to create a sustainable NCA based in indigenous industry. This paper agrees with Porter when he states that '*policies implemented without consideration of how they influence the entire system are as likely to undermine national advantage as enhance it*' (Porter 1990). There are many lessons to be learnt from the Asian Tigers and their interventionist policies to increase the international competitiveness of indigenous firms and to make them more responsive to the pressures of global competition. This in order to reap the real benefits of international trade.

Conclusion

This paper concludes that Porter's model is unhelpful to explain the pattern of Ireland's trade. The competitive environment created by the four determinants does not fit with the statistical NCA. The statistics indicates Ireland's NCA lies in the 'high-tech' industries, however, the factor conditions, demand conditions, related and supporting industries and the structure and strategy of firms do not create a competitive environment that fits these industries - Government policies have artificially created this 'statistical NCA'. The Government industrial policy of attracting FDI has been responsible for the creation of 'high-tech' industries in Ireland and their dominance of the trade statistics is in large part due to the attractive corporation tax rate which create the incentive for Profit Switching Transfer Pricing.

Porter's model can also be criticised on a number of other points. First, it is an ex-post model and therefore has no predictive powers, also the number of variables involved weakens any predictions, in particular the inclusion of 'chance' into the equation; second, Porter uses examples of success to back up his theories but his 'interpretation' of the reasons behind the success is subjective in many cases and could be explained by other factors; third because of the number of variables and the inclusion of chance, the model has the ability to explain away evidence which does not agree with its findings and finally he also provides himself with a 'get-out' clause when at the end of discussing each determinant he states it will not be effective unless the others reinforce it.

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1991 Stats :

R&D -.8%; Irish GDP - 2.7%; Sweden 1.3%; Denmark and Norway 1.5%; Netherlands 2.1%; UK nad West Germany 2.5%.

German Terms of Trade in The Last Decade

Stefan Napel - Erasmus

A country's terms of trade are an important measure of its export to import ratio. In a globalising world economy, such an index assumes heightened significance for large trading blocs. In this essay, Stefan Napel detects, analyses and seeks to explain interesting developments in German terms of trade in the five years before and after reunification

Graph 1: Net barter terms of trade of goods and services for West Germany, 1985=100 (European Economy 1995)

Terms of trade and the West German economy

The terms of trade are referred to as an '*esoteric problem in the pure theory of international trade and a highly charged emotional issue in world politics*' by Ronald Findlay (1981). The terms of trade are an index of a country's exports against its imports, and thus are useful for cross-national trade comparisons. There is a great variety of indices which are designed to measure the terms of trade and to relate them to possible gains from trade - Viner (1937) lists not less than seven of them. Most important is the *commodity* or *net barter terms of trade* index, to which this text refers unless otherwise specified.

The net barter terms of trade index is calculated as the ratio of the relative change in the price of the exported goods and services basket to that of the corresponding import basket (of one country). It indicates the change in the value of the export basket, expressed in units of import baskets, and is equal to the ratio of the so-called unit values of exports and of imports.

In trade theory, the terms of trade are the solution to the problem of finding an equilibrium vector of relative prices for a world market of traded goods and internationally mobile factors and national markets for non-traded goods and immobile factors. They are determined by the consumer preferences, factor endowments, technology of production and income distribution in the trading countries. The terms of trade are usually regarded as an exogenous parameter for a 'small' open economy.

Changes in the terms of trade have been a controversial topic in international economics and particularly development economics since Prebisch (1950) and Singer (1950) independently postulated a continuous deterioration for primary goods versus manufactured goods. The debate about trends and volatility of the terms of trade between developing and industrial countries did not only produce a temporary anti-trade bias of government policy in many less developed countries but also a huge amount of literature. Still, little study has been pursued in the area of the welfare implications from a movement in terms of trade. And rarely - only with the exception of the oil crises - has the focus been the situation of an industrial country.

Graph 1 depicts the development of the terms of trade for an industrial country, West Germany. In the last ten years, from 1985 to 1995, West Germany experienced an improvement of its terms of trade of almost one fifth. This change is the topic of this project, which tries to work out its causes and consequences. As can easily be seen in graph 1, the choice of the benchmark year 1985 is crucial to the observation of an almost 20 percent increase. But the period 1985-1995 is of special importance to the country and therefore justifies this (biased) choice. In October 1990, the mid point of the chosen period, West Germany was united with the former German Democratic Republic. East Germany represented an economic area of one fifth of the population and one third of the area of Germany. The unification had a strong impact on the whole of Europe.

The East German demand, mainly for specific consumer goods like automobiles, certain food items and electronics, induced an economic growth in West Germany which exceeded that of the previous fifteen years. The boom years of the late 1980's were surpassed in 1990 and 1991 as a consequence of the so-called *Sonderkonjunktur* (exceptional GDP movement) of the unification - contrasting to adverse movements in most industrial countries. However, large financial transfers of some 5% GDP to the East represented a serious financial burden to the government and the private sector: higher social contributions, higher taxes and less public spending in the western parts of the country all contributed to the 1993 recession and to huge

lay-offs in response to the increased cost pressure. The turmoil in the West German economy was mirrored by an important shift in its external balance. A large decrease in the traditional trade surplus and even a current account deficit after 1990 emphasise the economic relevance of the 1985-95 period.

Possible explanations of the movement

One might try to investigate the changes of the terms of trade for West Germany by using a theoretical model of trade. One could argue that West Germany gained far more labour than capital with the unification, and proceed to search for the subsequent economic consequences. In addition, though, to the methodological problem of comparing the pre-1990 West German situation with that of post-1990 united Germany consistently, all theoretical models of trade need many assumptions to be applicable. Therefore this piece puts more emphasis on empirical data than on a theoretical framework. West Germany's imports and exports are considered first. Although the terms of trade refer to goods and services, only the trade in goods is explicitly mentioned due to a restricted availability of data. Import and export of services account for about one third of total West German trade, but they mainly consist of capital gains from foreign investment and tourism. These aspects are interrelated with the development of the German mark which is dealt with later.

Standard International Trade Classification	Exports	Imports	Ex/Im ratio
SITC 0+1(food, tobacco)	33227	60786	0,55
SITC 2+4 (natural resources)	13549	29700	0,46
SITC 3 (oil)	8111	44792	0,18
SITC 5 (chemicals)	82373	53974	1,52
SITC 6 (manufactured goods)	108699	104382	1,04
SITC 7 (machinery, electric appliances)	326689	217940	1,49
SITC 8 (various finished products)	74594	102534	0,72
weighted average			1,05

Table 1: West Germany's exports and imports of goods by Standard International Trade Classification groups 1992 (Statistisches Bundesamt 1993)

West Germany's imports

West German unit values of imported goods changed significantly more than those of the exports from 1985. This indicates their dominating relevance for the development of the terms of trade of goods, and as well for the terms of trade of goods and services. West German imports reached unprecedented heights after the unification. The boom of 1990-92, stimulated by the unification, implied increasing aggregate demand in West Germany, whilst East German demand absorbed much of West Germany's output. This caused the general procyclical rise in imports to be more pronounced than usual. Thus - whilst European countries with high foreign debt suffered from the effect of rising German interest rates - the trade partners with high international competitiveness gained from a 'locomotive' effect of the German unification. In many European countries it eased a decreasing domestic demand, which in return helped to reduce or avoid price effects of the German demand.

Table 1 shows the commodity structure of German exports and imports of goods, for 1992, but the proportions of the different commodity groups are representative. Though oil and related imports do not (SITC 3) form a particularly large part of the total import volume, the high volatility of oil prices and its

influence on the prices of imported chemicals and energy intensive goods results in its important contribution to changes of the terms of trade. The oil crises of 1973 and 1979 evidently led to unfavourable terms of trade movements. The reverse oil price shock of 1986 was not as disruptive as the adverse movement of the 1970's crises, but it is likely to have caused much of the enormous terms of trade improvement of that year, which again makes 1985 as the starting year of the observed period so crucial. The fall of the unit value of imports from 1985 to 1987 is the most pronounced movement of either export or import unit values between 1985 and 1995 and the unit prices have stabilised since then. The oil price hikes during the Gulf crisis 1990/91 were only temporary and did not induce such a lasting change in the terms of trade.

The Prebisch-Singer hypothesis of long-run deterioration in the terms of trade for developing countries could - if true - imply that a part of the increase in West Germany's terms of trade is caused by this alleged trend. However, if one excludes oil imports, it seems extremely unlikely to be a viable explanation. Only a small proportion of West German trade occurs with developing countries and no underlying positive trend is visible in the long-run development of the terms of trade for West Germany (see graph 1).

Graph 2: Terms of trade for the European Union in extra-EU trade by SITC groups, 1985=100 (eurostat 1994, eurostat 1995)

West Germany's exports

Mendoza (1995) uses a Granger-Sims causality test to determine, if it is exports or imports that mainly govern the terms of trade for West Germany. He calculates the F -statistic for the hypothesis 'exports cause the terms of trade' as 2.757 in contrast to only 0.169 for import-domination. Though this result seems to contradict the above interpretation of the unit value's movement, which refers to the short period 1985-1995, and though it is not statistically significant, it emphasises that exports also play an important role.

More than 50 percent of West German exports are destined for the European Union. The rather stable EU-demand provides a solid basis to profit from the often more volatile extra-EU trade. West Germany regularly gains market shares if and when imports to partner countries are increasing rapidly. This indicates a high flexibility of the German industry. The West German export industry is rarely hindered by government rulings - it enjoys a risk bonus and a head start on politically turbulent countries like China or Iran.

German exports have a favourable, very specialised commodity structure. The strong emphasis on investment goods implies a high sensitivity to international growth. On the other hand it also yields all the benefits of a low elasticity of demand.

The terms of trade for commodity groups which have particular importance for West German exports - chemicals, manufactured goods, machinery, cars and some finished goods (SITC 5-8) - have not improved that much for the whole of the EU (see graph 2). Either Germany's position in intra-EU trade improved significantly, or Germany's terms of trade in the mentioned product classes are better than those of the EU average. This seems likely as West German exports are very specialised within the one-digit SITC groups. Machines for various purposes and motor vehicles reach export/import ratios of up to 2.7 and account for almost 40 percent of West German exports. West Germany does not enjoy an international monopoly in these areas, but continuing specialisation in particularly skilled labour and capital intensive goods has surely contributed to the favourable terms of trade movement.

The German mark

The D-Mark appreciated significantly between 1985 and 1995, especially after re-unification. Amano and van Norden (1995) show that the real exchange rates of the Canadian and the US dollar are cointegrated with terms of trade variables and that causality runs from the terms of trade to the exchange rates. A similar result was given by Koya and Orden (1994) for New Zealand and Australia. In spite of open capital markets and flexible exchange rates, monetary and portfolio balance effects seem in those cases to have little importance - terms of trade shocks appear as exogenous determinants of the exchange rates.

The value of the mark shows an analogous movement with West Germany's terms of trade, but in the German case it is not evident that causality runs only from the terms of trade to the exchange rate. Just like exogenous terms of trade shocks can induce exchange rate changes, an exogenous currency shock, for example that of 1990, has terms of trade implications. The appreciation of the mark is very likely as much a consequence of

changed preferences of international capital markets, of a reappraisal of the German economy after the unification, of the increasing role of the German Bundesbank and the anchor function of the mark in the European Monetary System, as it is a response to changing terms of trade. In probability, the stronger D-Mark induced favourable terms of trade movements for West Germany, especially in the years 1992 and 1993.

Implications for the West German economy

The attribute 'favourable' has been used several times to describe an increasing net barter or commodity terms of trade index for West Germany. However, in spite of the extensive literature in response to the Prebisch-Singer hypothesis, there is no comprehensive approach that fully incorporates the various welfare implications of terms of trade 'gains'. John Stuart Mill (1844), the great pioneer in the terms of trade context, rejected the conclusion that a favourable movement of the commodity terms of trade necessarily indicates actual financial gains from trade. Lutz (1994) recommends an examination of the *income terms of trade*, i. e. the net barter terms of trade times the volume of exports, as they measure the relative purchasing power of a country's exports. He succeeds to establish a significant link between income terms of trade volatility and lower growth rates.

Mendoza (1995) claims within his real business cycle framework, that terms of trade shocks account for 45-60 percent of GDP variability. He calls them the most important exogenous variable in the context of economic growth next to the productivity shocks that are essential to real business cycle theory. However, although terms of trade movements do certainly have welfare and gains from trade implications, Findlay (1981) states that there is no unambiguous indicator of them.

To correctly analyse the implications of the favourable terms of trade development for West Germany between 1985 and 1995, would first require an exact disintegration, into direct exogenous terms of trade changes and indirect terms of trade changes, which are a consequence of other exogenous shocks, like changes in tastes or technology. This is rarely possible. However, the magnitude of the fall of the unit value of imported goods in 1986 and the notable appreciation of the German mark after the unification suggest mainly direct terms of trade shocks, possibly supported by endogenous changes due to the specialisation and flexible technology of the West German export industry.

Germany in all likelihood, did benefit from the improvement of its terms of trade. The increase in the income terms of trade was even greater than that of the net barter terms. This means that the purchasing power of German exports was boosted in the analysed period. Relatively cheap imports contributed to the strong position of the West German economy before the unification, which was crucial for the eventuality of a quick unification with the weak East German economy. Subsequently later with the high increase in demand and need for, imports in the wake of the 'unification boom' they became even more important. They helped to smooth the economic turmoil which was induced by the East German aggregate demand shock and the increase of taxes and social contributions. Many trade partners profited from the post-1990 development in West Germany, which by the help of the favourable terms of trade obtained the requisite imports of goods, services and also capital at a relatively low price.

To actually measure the gains from a favourable terms of trade movement is difficult. In national income statistics one can occasionally find terms of trade adjustments of the gross national disposable income. The adjustment term is derived by taking the difference between the figure obtained by deflating the current value of exports of goods and services by an index of import prices and the current value of exports deflated by an index of export prices. The adjustment figure represents an 'invisible' increase of disposable income, which is a consequence of the increased purchasing power of exports. For Germany, a positive adjustment of about 4.5% of GDP would have to be taken, if unit value price indexes are used, for the terms of trade calculation (other indices like that of direct importer and exporter prices lead to even higher figures). This figure is not surprising, given the importance of foreign trade for the German economy - exports account for more than one third of West German GDP. Changes in the composition of exports and imports, distributional and other dynamic aspects of a terms of trade fluctuation can of course not be captured by this type of comparative static. Hence one needs to be very cautious when speaking of gains of a certain percentage of GDP. Still, one can conclude from the above number that a positive and significant contribution to German welfare has been made by the recent terms of trade improvement.

Conclusion

The interpretation of reasons for, and consequences of the significant improvement of the terms of trade for West Germany between 1985 and 1995 is difficult and ambiguous because of the complex interrelation between the relevant economic variables. To date there has been little literature produced regarding the terms of trade from an industrial country's point of view. Even the related problem of deriving the connection between the terms of trade and exchange rates of two countries has not yet been solved, as both Koya and Orden (1994) and Amano and van Norden (1995) concede that their results may only hold for countries with closely linked monetary policy and business cycles. It is even more difficult to distinguish which of the dynamics of an economy can be attributed to terms of trade movements and which terms of trade movements are a result of more general economic dynamics. The topic has much potential for further research.

This piece has tried to work out some aspects of the West German economy and its foreign trade which clarify causes and consequences of the important change in the terms of trade for West Germany from 1985 to 1995. It was not possible to establish an explicit chain of cause and effect. Still, it seems certain that the mentioned import unit value and oil price fall, the specialised structure and elaborated technology of German exports and a partly exogenous appreciation of the D-Mark are major reasons for the terms of trade improvement. Its consequence was a positive contribution to the economic 'preparation' for and the realisation of German economic unity. A precise quantification of this contribution and a detailed list of consequences could not be presented. It is impossible to split up the complex dynamics of West Germany's real world economy, like those of a theoretical model.

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Privatisation and the Polish Experience

Cian McCourt - Senior Sophister

1989 saw the beginning of the end for the communist economic regime in Central and Eastern Europe. Notions of capitalism and privatisation became pervasive in the newly open corridors of power. Cian McCourt traces the theory and development of privatisation in the Polish economy and discovers a system slowly and sporadically aligning itself to the 'Western World'.

In September 1989 Eastern Europe saw its first non-communist government in fifty years. The country was Poland. The Solidarity led government assumed office facing an enormous budget deficit and rapidly accelerating inflation. Economic reform was an imperative. In the first phase of reform the Government tried to regain some control over the budget, and price distortions were corrected. The second phase is known as the 'big bang'. This was a radical departure and uncharted territory that the Poles were sailing into. There was a liberalisation of prices, reform of the tax system, reduction of the deficit, and the implementation of a restrictive monetary policy. These moves from a planned economy to a market economy laid the groundwork for privatisation, an essential part of the market economy.

'Privatisation remains the most important outstanding item on the agenda of radical reform in Poland.' The reforms in Poland have been slow however. The process has been *'characterised by conflict between the centralist schemes of the post-communist government and the pressures of insiders to decentralise.....at the enterprise level.'* Added to this has been a succession of weak governments, with no strong parliamentary majority. In this essay the author looks at the privatisation process in Poland and its success to date. Firstly, however, the author examines the concept of privatisation itself.

Privatisation

A privatisation programme should set out to achieve a number of goals, according to Gros and Steinherr (1995). Firstly, privatisation should be an instrument for promoting efficiency by creating an incentive-based economy. Secondly, there should be a fair distribution of ownership. Finally, it *'should serve the creation of a market structure that is compatible with a decentralised and democratic society.'* The efficiency argument requires firms to face real competitive pressures, therefore it is not just ownership that must change but the whole macroeconomic environment.

'Privatisation is crucial to the reform process in an Eastern European countries.' The right to private property is the chief feature distinguishing market and centrally planned economies. Without privatisation the market economy cannot begin to develop, nor can it attract foreign investment. What is happening in Eastern Europe at the moment is unique and unprecedented, it is a learning process to which it is difficult to apply Western practices.

There are many problems associated with the privatisation programme. One of the most difficult things to do is to value the firms to be privatised. There are very large price and non-price distortions from pre-price liberalisation. Added to this is the need to develop capital markets so that a firm's future viability and performance can be assessed.

According to Gros and Steinherr the success of privatisation *'hinges on owners' ability to monitor managers' performance properly.'* One way of curing this problem is to bring in incentive based schemes, but this is easier said than done. What this highlights, however, is the lack of managerial and technical skills that exists in Eastern Europe. Traditionally the principal-agent relationship has been faulty. There are no real incentives or penalties at the managerial level, nor is there a realistic production response to a given set of prices. Furthermore, there has to be increased opposition from principals to the demands for wage increases. Ever increasing wages can lead to macroeconomic destabilisation.

Macroeconomic Effects of Privatisation

The macroeconomic structure is a very important issue. The uncertainty about the future presents huge risks. The return on any investment will need to be well above the opportunity cost of capital to be worthwhile. There can be a couple of effects on this structure due to privatisation. Firstly, privatisation will have an adverse effect on the budget. The tax revenue from enterprises will undoubtedly fall due to new competitive pressures. Furthermore, the restructuring process will require the writing off of a large number of bank loans. Finally, social safety nets will need to be implemented to protect employment and savings.

One can look at the actual effects on employment and savings. Hyperinflation and the distributive effects of privatisation may cause a fall in real wealth for a majority of the population. Savings will increase due to the widening gap between actual wealth and long-term wealth positions. However if unemployment is rising, then there will be an aggregate fall in savings (because unemployed people are usually dissaving). *'Labour supply of most individuals will increase and with a capital shortage sustaining at least in the medium term one would consequently expect rising unemployment rates.'* One can see the effect that privatisation can have on the economy; in Poland transfers to households have risen by ten points of GDP since 1989.

It is evident that privatisation is a process fraught with social, political and economic danger. It is a process that requires great care and great thought. The author now proceeds to examine the process in Poland and look at the various methods used and their success so far.

Privatisation in Poland

The 'big bang' reforms have had quite an effect on Poland. Unemployment doubled between 1989 and 1992. At the same time real GDP fell, by as much as 11.6% in 1990. It subsequently recovered and is projected at 5% for 1996.

Poland also experienced severe inflation in this period, peaking at 585.8% in 1990. In comparison with other Visegrad countries Polish inflation has been very high. It is evident that some control on prices has begun, with the inflation projection for 1996 being 18%. Poland has been referred to as being the 'tiger economy' of Eastern Europe due to its growth figures. Privatisation, however, has been very slow in getting off the ground in Poland. Weak governments and the return to power, in 1993, of the ex-communists have been largely to blame. At the same time private sector share of GDP had risen to 55% by 1994. This has been due mainly to new firms rather than newly privatised state firms. By 1993 only 200,000 jobs had gone from the state sector to the private sector, while the new private sector had created 3.5 million new jobs. The potential for real growth is obviously there.

The State Structure

When the new Government came into office in 1989, a governmental office was established to oversee the privatisation process. The first office established was the Government Plenipotentiary for Ownership Transformation, this became a full ministry in 1990. One of its most important tasks was to stop the spontaneous privatisation of state enterprise, and to reinforce state control over the whole process. Other important bodies are the founding organs of state enterprises, The Ministry of Industry or the local authorities. Their consultation is required in most privatisation cases.

The first form of privatisation examined here is 'spontaneous privatisation.' This is the name given in Poland to the unsupervised, uncontrolled conversion from state to private ownership by members of the communist elite. Not all of these practices were illegal, yet many were corrupt. Many of the ex-communists who still held a position of power, abused their positions. Enterprises were stripped of their assets; bank loans were taken out for the enterprises and then pocketed. Finally the enterprises in question would be declared bankrupt. The process was severely slowed down in 1992 when many of the state enterprise directors were ousted by the Solidarity-led Government. The whole period shows why there is a need for some form of state control over the privatisation process and why the Polish Government sought to gain such control.

Capital Privatisation

There are different forms of capital privatisation and Poland has tried different ones. A public offering was one such method tried. This is a very complex and time consuming method of privatisation and can only be applied to a small number of firms. Nevertheless it held a lot of attraction for the Poles. *'It promised an immediate move into the prestigious world of quintessentially capitalist finance: the introduction of stock*

exchanges, a myriad of financing instruments, banking institutions, mutual and pension funds, etc.' Indeed foreign advice was sought and legislation adopted to open a stock exchange in Warsaw. Unfortunately it did not quite work out. The selected companies had no experience of a market economy. Coupled to this were the centrally based prices of inputs and outputs. Due to this Western accounting methods were quite useless in valuing the firms. In the end the figures used were arbitrary. In 1990 only five firms were privatised this way and receipts fell well short of projections. Six more firms joined in 1991.

Trade sales is a way of selling large blocks of shares through public tender or a public auction. In deciding upon the sale, the Ministry of Privatisation weighs up several factors: price, the readiness to bring in new capital and the ability to maintain employment levels. The effects of this process have not been great, the number of firms privatised this way is still in double figures. Likewise management/employee buy-outs have not taken off. The reason for this is that there is another process; 'privatisation through liquidation' which has proven far more popular.

Privatisation Through Liquidation

So far 'privatisation through liquidation' *'has been the most successful Polish privatisation programme outside the field of very small units.'* It has been very popular because of the advantages it offers to the insiders. The process begins with a decision to liquidate a state enterprise. It can be used either for viable or bankrupt state enterprises. In the viable cases a successor always emerges. The interesting part of the process is that in addition to selling the assets, they may also be leased.

The leasing aspect has proven to be very popular. It has given an outlet to those who wanted the 'spontaneous privatisation'. *'Thus privatisation has had a very one-sided character both with respect to the form - leasing arrangements - and with respect to the final owners - predominantly the employees of the former state enterprises.'* At the beginning of March 1992 1,055 state enterprises had been liquidated, 545 new companies had been formed, of these 384 were formed by the employees leasing the assets of the liquidated enterprises. This has been a successful process in a couple of ways. As mentioned above, it has been a release valve for those seeking to engage in the 'spontaneous' process. Secondly, it has given many workers the chance to become their own bosses, thus adding a great incentive to succeed; the penalty of failure is shut-down and unemployment.

Small Privatisation

By far the greatest success in Poland has been small privatisation. *'Small privatisation concerns shops and other small units which are the property of local, rather than central, authorities.'* There has been no formal programme of small privatisation. Local authorities have been given a free rein on the subject. One of the problems faced was to decide whether communal property should be rented at market rates or at set prices. The pressure from insiders entailed that 90% of the rents were set at administrative prices, even though market rates were thirty to forty per cent higher. However, by the end of 1990 the Ministry of Privatisation published a report showing that 80% of 100,000 small and medium sized retail stores had been privatised. This has been a success story for privatisation in Poland, even if revenue from rents has been very low. What it does though is bring private property and business in at a grassroots and nation-wide level. It has helped enormously in spreading a privatisation and enterprise culture.

Corporatisation

At the beginning of the reforms in Poland, the Government wanted to move quickly and install a traditional capitalist system of corporate governance. This was to have been accomplished by corporatisation. It would impose a new legal regime and recentralise decision making. This was then to be followed by a British style sell-off. In Poland corporatisation is the *'transformation of state enterprises into wholly state-owned joint-stock or limited-liability companies governed by the rules of the Commercial Code.'*

Of critical importance to this was the reorganisation of corporate institutions and the reassertion of the state's ownership rights. More than this it was meant to be the first stage on the way to the change of ownership. Unions and insiders were opposed to the corporatisation process. They did not see much future in it for themselves, and feared future foreign take-over. The law enacted in the Summer of 1990 ended up being a series of compromises. Article 5 of the Act states that for the transformation to occur, the consent of the director and the workers' council is required. Basically it means that workers have a veto over any decision.

The Act also provided that 20% of the shares of each company could be purchased by the workers at a discount of 50%.

The idea of corporatisation was correct but it too failed in its goals. By the end of February 1992 only 407 enterprises had become wholly state-owned, just 5.3% of firms in the state sector. More interesting though is that 139 of these firms were being prepared for the mass privatisation programme.

Mass Privatisation

The Polish mass privatisation scheme has been years in the making. When the former communists regained power in 1993, the plans were shelved because of the new Government's distaste for market reform and its suspicion of foreign investors. However in July 1995 the mass privatisation programme finally began. *The Guardian* said 'it bore a striking resemblance to the annual talent draft in American professional sports.' The whole process relies on fifteen government appointed National Investment Funds (NIFs). The funds are run by a consortia of foreign and local institutions. They are mostly staffed by Westerners, a condition of The World Bank which is providing one hundred million dollars in support. Five hundred and fourteen state enterprises (with a book value of \$2.6 billion) were distributed amongst the fifteen NIFs, hence *The Guardian's* description. Each fund has 33% control of twenty eight companies and a 2% stake in each of the four hundred plus others. This means that 60% of all of the enterprises are owned by the NIFs. 15% is given free to employees and another 15% to pensioners and social funds. This leaves just 10% with the Government.

Twenty-seven million members of the public are entitled to buy a voucher for 20 zloty (approximately \$8.15). The vouchers can later be sold or exchanged for a share in each of the NIFs. Unfortunately opinion polls showed that only one half of the population were interested in taking up their option, which was launched on November 23rd, 1995. There is, however, a whole year in which to buy them. The only worry is that people will not see the long term value of the vouchers. People may wish to realise their vouchers, like in Russia, for a couple of bottles of vodka.

There are advantages and disadvantages to this scheme. Firstly, the funds will promote the fledgling capital markets. They are likely to list their best companies on the stockmarket to raise cash and to add value to their portfolios. The vouchers will also be listed and a separate market created for them. Secondly, the funds will bring a level of corporate governance to the market. Thirdly, the scheme brings the expertise and knowledge of some of the Western World's best banks and financial institutions to Poland. There will be incentives for the Westerners to stick with their portfolios. The fees earned will be based on the fortunes of their company. Indeed 'over ten years managers will be paid 15% of the value of the funds' shares.' Finally, the scheme will get millions of Poles playing, and taking a vested interest in, the markets.

There are also some difficulties with this scheme. All of the funds are saddled with government appointed supervisory boards, that are more concerned with the strong Polish unions. There have already been some clashes with Western investment banks like Yamaichi/Regent. Another problem is that the scheme is actually very small, it will only control 5% of state industry. The voluntary nature of the scheme may need, in the future, to be changed to a Czech style give-away. Finally, there has been a great lack of interest from the public who have got fed up waiting for the mass privatisation programme. *'If it is a failure at the beginning it will be a failure at the end.'* The next twelve months will give us the answer.

Conclusion

'The fundamental weakness of post-communist Poland's political infrastructure has made it extremely difficult to attain a workable social consensus about the nature of privatisation. In conditions approaching something like a political vacuum, it is very hard for social groups to articulate their opinions, interests, and political positions.' This is probably an accurate description of privatisation in Poland. Even though Poland was the first East European country to dismiss communism it has been slowest on the privatisation wagon. Undoubtedly the continuous change of governments and parliament has meant that many plans have been severely delayed. Ironically it is the strong unions that brought about change in 1989 that oppose it most now.

Perhaps the piecemeal Polish approach has been more successful than it looks from the outside. Certainly the mass privatisation scheme is anything but mass, but when one looks at Polish economic performance compared to the rest of Eastern Europe, it has been good. Inflation is dropping, employment is increasing and

GDP is growing at a steady rate. While much privatisation has taken place in Poland, there is still much more to be done. However maybe due to accident, rather than design, the slow approach seems to be the right one. The voucher scheme should be particularly interesting to observe, as will be the performance of the NIFs, as this could well be the groundwork for a truly mass privatisation of state enterprises. The next twelve months will tell. Nevertheless the dithering and the waiting may well have been worthwhile, as foreign investors' willingness to participate proves. If opposition from the unions and the former communists can be pushed aside, then there is a good chance of success. One thing is important and that is that Poland does not take too much more time in its quest for privatisation.

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Slovenia: Birth of an Adriatic Tiger

Fergal Shortall - Senior Sophister

The ex-Yugoslav Republics are associated with fractious in-fighting. The economic performance of these embryonic states is often overlooked at the expense of political and military analyses. Fergal Shortall investigates Slovenia, long regarded as the least communist of the republics, and finds a rogue economy beginning to reap the benefits of a terminated captivity.

Yugoslavia was always an outlier in economic models of communist countries, with its different system of ownership and isolation from the CMEA. Slovenia, in turn, with its specially Western outlook and relative wealth was always an outlier in comparison to the rest of Yugoslavia. However, upon the fall of the Berlin Wall and the collapse of communism throughout the region, Slovenia faced many of the same challenges which confronted other countries of Central and Eastern Europe. As the author shall endeavour to show, it has dealt with them with some success and in a manner which may prove useful for other transitional economies. After firstly giving some historical background, the author shall examine Slovenia's attempts at stabilisation and evaluate its success at fiscal reform, banking reform and privatisation.

Background

After the Second World War, a special brand of socialism developed in Yugoslavia under the rule of the iconoclastic Marshall Tito. Ownership of the means of production was defined as 'social' rather than 'state' - a formulation much closer to Marx's original concept than ever existed in the Soviet Union - and firms were managed by workers councils. No central planning existed after 1965 and each republic was given a high degree of autonomy.

For historical and political reasons Yugoslavia was never a member of the CMEA. Consequently trade was orientated much more towards the West and was thus more market-orientated than in any other country in Eastern Europe. As Pleskovic and Sachs put it, *'in general there was not a chronic shortage economy in the industrial sector or in consumer markets, so that inputs were available on a fairly reliable basis.'* This enabled Yugoslav firms, exemplified by Elan, a Slovenian ski manufacturer, to compete on quality in the West, something only a handful of firms throughout the region had been able to do. Economic reform had meant that 40% of prices had been liberalised by 1987 and this increased further during the following two years. By the end of the 1980s, then, the Yugoslav economy was moderately open, prices and imports were relatively free and the budget was more or less balanced. In spite of this, lax monetary and fiscal policy coupled with an unstable political situation, meant that Yugoslav economic performance had deteriorated considerably. Output growth averaged a mere 0.6% over the decade, unemployment 14% and, by 1989, inflation had spiraled to 2,800%.

Slovenia, with a population of about two million people, was the most northerly of the republics that made up the Yugoslav federation, and bordered on Austria and Italy. Its history and geographical location had meant that it was approximately 1.75 times richer than the Yugoslav average. As a result the Slovene contribution to the federal budget was 16.8% even though it had only 8.4% of the population. As the gap between Slovenia and the rest of the country widened, Slovenes became less and less willing to subsidise the overwhelmingly non-Slovene federation. It lies outside the scope of this paper to determine how much of the rationale behind independence was economic and how much was due to other factors. Suffice to say, however, that the Slovene economy was not overly dependent on the national market, and enjoyed a high degree of decentralisation and positive net outflows, all of which provided an economic basis to secession. The general election of May 1990 produced a Slovene government whose economic policy, according to Mencinger, *'was set by the premise that prospects of transition to a market economy were worsening; the economic policy of the federal government mistaken, the existing economic system unsuitable, and the Federation facing political turmoil.'* A referendum on independence passed with the support of 90% of the people on the 26th of December. Negotiations with the federal government came to naught and on the 26th of June 1991, Slovenia declared its independence. The federal government resisted this violently meaning that it was not until the 8th of October that Slovenian independence became a reality. Recognition by the European Union was not to come until the 15th of January 1992. In the meantime the rest of Yugoslavia descended into chaos.

Stabilisation

Stabilisation within Slovenia had begun before independence, as, indeed, it needed to, with inflation running out of control. Although prices were largely liberalised, federal policy was acting as a drag on reform. As a result, *'the Slovene government, having realised that the prospects of transition to a market economy within Yugoslavia were worsening, ... focused on pragmatic adjustments to policy measures of the federal government, on an acquisition of policy tools, and on a gradual construction of a normal economic system.'* More drastic measures would begin after independence. Although Slovenia was able to make a relatively clean break, independence was not without its costs, however. As Cvikl points out, in 1987 still over a third of exports went to the rest of Yugoslavia and many firms depended on it to create economies of scale. The loss of this market could not be underestimated. An estimated 6% drop in GDP was the direct result of independence and the civil war in what was left of Yugoslavia. This, however, was small in comparison to the shock caused by transition itself: industrial production shrank by 38% between June 1989 and June 1992. And yet, *'in a year, Slovenia increased its relative competitiveness, established sovereignty in the fiscal and foreign exchange systems, and prepared institutional settings for a 'new' country.'* According to Pleskovic and Sachs, *'an effective stabilisation programme requires a determined and strong government to enforce a strict monetary and fiscal policy, and financial discipline on enterprises and government.'* Stabilisation was achieved by autumn 1992, primarily through two mechanisms: the introduction of a new currency, and the creation of an independent central bank.

The Bank of Slovenia and the Tolar

A certain amount of monetary independence existed in Slovenia already. Since the late 1980s, an exporter who sold foreign exchange to the bank had been able to receive a convertible *certificate of export privileges* which allowed the bearer access to hard currency. The fixed exchange rate plus the price of the certificate totaled the flexible rate of exchange. In addition in May 1991, the 'Slovene ECU' was introduced as a unit of account, *'its value was to be determined by the average weekly price of the certificates on the Ljubljana stock exchange.'* Thus, for some transactions, there existed a *de facto* second currency. However a proper currency was needed because Serbia was printing money to finance its war efforts. This was causing further inflation and making monetary stability under the dinar impossible. The experience of expansionary monetary policy led to the establishment of an independent central bank, the Bank of Slovenia (BOS). According to Cvikl, this was *'crucial to implementing macroeconomic stabilisation policies after October 1991.'* In contrast to the Yugoslav central bank, it could only give short-term loans to the government to cover cash flow problems, thus preventing the monetising of deficits. The law mandated the BOS alone to execute monetary policy, free from political interference. Price stability and smoothly functioning domestic and international payments were its only objectives.

But would the new currency have a fixed or floating exchange rate? According to Mencinger, who was a deputy prime minister at the time, *'the debate on pegging versus floating reflect two opposite approaches to the transition in Slovenia in general: a radical and a gradual approach.'* In the end, though, there wasn't much choice. Although conventional wisdom favoured the fixed approach, Slovenia, for reasons explained below, didn't have the foreign exchange reserves to back it up and even if it had, fluctuating trade patterns made it impossible to determine the proper fixed rate *ex ante*. In October 1991, the tolar, as it was called, was introduced with surprising smoothness. Bank deposits were converted automatically on a one-to-one basis and 86 billion dinars (about \$75 per person) in cash were also exchanged in a very short period. The law already allowed contracts and even wage agreements to be denominated in foreign currency (as a means of inflation-proofing) so there was no change required here. However the principal reason for the ease of introduction was the fact that more than 80% of household monetary savings were in foreign currency deposits. Special accounts had been set up for emigrants' remittances (especially *Gastarbeiter* in Germany) as well as for the local domestic population. Deposits were credited to households while the foreign exchange was transferred to the National Bank of Yugoslavia in Belgrade to be used in debt servicing or in foreign exchange market intervention. Thus Slovenia itself initially lacked the foreign exchange reserves it needed to defend the tolar or even to pay out these deposits. This lack of foreign exchange led to some exchange restrictions at first. Initially the tolar started off at a rate of 32 to the Deutschmark. It immediately rose to 42:1 and by January 1992 had reached 56:1. It was at this point that, thanks to highly restrictive monetary policy, the exchange rate stabilised.

Fiscal Reform

Fiscal policy had been under Slovenian authority since 1974. Yugoslav law prevented individual republics from running deficits, so prudence prevailed. In spite of this, there were some blatant inefficiencies in the system, caused principally by Slovenia's very decentralised public sector. Each commune had independent authority to administer expenditures and set taxes. The same was true for social security contributions. Most public services, such as health and education were financed through earmarking funds at various community levels. To compound the confusion, each commune had its own budget. It was therefore impossible to accurately measure consumption and savings. Reform of the system occurred in early 1991. Direct taxation was revised and simplified. More comprehensive corporation and income taxes were introduced. Social insurance contributions were slashed and all previous off-budget funds were brought into the open. Revenue, however, was below target because of the shock of transition. The restriction on monetising the resulting deficit meant that government expenditure was cut considerably, from 48.9% of GDP in 1990 to 43.2% in 1991 (although much of these savings were accounted for by the ending of the federal budget contribution). This resulted in a budget deficit of just 2.6% in 1991. Much structural reform remains to be implemented however.

Banking and Financial Reform

The financial sector plays a key role in the transition process. It is paramount for resource allocation and mobilisation, and a prerequisite for any large-scale privatisation scheme. A lack of financial regulation in Slovenia has produced many problems. Firstly, most banks were owned by the firms to whom they lent. As a result, 30-40% of loans on the books were non-performing. This, combined with a monopolistic structure, has led to exorbitant lending rates, preventing many viable enterprises from access to capital. In addition the banking system requires recapitalisation and investment to improve service. Banks were audited in 1991 and in the autumn of that year, the Bank Restructuring Agency was founded to deal with these problems and to help restore competition. In the spring of 1992 a partial restructuring programme was prepared which included a proposal to issue bonds to cover the frozen foreign exchange deposits, but this was rejected by parliament. In spite of this, most banks have been privatised; indeed, only two banks are still state-owned. Capital markets remain in their infancy though. Thirty-three banks and financial institutions founded the Ljubljana Stock Exchange in December 1989, but, as of yet, only they can buy its shares, although other institutions can become members. Most of the trading is accounted for by government bonds not equities, however.

Privatisation

Because of its unique method of ownership, the challenge facing Slovenia when it came to privatise its enterprises was one quite dissimilar to that faced by other transition economies. Because firms were owned by 'everybody and nobody' and not by the state, the government could not force a company into privatisation: the initiative had to come from the firm. The 1988 Mikulic commission had proposed radical changes in the structure of ownership and constitutional amendments were enacted to this end. A new economic and labour relations code was introduced, four types of potential ownership were defined (social, co-operative, mixed and private), and the business firm was created as a legal entity. Although half-hearted *'they nevertheless created preconditions for a rather swift transition to a market economy unthinkable in other countries of Central and Eastern Europe.'* However, as Yugoslavia began to break up, the Slovene parliament suspended privatisation because it viewed the method as the giveaway of social property, thus leaving property rights in limbo.

Since then progress has been slow. Part of the reason has been due to a fundamental dichotomy on the goals of privatisation. Is privatisation merely a means of increasing efficiency, or are there valid distributional issues too? There existed two rival privatisation codes corresponding to each view. The first, an internal privatisation model proposed by Mencinger, among others, was gradual, commercial and decentralised. Firms themselves would be the instigators of privatisation and management or worker buy-outs would be encouraged; the government would merely act as a rule setter. This laid the emphasis on sales rather than distribution and had the advantage of seeming suited to a relatively efficient economy. It would rely on existing infrastructure, would be reasonably cheap and easy to administer, and would avoid institutional shocks. Above all it would make sure that the people who wanted the shares got them, and that the new owners were free to choose the company form. However valuation problems could lead to windfall gains for investors and it would have perpetuated the existing, socialist, management structure. A second proposal led by Sachs, among others, wanted to introduce a voucher scheme, similar to that used in Poland and Russia.

Shares would be distributed to citizens free of charge, either through vouchers or via institutional companies who would manage the funds. This would immediately create a Western model of ownership and was equitable. However it neglected efficiency issues and produced a large number of 'passive' owners. In some ways it was simply maintaining ownership by 'everybody and nobody'. The political turmoil which resulted was not just about the efficacy of the different models, but rather a struggle over who was going to end up owning or controlling Slovenia's assets. The dispute ultimately caused the fall of the government in April 1991.

In the meantime privatisation continued in a haphazard manner. In autumn 1991, in spite of broad popular support, a second draft law was blocked by the third legislative chamber, itself representing the managers of the firms to be privatised. The *Law on the Transformation of Social Ownership* was finally passed at the end of 1992. A Privatisation Agency and Development Fund were established. The Privatisation Agency would have a monitoring brief, the Development Fund would actually manage the disposal of shares. 20% of shares in their enterprises would be distributed to workers and managers for free. Forty percent of the shares would be reserved for institutional investment funds, vouchers in which would be given to the people. The remaining 40% would be sold to workers and managers, or outside investors. It allowed for quick privatisation with a majority of active over passive shareholders, but didn't clarify the position on property rights. Nevertheless, by June 1995 over 685 companies had reached first stage approval, and a further 210 had reached the second stage.

Assessment

As Cviki puts it, Slovenia has been a '*pathbreaker in stabilisation and currency reform.*' Real economic growth is estimated to have been 5.5% in 1995. The exchange rate is stable and unemployment is falling. Per capita income is the highest in Eastern Europe. Slovenia joined the World Trade Organisation in June 1995, has brokered a free-trade deal with EFTA and grows ever closer to the EU. Although progress has been slow on privatisation and financial restructuring, the delay has proved neither catastrophic nor insurmountable. There may not be a Slovenian model to copy but there is much that it can offer to other post-communist economies.

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Are Women Driving Men from the Workplace?

John Reynolds - Senior Sophister

Women have become increasingly active in the Irish labour force in the last three decades. However, has this been at the expense of male workers? In this investigation, John Reynolds employs econometric analysis to see if the claim that more women in the workforce drives men out of it can be substantiated. *'Change is inevitable....change is constant'*

-Benjamin Disraeli

Despite the fact that for years women have campaigned to be treated equally with men in the job market, no country has actually achieved this. Yet 'change is inevitable' - recent changes in the labour force have provided women with increased opportunities. In most industrialised countries, the gap between male and female employment - and their wage levels - has narrowed. It therefore begs the question - has women's increased participation in the labour force driven men from the workplace?

Figure 1

(Source : OECD Labour Force Statistics 1970-90 : pp.286-287)

The evidence for Ireland, as indicated in figure 1, shows clearly that during the period 1970-90 male unemployment has seen a steady increase, with only a slight fall away towards the latter half of the 1980's, while female participation has also steadily increased - an indication of a possible relationship between the two. The question of whether or not this increased female participation is directly to blame for increased male unemployment shall be the focus of an econometric investigation in section 3 of this piece.

The purpose of this project is two-fold in its aims - firstly, to examine the causes of increased female participation in Ireland, and secondly, an econometric investigation of the sectors of the labour force that have been shown in the literature to have the greatest influence on the level of male unemployment. It is the author's aim to conclude that increased male unemployment has resulted from a changing structure of employment in modern economies, with a resulting shift toward the service sector and part-time employment, from which men have lost and women have gained jobs. Increased female participation and an increase in male unemployment are the result of these changes - hence increased female participation is not to blame for pushing men from the work force, rather the blame lies squarely at the feet of the forces of society responsible for the shift in the structure of employment, from sectors deemed the traditional 'domain' of men to sectors where women have been the greatest benefactors.

Increased Female Participation

Approximately one-third of Ireland's labour force of 1.305 million in 1990 was female. They tended to be young, mainly in 'traditionally' female employment, and were inadequately represented in managerial and skilled occupations. They dominated secretarial-type work and part-time work, with average earnings at a lower level than that of their male counterparts. They tended to drop out of work and raise their family, experiencing difficulties re-entering the labour market, as discussed in Davidson and Cooper. Yet an increasing female participation rate coincided with an increased male unemployment rate - have women pushed men from the labour market? Why has it been easier for women to find jobs than men? The main answer lies in the way women's working lives differ from those of men.

To begin with, it is important to note that the significant developments in female labour supply has naturally attracted the attention of researchers and policy makers, so that the bulk of recent labour supply literature has concentrated on women. The labour force participation decision of women has also been studied in detail in many countries - the list of explanatory variables is lengthy but most studies contain a subset of the following:

- female wage;
- male wage;

- nonwage income;
- labour market conditions;
- marital status;
- employment status or earnings of husband, when appropriate;
- number of children;
- years of education;
- age.

In an ideal world all 9 variables could be examined in the case of Ireland, but due to the spatial constraints imposed on this project, the author has chosen to concentrate on labour market conditions, particularly the changing structure of sectoral employment.

In all rich countries, most women are crowded into a handful of occupations. These are secretaries, shop assistants, nurses etc. - the list varies surprisingly little between countries, and Ireland is no exception.

Women in Ireland have predominantly worked in the clerical and catering sectors (service) making up some 69.8% and 77.4% of total employment in 1990 in each sector, respectively. On the other hand, women constituted a mere 9.1% of the total employment in the agricultural sector in the same year. The fact of the matter being that women have not, on the whole taken men's jobs. Rather 'women's' jobs have expanded in the past couple of decades while so-called 'traditional' male jobs have been disappearing (see Table A). This is particularly striking if one looks at the split of the sexes between agricultural and service jobs. A larger proportion of women than men work in the service industry, and women are less likely than men to be employed in the agricultural sector. So as agricultural jobs have vanished, it is mostly men who have become unemployed. Conversely, service employment has grown - in particular clerical, health care, education and social work have expanded with women being the main beneficiaries.

Table A

Sector	% of total employment 1971		% of total employment 1990	
	Ireland	OECD	Ireland	OECD
Service	43.0	50.3	56.4	62.9
Industrial	30.8	36.4	28.6	29.6
Agricultural	26.2	13.3	15.0	7.5

(Source: OECD Labour Force Statistics 1970-1990 : pp.42-45)

In an attempt to provide an explanation for the increased female participation in the labour force, Rothschild examines the merits of the main approaches proposed in economic literature. Principally, two dominant tendencies can be observed - a microeconomic, supply oriented 'neo-classical' approach and a more demand oriented, macroeconomic and structural view-point. The microeconomic approach, which dominates the field, attempts to explain the determinants of female labour supply decisions in terms of the traditional elements of economic analysis: utility-maximisation in response to market signals (prices) and given resources (material and human capital) under special constraints. Accordingly prices (wages of women and their husbands), human capital (education levels) and various constraints (number and age of children, lack of nurseries etc.) are found to be the main components in an attempt to find the determinants of participation decisions. Yet, while there can be little doubt that these efforts have produced interesting and impressive results (in showing that at any moment in time some, if not all of these elements play a significant role in determining the probability of whether a woman will be in the labour force or not), a problem is encountered in their explanatory ability. For example, is the labour market entered into because one has few children and a high level of education (as theory suggests) or does the decision to enter the labour market lead to a reduction in the number of children and the furthering of one's education? Cause and effect, it would seem, are interchangeable.

Rothschild points to a less dominant and rather loosely presented explanation with regards to structural changes. Put simply, it proposes that with rising productivity and income there is a continuous shift in demand, production, and employment from the primary to the secondary and, finally, to the tertiary (service) sector. As previously noted (Table A), female labour is traditionally biased toward the service sector, hence this trend has favored the activation of a dormant supply of women whose share in employment has consequently risen. In view of the parallel increase in the importance of services and female employment in all countries, it is obvious that this explanation has a high degree of plausibility and its significance should not be denied. Yet again, however, we are faced with the possibility of reverse causation - could it be that an increase in women's propensity toward the labour market has, by increasing the availability of suitable labour, helped to accelerate the expansion of the service sector? In his econometric analysis of the determinants of increased female participation in the labour force, Rothschild finds some support for this final explanation with regards to structural changes, but also notes that female attitudes towards work, as developed by society, are of no small significance.

The changing gender structure of employment in the richer economies, including Ireland, is indicative of yet another, relatively unexplored dimension of the so-called '*new international division of labour*.' In this new division, jobs are shifted from high-wage secure employment to ill-paid casualised work. Despite the fact that the total level of employment in Ireland increased from 1.151 million in 1979 to 1.152 million in 1990, the growth of jobs on part-time and short-term contracts has, in contrast, been substantial. In 1979, only 1 job in 20 was deemed part-time, but by 1990 the proportion had become 1 in 12. The fact of the matter being that, as can be seen from figure 2, the majority of part-time workers in Ireland have continued to be female.

Figure 2

Mitter further argues that the resultant shift in the gender structure of employment in Ireland mirrors the experience of all western countries and points '*to a new thrust in the restructuring of capital*.' This restructuring is fundamentally based upon the accepted division of work in the domestic sphere. As it is the women who are deemed responsible for housework and childcare, it is considered 'normal' for them to be satisfied with ill-paid and insecure jobs. This theory is given added weight in an article in the Economist- the article suggests that part-time work suits employers because it helps them to reduce their wage bills. It also allows them to employ workers only when they need staff, as opposed to keeping idle people on their payrolls. Moreover, firms also find that part-timers often cost less per hour than full-time employees. Even if they manage to get the same hourly rate, part-timers may not qualify for costly fringe benefits such as paid sick leave, holidays or occupational pensions. All of which seems to suggest that the restructuring of employment from full-time, secure employment to that of part-time employment which has become a feature of the labour market in Ireland in recent years, has led to a shifting gender bias favouring women over men.

Another key element in the increased participation of women in the labour force arises in the context of legislation with regards to women at work - legislation which has seen some notable changes in the last 22 years or so. Such changes include -

- The removal of the Marriage Bar in 1973. This was a legal bar to the recruitment of married women to the Civil Service, or to their retention after marriage.
- The Anti-Discrimination (Pay) Act of 1974 which was aimed at ensuring that men and women receive equal treatment with regard to pay.
- The Employment Equality Act of 1977 which made it unlawful to discriminate on the ground of sex or marital status and also provides for the establishment of an Employment Equality Agency.
- The Maternity Protection of Employees Act of 1981 which provided maternity protection for employees who are expecting a baby.

Another major grievance of women during the seventies was the continuing discrimination against women in the tax code. A Supreme Court decision in 1980 with regards to sections 192-198 of the Income Tax Act of 1967, which deemed all income of a married woman living with her husband to be the income of her husband, led to the introduction of a new system of taxation of married couples whereby all married couples, whether with one or two incomes, were granted double the personal tax-free allowance and tax bands enjoyed by single people. Clearly, the changes to legislation in recent years with regards to women and work have presented increased opportunities for women in the labour market and, hence, increased female participation.

To conclude this section, it should be noted that the factors underlying the growth in female labour force participation over recent decades are complex, and that there are varying views as to the degree of emphasis that should be given to the different influences in explaining this growth. It is clear that all of the factors mentioned have had an impact, but the existing body of research does not allow us to determine clearly the relative importance of these different influences.

The Experiment

An econometric investigation of the influence three variables have on the level of male unemployment in Ireland between the years 1970-1990 now follows. These variables include;

-Female employment

-Industrial employment

-Agricultural employment

in Ireland during the years 1970 to 1990.

The Model

Y variable : The total number of males deemed unemployed in Ireland between the years 1970 and 1990. The figures from 1970-74 are official estimates based on the 1966 and 1971 Census, and those from 1975-90 are the figures established from the annual labour force surveys. A large increase between 1980 and 1987 occurred, male unemployment rising from approximately 60,000 to 180,000. A subsequent fall to below 140,000 by 1990 occurred after this.

X1 Variable : The total number of females deemed employed in Ireland between the years 1970 and 1990, drawn from the same sources as male unemployment. The extent to which this variable influences the Y variable will answer the question of whether increased female participation in the labour force has affected male unemployment levels - a positive 1 is expected indicating a positive relationship between female employment and male unemployment.

X2 Variable : The total number of people employed in the Industrial Sector in Ireland between the years 1970-90. The very fact that this sector is predominantly the domain of men would lead to the assumption that an increase in total employment in this sector would, in turn, lead to a reduction in total male unemployment - a negative relationship, as demonstrated by a negative 2, is expected.

X3 Variable : The total number of people employed in the Agricultural Sector in Ireland between the years 1970 and 1990. As the Agricultural sector has always been the domain of men, even more so than the Industrial sector, a strong negative relationship between this variable and male unemployment, as demonstrated by a negative 3, is expected.

The model is linear of the form:

$$Y_i = + X_{1i} + X_{2i} + X_{3i} + e$$

where , 2 and 3 are parameters and e is the error term.

Results

In estimating the model time series data from 1970 to 1990 has been used. All the data for the four variables has been taken from the OECD publication 'Labour Force Statistics 1970-90'. With the aid of the computer package SPSS, the multiple regression was found to have a coefficient of determination, R^2 , of value 0.97063, which indicates that female employment, industrial employment and agricultural employment together explain approximately 97% of the variation in the level of male unemployment in Ireland during the period 1970-90.

Table B

Regression Results

Variable	Parameter Estimator	t-statistic
	0	
Constant	658.1917	6.244
	1	
X1	-0.179053	-0.729
	2	
X2	-0.788562	-7.462
	3	
X3	-1.118785	-5.952

Closer examination of the evidence produces less than 'inspiring' information. To begin with, the parameter estimate 1 is negative which thoroughly contradicts the original hypothesis by suggesting a negative relationship between female employment and male unemployment. This indicates that an increase in female employment is consistent with a fall in male unemployment. This suggests that not only is increased female participation not responsible for pushing men from the labour force, in the case of Ireland between the years 1970-90 increased female participation in the labour force was responsible for pushing men from the dole queues into jobs (or retirement). That said, the parameter estimates 2 and 3 are negative, as was originally hypothesized, indicating that both industrial and agricultural employment are negatively related to male unemployment, with agriculture having the stronger (larger negative value) negative relationship. Examination of the t-statistics reveals that the parameter 1 is statistically insignificant at the 5% level. Therefore, the original hypothesis of a positive relationship between female participation (as represented by my chosen proxy - female employment) and male unemployment was found to be inaccurate, although both industrial and agricultural employment were found to have a positive relationship with male unemployment as had been originally hypothesized, albeit at statistically insignificant levels.

Analysis

Variations in the level of male unemployment can be significantly (~97%) explained by variations in the three chosen independent variables; female, industrial and agricultural employment in Ireland between 1970-90, but the premise for the experiment - to reveal a positive relationship between one's proxy for female participation in the labour force and male unemployment - was wholly contradicted by the findings of the econometric analysis. This could have resulted from a number of problems contained in the regression;

- The proxy used in the analysis for female participation, namely female employment, is a very debatable measure but was introduced as the other variables were in absolute terms - the introduction of a relative term as contained in the percentage of female participation would have seriously damaged the results of the analysis.
- There exists a high level of multicollinearity among the chosen independent variables which seriously damaged the results.
- The analysis was 'complicated by the high levels of autocorrelation' among the individual variables - for example, women's participation in the labour force is correlated with the status of her husband, the level of household income etc..Autocorrelation refers to the correlation of disturbance terms (ϵ_i).

Hence, any attempt to draw any conclusions from the analysis was ultimately doomed from the offset of the analysis. The econometric investigation has added little to what was originally hypothesized - that increased female participation in the labour force and increasing male unemployment are both by-products of an ever changing structure of labour, a structure which has shifted from the industrial to the service sector, from full-time, secure employment to part-time and short-term work, as illustrated in section 2.

Conclusion

The gender structure of employment worldwide has experienced dramatic shifts in recent times. Ireland is no exception - an increasing male unemployment rate has coincided with a rising female participation rate. What is the explanation for this increasing female participation rate? Has increased female participation in the labour force pushed men from the workplace? In this project, this very question was addressed with respect to the case of Ireland during the period 1970 to 1990. Such is the complexity of these questions, this project has merely scratched the surface of these issues. Nevertheless, it has been shown that this period is characterised by a changing structure of employment in modern economies, with a resulting shift toward the service sector and part-time employment, from which men have lost and women have gained jobs. Upon econometric investigation, male unemployment in Ireland during this period was found to be significantly explained by the three chosen variables - female participation (as given by one's chosen proxy, female employment), industrial employment and agricultural employment - but closer examination revealed a negative relationship between male unemployment and female participation, indicating that during this period increased female participation was associated with a fall in male unemployment, truly a perplexing result. The econometric investigation, it would seem, has added little to what was originally hypothesized - that increased female participation in the labour force and increasing male unemployment are both by-products of an ever changing structure of labour, a structure which has shifted from the industrial to the service sector, from full-time, secure employment to part-time and short-term work.

As Disraeli said 'change is constant' - increased female participation and rising male unemployment during the period 1970 to 1990 were by-products of an ever changing structure of labour. Increased female participation in the labour force is not to blame for pushing men from work, rather the blame lies at the feet of those forces which have brought about the changes in the structure of labour.

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The Irish Plague - Symptoms and Antidotes

Barry O'Donnell - Senior Freshman

The problem of unemployment has plagued economic theorists and politicians for generations. Ireland has the third highest unemployment rate in the EU, despite the authorities overtly seeking to reduce the scale of problem. In this piece, Barry O'Donnell attempts to outline several possible causes of and solutions to the scourge of the Irish economy in a national and international context. There has been a dramatic rise in unemployment in the 1980's and 1990's throughout the OECD (Organisation for Economic Co-operation and Development). This has been particularly noticeable in some European countries such as Spain and Ireland where unemployment rates are 18% and 15% respectively. Considering that Ireland has experienced high levels of emigration in the past thirty years this figure is even more startling, and has led to the reduction of unemployment becoming a primary objective of consecutive Irish governments. Many emotional speeches have been made regarding this problem without there being a clear understanding of the causes of unemployment. The first half of this paper will try to shed light on some of the causes of unemployment emphasising the phenomenon of long-term unemployment, while the second half will deal with possible solutions to this serious problem.

Traditionally espoused causes of unemployment can be divided into two distinct, but interdependent phenomena; (i) structural rigidities that exist in the labour market, and (ii) a changing global economy. Commentators have put forward three influences in relation to structural rigidities in the labour market; rigid real wage, inflexible labour demand and inflexible labour supply.

Rigid Real Wage

This is the classical interpretation of unemployment where the real wage rate is set above the equilibrating real wage rate. There are two possible explanations for this: pressure from trade unions and an unwillingness on the part of employers to reduce wages to their 'clearing level' because of a desire to reap efficiency gains. As regards the first explanation, studies have shown that there is no positive relationship between the strength of trade unions and unemployment. It seems, however, that non-centralised, across-the-board wage agreements have imposed a rigidity on the labour market and may be causing the rise in unemployment.

In order to reduce labour costs by reducing turnover costs firms pay a high real wage (called an efficiency wage) to discourage workers from being unproductive or seeking higher remunerated work. As yet, there is very little evidence to suggest that efficiency wages are causing unemployment although it must be said that the growing sectors of the economy are those that would generally be expected to have efficiency wages.

Rigid Labour Demand

Two factors which tend to make labour demand inflexible to changes in the real wage are employment protection legislation and the influence of activities in the product market. The former tend to reduce job creation as they discourage firms from hiring new workers. High dismissal costs make employers cautious about hiring workers with little experience. As regards the latter, imperfectly competitive product markets choose supernormal profits over increased employment. This means that market prices are high and employment levels are reduced. This problem can be reduced through effective competition policies.

Rigid Labour Supply

This is a very serious problem in Ireland and it is, in the author's view, one of the main reasons why unemployment is so high. The main factors involved here are the level and duration of unemployment benefits and the high levels of taxation. The 'replacement ratio' is defined as the proportion of an individual's take home income replaced by unemployment income. Many commentators suggest a replacement ratio in excess of 80% represents serious inefficiencies in the tax and social welfare system leading to the discouragement of people from working. Statistics show that one-fifth of families with three or more children face replacement ratios in excess of 100%. Marginal rates of taxation are very high in Ireland, particularly for

lower income workers (up to 100% for some individuals) and this seriously discourages potentially lower income labour from searching for jobs.

Over half of Ireland's jobless workers are considered long term unemployed, that is longer than one year without employment. Factors such as a loss of motivation and skills lead employers to regard the long-term unemployed as unemployable. As Colm McCarthy has said, however, before someone becomes long-term unemployed they must first have been short-term unemployed, hence the problem is created by the causes discussed above. One of the reasons that so many drift from short-term to long-term unemployment is the availability of high unemployment benefits.

The second phenomenon which is often believed to be causing high unemployment is the changing global economy and this can be divided into (i) increasing international trade, and (ii) rapid technological change. In reality, these factors are not *directly* causing unemployment. It is more a case of economies failing to adjust to these changes.

International Trade

In neo-classical theory, increased international trade will lead to job losses in some sectors and job creation in other sectors with no overall effect in relation to employment. The main impact should be an increase in living standards due to efficiency gains. The problem for countries like Ireland is that some labour and product markets are inflexible and this is leading to unemployment. There is not, however, a great deal of evidence to support this and, in fact, there has been increases in employment, arising from economic growth, that are directly attributable to an improved trade balance.

Technological Change

The long-term effect of technological change should be increased living standards. For countries like Ireland, however, there may exist short-term effects such as increased unemployment resulting from the labour market's inability to accommodate technological change. Countries like the US and Japan have experienced huge technological change and yet have still managed to adapt quickly to keep unemployment low. In order to be able to adapt quickly to these changes the economy must be able to upgrade the skills of the labour force and redesign firm organisation. This had been a serious problem in some OECD countries and has led to high unemployment.

Possible Solutions

Let us now concentrate on possible policy solutions to the unemployment problem in Ireland. Short-term answers to the problem are difficult to implement and it must be adduced that in the face of many policy solutions, substantial numbers are likely to remain unemployed, throughout the next ten years at least. However, it is generally better to secure modest progress than no progress at all. We will consider the short-term strategic options available to Ireland and then the longer-term options. First, however, the author wishes to analyse Irish people's dependency on governments to accomplish necessary changes.

Ever since independence there has often been a tendency on the part of the Irish people to view governments as the answer to all of their problems. As Kennedy points out, *'Even economists of the far right, with strongly held views about the power of the market, will, when confronted by a problem, instinctively respond by reference to what governments are expected to do about it.'* There are, of course, many factors which constrain the power of governments, not least the unwillingness of the electorate to support necessary remedies.

As regards short-term solutions, the key areas are (i) infrastructure, (ii) disincentive effects of taxation and public expenditure, and (iii) the moderation of restrictive practices.

While the EU structural funds have been valuable in providing additional funding for the development of the economy's infrastructure, a dependency mentality has been created. With the expansion of the EU, the funds are set to dry up in the late 1990's, and this will test Ireland's ability to take care of itself. The Culliton report emphasised the need to develop Dublin Port which has been mismanaged in the past.

One of the major problems with the system of tax incentives/disincentives in Ireland is they are often contradictory in operation e.g. a tax incentive is given to encourage manufacturing such as the 10% corporation tax rate, but its impact in improving the relative attractiveness of manufacturing is nullified by such measures as Section 23 relief for construction. There are too many taxes in the Irish system which encourage 'rent-seeking' activities and these need to be abolished or, at least, reduced.

There is a need to encourage competition and break down restrictive practices in professions (law, medicine, etc.) and in financial services. This will encourage efficiency, and bring about employment opportunities. It has been pointed out that government regulation of various services may restrict entry and limit employment opportunities.

In considering long-term options, it is useful to keep an eye on whether there are any other countries which offer a model of what Ireland may wish to achieve. The range of possible options can be clarified into four broad categories. The first two models- the Korean and American models- are very ambitious but essentially for independent trade blocs, and in the author's opinion, are not quite appropriate for a country that is part of a large organization such as the EU. The third option- the Scandinavian model- would be to increase labour intensity of production, not in the market sector, but through publicly funded activities. Productivity growth would continue to be strong in the market sector, but the resulting income gain could be used to finance pro-active manpower policies. Ultimately, the idea is to use the after-tax incomes of the employed to give useful work to the unemployed. The best example of this is in Sweden, where long-term unemployment has been curbed through the implementation of manpower programmes. A key element of this policy is a restrictive approach to paying unemployment benefits in order to ensure co-operation in responding to these schemes. Problems which Ireland would probably encounter in trying to implement this policy include strong opposition from trade unions, very high costs and the sheer scale of the unemployment in Ireland.

There is a fourth model which suggests upgrading the traditional Irish way of coping with surplus labour by not only tolerating emigration but actively encouraging it. This, however, could give rise to strong anti-government feelings which would be damaging to national morale. It is also doubtful if the approach would enable Ireland ever to catch up with the rest of the EU in terms of living standards.

Conclusion

In reality, there is no quick and easy solution to the unemployment problem in Ireland. In addressing the possible causes, in particular the real rigidities in the labour market, we may turn to such policies as further alteration of the existing tax and welfare system and perhaps more radical moves such as erecting some of the Nordic prescriptions. Of course a large cultural gulf still exists here, yet we must seek a pro-employment agenda.

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A Rein On The Irish Government

Michael McBrinn - Senior Freshman

The role of the government in the economy is an old chestnut to theorists of various stripes. The issues of governmental regulation and co-operation with other governments are topical and contentious among Irish politicians and economists, be they bar-room or professional. In this piece Michael McBrinn adopts a contemporary Irish angle on these two areas, and finds an economic role for the government, albeit one under the dictat of the market.

The scope for intervention by Irish policymakers seems to be diminishing at pace. European Union constrictions on the government's freedom to act have been widely felt. Can regulation, though, be restrictive in itself to the workings of the market? This essay will attempt to assess this issue by focusing on regulation and intergovernmental co-operation. Thus, while discussing the tradeoffs involved in regulatory control, this paper will concentrate on its function as a consumer safeguard and 'corrector' of market imperfections. Then one will discuss the issue of government sovereignty in Europe, of which recent events may imply paradoxically a transfer of power to the marketplace. One shall conclude by acknowledging the important, if somewhat limited, role governments have in the economy.

In the height of economic lethargy over the last four years in Japan, those lamenting the burden of government regulation deserve some credibility. With business costs approaching the world's highest one begins to see the reason. Regulation is, in some respects, a tool that confers control without the market bargaining chip, money. However, it might better be seen as a transferred expense, ask any Japanese businessman. Alternatively, it could be seen as a deferred expense when the need to deregulate and placate interest groups affected becomes imperative, ask any Japanese policymaker. Depending on the scope of its influence, it acts as a counter balance to the economic players in the marketplace, but is it really so bad?

While many hail the benefits of consumer sovereignty, and a producer that serves the needs of the customer, the increase in consumer protective legislation seems to suggest our joy should be qualified. On the one hand, this would seem to refute the role of the consumer as the best judge of his/her welfare and as an autonomous player in the marketplace. However, in one sense, consumer protection is the very safeguard of consumer sovereignty. If we take the case where a producer 'generates' consumer needs through effective marketing only to ill-satisfy them, we must ask ourselves, who is directing who? If this seems far fetched, perhaps then we should look at the recent Package Holidays and Travel Trade Act (1995). The legislation involved is designed to ensure that what appears in the holiday brochure coincides with reality. In this instance, the government is forced to act as a check on the producer. It corrects a market imperfection, which relates to the next point in this essay, by restoring consumer direction in the marketplace.

If a market is to be free, ideally it should be independent of the players in the market. Its power should be collective, owned by its players but controlled by nobody. This can be justified, most obviously on efficiency grounds. Take the case of a monopoly, by producing less than society desires at a price above the market clearing level, it leads to a wastage of resources and a producer rather than a consumer directed market. On grounds of equity, the market is no longer free, since entry is likely to be impeded by technological advantage or scale economies in production. In this light, the intervention by employment minister, Richard Bruton, into the purchase by Independent Newspapers of a large stake in the Irish Press group, is hardly surprising. The concern here being that Independent Newspapers would hold a dominant position in the Irish media market, dispelling the idea of market sovereignty to the detriment of the consumer and other market producers. Of course, a cynical view of this might be that a politician depends greatly on his/her image portrayed by the media. Thus, by controlling monopoly power here it might reduce the chances of a single, perhaps poor, image being portrayed.

From issues of market and consumer sovereignty we can now move to consider the fading notion of government sovereignty in contemporary Europe. Concerns raised over the movement to a single European currency have added fuel to the debate. The rules laid down in the Maastricht treaty have placed a considerable constraint on the scope of government policy, both in fiscal and monetary terms by necessitating a limiting of the government deficit and holding inflation at a low level. Arguably, this is a positive aspect in

a world where policy is directed by elected officials, dependent on popular approval in the short and medium term. However, in committing itself to fiscal and monetary austerity, the government loses some power to stabilise the economy in times of recession. Secondly, by ceding control of exchange rates we are handing over the possibility of a competitive currency devaluation, especially in the light of a weakened sterling. Effectively, one could argue that a united Europe involves a transfer of power from national governments to the marketplace, with economic players acting as a more potent balance to elected officials. Economic expediency and the movement towards a greater competitive ideal was vividly illustrated by the furore created at European level in response to proposals of a government injection of cash into Irish Steel. The days of an uncompetitive government subsidiary sustaining market share appear numbered.

Conclusion

The government's role appears to lie in making incremental corrections to market faults while ceding control on a wider level over the direction that very market takes. While we must qualify regulation by taking account of corporate costs, the role of economic forces cannot go unchecked (as Independent Newspapers learned). We should also qualify our enthusiasm for the drive towards European Union by the potential isolation it could create in the event of an economic downturn or a loss of competitiveness. We must expect a certain trade-off in the weakening of government powers, of what gravity, unfortunately time will have to tell.

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The Future of Irish Rail

John Carty - Senior Sophister

Irish Rail, for many an infrastructural necessity, for others a money drain, has always been near the top of the 'worries' agenda. Yet few coherent policy directions have emerged. Can we turn yet again to our (so often) economic role models - Sweden and Japan - for inspiration? John Carty argues that we can, and that perhaps a major change is needed to put it back on the right tracks.

Irish Rail has existed in a constant state of financial crisis since its incorporation under the 1944 Transport Act. This essay will examine the history of the CIE in an attempt to explain the situation that Irish Rail faces today. By using the reports, criticisms and suggestions from various investigative bodies such as the European Council of Ministers, this essay will offer an analysis as to how Irish Rail can reduce the financial crisis if not solve it. Included in the analysis will be an examination of other rail networks which have succeeded where the Irish network has failed. The final section of this essay will provide possible future policy objectives based on the past experience of CIE, recommendations from the investigative bodies and the successes of the Japanese and Swedish railways.

CIE was incorporated into the Irish Government under the Transport Act of 1944 as a result of rising financial losses by the Great Southern Railway Company. The government strategy was to let CIE manage the operation of the national rail network with occasional subsidies from the Exchequer. It was soon apparent that further capital was needed to combat the recurring financial losses. After the failure of the first policy, CIE decided to write off six million pounds of its debts with the governments permission. This was achieved by writing down the capitalisation value of the company. This strategy was aided in turn by a £1.75 million per annum subsidy which was to improve the structure and operation of the company.

This once-off attempt at debt clearance failed and a policy of recurring subsidisation was introduced to cope with the financial losses. Throughout this period, CIE defended its right to government subsidies, arguing that the welfare benefits to society outweighed the costs. An interesting argument, since the utility benefits accruing to society can not be quantitatively measured. By the 1970's the company's deficit had increased by a factor of 45 in real terms. Since the majority of CIE's deficit is incurred by Iarnrod Eireann (80% in 1991), any plans to revitalise the company must start with the restructuring of rail transport.

The 1990 European Conference for the Ministers of Transport tackled all aspects of transport. In particular they blamed the gradual decline in railways on excessive infrastructural costs:

'For many years, states as owners of the railways have failed to give them the capital injections needed. Railways have therefore been obliged to borrow from outside and most have to bear the burden of increasing debts which in too many cases means that they could never be expected to achieve balanced financial results. In particular the fact that the railways, unlike their rivals, are responsible for their infrastructural investment costs is a decisive factor in this connection.'

The costs of constructing roads has never been directly borne out by the users of the road despite road tax and toll systems. However it can be argued that people using the roads are willing to pay for rail infrastructural costs in the light of the apparent absence of costs in using roads as a result of state subvention.

The result of the 1990 Conference was a series of solutions which proposed to address the problems faced by railways:

1) Clearance of Debts.

The Ministers proposal was that each railway would take out loans to cover the deficits. The government as owners of the companies would repay both the loan and the resulting interest repayments.

2) Normalisation of Accounts.

The company was to be split into two sections. The first section should be responsible for rail transport as a necessary public service. The second section of the company was to deal with the commercial aspect of the rail company, i.e. make the company economically viable.

3) Integration of External Costs.

The external costs of transport such as pollution and an increased risk of accidents should be added to the cost of varying forms of transport.

The proposals put forward by the ministers, though, give no new insight into existing problems. CIE adopted the policy of debt clearance in 1958-1963 when the outstanding debts were written off, but by 1973 its debts had returned by a factor of 45 in real terms. The normalisation of accounts method was the approach used by the Swedish rail company. However the success in Sweden was the result of not only the normalisation of accounts but also an increase in productivity and efficiency. To simply adopt the normalisation approach without a concerted effort to improve efficiency would prove to be an exercise in creative accounting.

Rail networks are perceived as being inefficient and too expensive considering the time taken for the journey and the quality of the service provided. To raise the costs of travel by incorporating external costs would only increase the dissatisfaction already plainly evident. These costs are not to be solely borne by rail networks but by all methods of transport. For example, motor cars consume 40% of Europe's energy resources, while the combined cost of pollution and congestion account for more than 4% of GNP annually. For the vast majority of people who own or use cars, an increase in the cost of travel as a result of government legislation would make the political party in power unpopular. This unpopularity may be reflected in the ballot box resulting in the government not being re-elected. This effect is known as the 'cleaning house government model.' In this, the government is assumed to maximise their probability of reelection by reacting to lobby groups.

Assuming that none of the recommendations of the 1990 Council are of any real relevance to Irish Rail's predicament what then is the solution? The most obvious answer is to reduce the overall deficit. One method of reducing the deficit is to gradually privatise Irish Rail. Complete privatisation should be avoided as this would result in the closure of all non profitable lines. An open market approach similar to that operating in the British Bus sector would ensure that the rail companies would have to compete, resulting in benefits to the public, i.e. reduced fares and a better service overall.

A good example of this approach is the policy adopted by Sweden. In 1988 Sweden introduced an act which divided Swedish State Railways into two companies. The traffic transport company Business SJ was responsible for operating railway services as a viable commercial business. The second company Swedish National Rail (BV) was responsible for the maintenance and construction of the infrastructure. BV remained as a monopoly with the aid of barriers to entry imposed by the government. BV continued to receive funding from the government in terms of infrastructural needs and continuing maintenance. The Swedish state pre-empted the proposed solutions of the 1990 Council and split the national rail company. The 500 million crowns loss of 1987 was converted into a profit of 300 million crowns by 1991. The commercial company SJ managed such an impressive turnaround by increasing productivity and reducing costs, essentially making the quality of the service better and hence attracting more customers. BV, the infrastructure company, continued to make a loss but in the long run it is estimated that increase in the general usage of rail would result in less profitable lines becoming more profitable.

The Japanese approached their rail problem in a fashion similar to the Swedish approach. The initial policy employed by the Japanese was to raise fares and reduce the total workforce; the result was a backlash from the public because of the fares and from the unions because of the redundancies. Realising that further measures were drastically needed, the Japanese National Railways (JNR) was split into seven networks. The first six dealt exclusively with passengers in their appointed region, with the seventh section being solely responsible for the nation's freight capability. With typical Japanese acumen a liquidation company (JR Settlement Company) was established to control the debts, excess resources and the prickly problem of the unions and the redundant workers.

The results are impressive. Of the initial workforce of 90,000 more than 98% of them were made redundant, however almost all of them were reabsorbed into the private and public sectors as a result of the exhortations of the JR Group. Some of the smaller rail networks are still making a loss, but this is easily compensated for by the success of the larger networks. Pivotal to JR's success is its ability to manage the company without

governmental interference, especially in matters such as the closure of unprofitable lines. Perhaps the best evidence of JR's success is the conversion of a trillion Yen per annum loss into a 480 billion Yen per annum net profit.

Given the success stories of the Swedish and Japanese rail networks, what then can Irish Rail do to improve its situation? The most obvious parallel between the Swedish and Japanese approach was that the solution was radical and once implemented it was completed. Broadly, for Irish Rail to improve its situation four objectives need to be reached;

- 1) Reduce the dependence on state subventions.
- 2) Raise the quality of service, perhaps by privatisation.
- 3) Increase the freight and passenger use of rail.
- 4) Reorganise the structure of the company - improve the efficiency and output.

The Japanese model of total privatisation may not suit Ireland as the majority if not all lines would be shut down due to a lack of profitability. Judging by the IDA's poor performance in creating regional employment, perhaps the splitting up of Irish Rail into provincial companies is not a good idea either. However the option to close some unprofitable lines should be open to Irish Rail.

Given the current structure of Irish Rail, perhaps the Swedish system of a government owned track authority and a private traffic company may be better. Whatever the choice, the policy must be firm and decisively implemented with the main target being the reduction in the deficit via an improvement in output and efficiency.

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The Economics of Partition

Ronnie O'Toole - Senior Freshman

The maintenance of Irish partition is a hugely contentious area of political discourse. The economic consequences of the division are often submerged beneath passionate rhetoric and partisan wrangling. Ronnie O'Toole finds a window in the stormy debate, and discovers sound economic reasons for some degree of enhanced co-operation between North and South.

The religious and political partition of Ireland has long commanded academic interest, often at the expense of the economic implications of the division. It must be asked, however, on an island so small in world economic terms, how costly such a division is? The author will firstly critically examine to what extent economics has been used to justify or refute partition. These economic arguments will be examined from both a 'nationalist' and 'unionist' perspective. The author will proceed to assert that many sectors of the island's economy would stand to gain economically from some degree of 'enhanced unity'. Finally, the author analyses the implications of advancing European Integration on a small divided polity. At no juncture in this piece will the author express a preference for the political nature of a more integrated Ireland. No preference will be evinced for any of the hypothetical models, be it a sovereign independent state, a state within a Federal United Kingdom or a country united within the British Commonwealth.

The nationalist interpretation of Ireland's economic woes has been well documented. However, this paper will limit itself to two reasons why it is an abuse of economic rationale to further the ideological end of independence. It is a common nationalist claim that due to Ireland's distance from the British government's decision making locus, the country suffered economically under British rule. However, areas of the British Isles, far removed geo-politically from London did not suffer as harshly as Ireland. Central Scotland, southern Wales and parts of northern England were more heavily industrialised than the counties which border Greater London. Scotland, for example, managed to replace cottage industries with a vibrant manufacturing base in response to increased competition from English-based firms. Why Ireland did not do the same cannot be blamed solely on the political institutions in Westminster, but mainly on factors indigenous to Ireland.

It is worth noting that Ireland's underperformance was not unique. East Anglia, for example, also experienced population loss and underdevelopment despite what nationalists would perceive as governmental favouritism towards such areas at the expense of Ireland. What factors, then, resulted in Ireland's poor economic performance while under the British yoke? Many reasons have been propounded (e.g. land tenure system, lack of natural resources, lack of capital investment etc.). Whatever the reasons, placing the fundamental blame on the Westminster parliament seems a simple and convenient, yet ultimately inaccurate interpretation of Ireland's economic woes.

Unionist demands to be excluded from Saorstát Éireann had a seemingly strong economic logic. On the one hand, their belief that 'non-Catholics' had '*inherent and ineradicable endowments of character and aims*' (Thomas Sinclair), which set them apart from the mainly agrarian Catholic populace of pre-Treaty Ireland. Quite apart from this, a more analytical argument against a united Ireland was espoused by J. Milne Barbour, a leading Belfast industrialist in pre-Treaty Ireland. Barbour's opposition to the six counties' participation in the Free State was threefold. Firstly, he claimed that the Free State would be highly protectionist in outlook, secondly that industrial interests would be subsumed by an overriding concentration on rural development, and thirdly that participation in an independent Ireland would result in restricted access to the UK market. While at first glance, his predictions would seem to have been accurate, a hypothetical analysis of what may have happened in the case of an all-Ireland state in the early 1920's can refute them.

It is generally accepted that Saorstát Éireann adopted a protectionist stance with the advent of the first Fianna Fáil government. However, this should be seen in light of the fact that much of the developed world followed such a policy in the aftermath of the 1929 stock market crash. A more hypothetical argument can be based on the (albeit tenuous) assumption that Fianna Fáil would not have gained power in a 32 county Ireland. Had Ulster Unionists been present in a 1930's all-Ireland parliament, they would have commanded about 25% of the seats (proportionate to the unionist population). The Unionists would, in such a situation, probably have

leant their parliamentary support to Cosgrave's Cumann na nGaedhael, a party more sympathetic to their views than De Valera's Fianna Fail. If such a Unionist-Cosgrave alliance achieved power, it is likely the Unionists would have pressured Cosgrave into some sort of single market pact with Britain. Therefore, Unionist fears of protectionism in a united state were unfounded. While accepting this argument is open to much political and historical criticism, the author believes the economic reasoning in it to be essentially sound.

Secondly, the fact that rural interests did dominate in the free state can largely be attributed to the fact that the economy of the 26 counties inherited by the first administration was largely agriculturally based. Agriculture accounted for 54% of employment and 32% of GNP in the early 1920's. Given a more balanced sectoral economy, as the 32 counties would have been, it seems unreasonable to assume that policy would have been identical. In fact, this assumption provides a strong argument in favour of North/South integration. The 6 counties, excluding Belfast, were largely agrarian, while the 26 counties' industrial base was still in its infancy. Both sectors would have benefited from a more balanced approach on the part of economic policy makers in a united Ireland. Industry and Agriculture would have been addressed by a 32 county government, both being key sectors of the fledging nation.

If all the above conjecture is assumed, this 'alternative history' of Ireland would have answered Mr. Barbour's last argument, i.e. that participation in the Free State would lead to a restriction to the UK market. The continued dominance of the Cumann na nGaedhael - Unionist coalition would have been ensured that close links with the UK would have been maintained. It could also be reasonably asserted that if Fianna Fail came to power after a single market with Britain was established, this hypothetical status quo would have been maintained. Economic benefits from the 'union' would have deterred most politicians from a complete reversal of the policy. Whether the UK government would acquiesce is a separate argument. A relevant observation that can be made on this issue is that continued pressure from Unionists would probably have been sufficient to maintain the single market - doubtlessly Westminster would still have been moderately pro-Unionist and would have been willing to maintain the single market with concessions to the 32 county state to appease unionist elements of the British ruling class.

The use and abuse of economic argument was frequently employed by both political persuasions in the six counties. The extent of its use shows how most people are driven by consideration of personal wellbeing rather than ideological dogma, and this was recognised by politicians of both persuasions to further their own cases.

The economic benefits which would accrue to both parts of the island from further integration would be substantial. If integration could deliver an end to violence many of the negative externalities associated with 'the Troubles' would disappear. Inward investment to Ulster, and to a lesser degree the Republic, would increase due to greater stability bolstered by membership of the EU and proximity to the UK. A more visible impact of the removal of the border would be a more efficient deployment of security forces, a type of economy of scale in the amalgamation of two police forces. The border, by definition, separates two distinct legal jurisdictions which results in a distribution of manpower which is wasteful. However, there are a number of sectors in the more conventional economic field which could benefit from cross border co-operation in an integrated economy.

Firstly, an integrated energy policy has been hampered in the past by terrorist attacks on the interconnector between the two electricity grids. Due to the fact that peak use of electricity differs between the two parts of Ireland, savings could be made (by both consumers and producers) by the reopening of the interconnector. These greater uses of economies of distribution could potentially lead to an All-Ireland electricity company or, perhaps, a degree of competition between the two sheltered existing companies. It is estimated that the ESB alone would achieve a saving of £10m per annum, by such a move, which is particularly notable in light of the restructuring that the company is currently undergoing.

Another area where enhanced cooperation would be beneficial is tourism. Indeed, this has already been recognised, with the Northern Ireland Tourist Board, and Bord Fáilte now engaged in cooperative marketing. Quite apart from foreign tourists, the dismantling of the border (and particularly the psychological baggage of the border) would increase cross border tourism. This form of 'import substitution', principally at the expense of comparable destinations such as Scotland or Wales, could in itself prove crucial to the development of the tourist sector. That both countries have the potential to increase tourism is clear. The North's tourism

revenues during the troubles were approximately one third of the Republic's, while the post-ceasefire tourism increase in the Republic is being consolidated by infrastructural investment by a number of hotel chains, both domestic and international. Therefore, increasing co-operation further would seem to have many positive effects on tourism if the benefits from the current joint promotional exercise is to be used as a guide.

The final sector analysed here is transport, which has been adversely affected by violence and partition. The most salient example is the Dublin-Belfast train line which was the target of many terrorist attacks. Other areas, however, could also benefit from increased cooperation. A prime example would be an integrated road-port development policy. An 'Economic Corridor' between the Dublin and Belfast regions has already been mooted by the Joint Council of IBEC/CBI. Such an improvement in the transport infrastructure would enhance the potential benefits of increased trade on the island, which would be an asset in the fight against unemployment.

Finally, reference should be made to the EU and Monetary Union. An integrated island would entail an 'All-Ireland' negotiated framework. The structural funds, intended to narrow the gap between the richest and the poorest states in Europe as EMU approaches, are going to be reduced for the Republic in the late 1990's. Economic growth and structural funding from 1987 onwards has nudged Ireland's national income per capita closer to the EU average. Northern Ireland's prosperity (as it is) depends upon subvention from the UK government which, at around £3 billion per annum, is worth approximately 20% of the North's GNP. If the peace process is resuscitated, this subvention is likely to come under severe pressure, despite any protests from Ulster's relatively small representation in Westminster.

On the assumption of the gradual but inexorable fall in the subvention and structural funds, Ireland as a single unit in Brussels might prove extremely successful in increasing EU transfers to Ireland because of increasing economic clout. Further, a reasonable claim could be made to the effect that the reintegration of the two economies is crucial to their development after a quarter of a century of terrorism and three quarters of a century of partition. However, mutual benefits could be achieved with joint negotiations on matters involving agriculture, fishing etc. It is notable that northern fishermen of the unionist persuasion pondered publicly over whether they might have got a better deal from the Irish government than from Westminster in the recent negotiations relating to the Irish Box.

All this conjecture is particularly relevant in light of the trend in Brussels to Commission and Parliament representation based more on population size than on a state by state basis. Both parts of Ireland are small players in Europe, and while some form of integration might not produce a monolithic state, a more unified and cogent All Ireland approach would in all likelihood reap more benefits vis-a-vis policy influence. Another crucial feature of the EU is the question of EMU and a single currency. This could be a medium for a single currency for the island, whose population of five million currently uses two currencies. In light of the arguments made previously regarding trade, tourism and the integration of infrastructure, the maintenance of two separate currencies between economic regions with striking similarities seems spurious. Unfortunately, a country's currency is one of the most visible reminders of its identity, so whose face is on a particular note can depend more on emotions than economic rationale. The transaction costs imposed and the uncertainty that is bred however, seem to make a good economic case for integration.

In conclusion, economies of scale dictate that efficiency on this island can best be achieved by some form of integration of the two parts of the island. Rather than view economics as a useful tool to achieve a particular political, social or religious end, economics and individual well being lie at the heart (as Marx pointed out) of most conflicts. An apolitical, detached examination of the two economies shows the benefits that could be achieved on a sectoral basis, with inevitable (but unquantifiable) efficiency gains as well. This is all particularly relevant in light of the shift of policymakers from the various states to Brussels where political, historical and religious considerations play second fiddle to economic realities.

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