The Royal Economic Society
Young Economist of the Year Competition 2008

The **joint winners** of the Royal Economic Society Young Economist of the Year Competition 2008 are **Promit Anwar** and **Lizzy Burden** who will each receive a £1,000 prize.

Nearly 400 entries – from as far afield as Singapore – were received for the 2008 competition. The task was to write up to 2,000 words on which economic idea or policy has most power to improve our lives. A wide variety of topics were covered by entrants including investment in sports facilities, the economics of happiness, micro-finance, mass collaboration and feed-in tariffs.

Lizzy Burden wrote about the power of ideas from game theory. True to its title, **"Love is a game",** her lively essay ranged well beyond the usual bounds of Economics, and took in politics and university applications as well as oil and airline cartels.

Promit Anwar chose international finance policy for his topic. In his essay, **"Which economic idea or policy has the most power to improve our lives?",** Promit put the case for the creation of an international currency to supplant the dollar, arguing that this would help economic development by improving investment efficiency, ease macro imbalances and provide an international policy instrument.

A team of twelve experienced Economics teachers met in June to read and judge every entry, identifying the shortlisted entries. The final judging process was performed by Charles Bean (Deputy Governor, Bank of England), Stephanie Flanders (Economics Editor, BBC) and Sir John Vickers (RES President).

Commenting on the results, Sir John Vickers said:

"The Young Economist of the Year Competition, now in its second year, has again excited great interests and brought forth impressive talent. Two entries stood out: Promit Anwar's impressive analysis of global reserves policy and Lizzy Burden's sharp and engaging account of the power of game theory. We are delighted to congratulate and announce Promit and Lizzy as the joint winners of the Royal Economic Society Young Economist of the Year 2008".

The competition was organised for the RES by tutor2u. Commenting on the 2008 competition, tutor2u's Jim Riley said:

"The overall standard of entries for the 2008 Competition was even higher than 2007 and a significant number of high quality entries made it through to the final shortlist. The RES Essay Competition is now firmly established as a challenging and rewarding extension activity for the increasing number of A Level and IB Economics students in the UK and overseas".

Any enquiries about the Young Economist essay competition should be made to the Administrator, Royal Economic Society on royaleconsoc@st-andrews.ac.uk

LOVE IS A GAME

Some say it takes chemistry to make a relationship work. Others apply the rules of physics – 'opposites attract'. But the real answer to love can be found in a different science: economics. Ever wondered why someone particularly experienced in the dating 'game' is called a 'player'? It is because unknowingly, they have successfully applied the rules of game theory to their flirtation strategy. If we used it properly, the world would be free of heartbreak, and what could be more important in our lives than love?

The elementary concept of game theory is often recapitulated using the following scenario. A detective is holding two criminals in separate prison cells – a wall ensures they cannot communicate. Their crime was a double-act and one by one, the detective lays out the terms of their potential sentences, giving them the same information: if neither confesses, neither can be convicted; if both confess, they will receive a reduced sentence of three years for their cooperation; but crucially, if one confesses and the other does not, he who kept quiet will face a ten year sentence, while his partner will escape with only a year. What happens? In absolute fear of the prospect of the longer sentence, and without the knowledge of what the other prisoner will choose, both inevitably confess. This is known as Prisoner's Dilemma.

This plot is surprisingly reminiscent of a universal teenage dating situation. The high school dream-girl is suddenly back on the 'market', but with the leavers' ball looming, she is faced with the unenviable task of securing a date. Typically, she confides in her best friend with her problem, but even more predictably, this friend tells the whole school of her friend's woes. The alpha female has specified that she would like a dark-haired rugby player to take her to the ball, but there are two males with such attributes. Both boys would gladly accompany her, yet they shudder at the prospect of rejection. As rivals, they only communicate about matters of extreme importance such as Jonny Wilkinson's recent performance, and one will only know if the other has plucked up the courage to invite the girl when the successful boy advertises his success; that is, they cannot know if they are the second to ask. Yet there is also the possibility that the girl will turn down the first proposition, in pursuit of the satisfaction of two hopeful requests.

We must first consider each 'player's' options. A number of situations could arise for our Cinderella. Ideally she would be asked by one, reject him, and then accept the second offer[1]. Alternatively, having turned down the first, the second might never ask. She could accept the first without knowing whether or not the second would ever have asked. Finally, she could end up with no offers. Let us now consider things from the boys' perspective[2]. Each boy's jackpot is acceptance. Since we cannot always have our own way, they would not mind if neither asked – this would not cause any major embarrassment, although they might end up with less attractive arm candy on the big night. However, Cupid might be playing favourites, and one could sweep the girl off her feet before the other gets the chance.

If the result is still not glaringly obvious, the case for game theory is even greater – this is the stage where disaster could be avoided. We should look to the aforementioned villains and their predicament in order to establish a solution. The detective's equivalent in the second scenario is the girl – she has laid down the terms to the two prisoners of her love, and the ball now lies in their court. The wall separating the boys is their rivalry. Like the criminals' utmost fear was the ten year

1 There really is nothing like an ego boost.
2 It is identical for both – since when have rugby players had any capacity for individuality?

sentence, the boys dread rejection. The prisoners did not choose the option which would have given them maximum happiness – walking away scot-free – because of the risk of their accomplice squealing to the detective. Therefore the boys should not approach the girl even though they would love to be her date, because rejection would ultimately be worse than arriving with a slightly less attractive girl. This is comparable to the prisoners who still had to spend three years in prison each, when they could potentially have tried to escape a sentence altogether. Indeed, the girl will not have either of the school hunks in tow, so she will be in a similar position[3]. No one profits any more from the situation than anyone else, so equilibrium is established. Though none of the original three players became a couple, there was no stinging heartbreak and everyone was free to find another partner.

The ‘father of economics’, Adam Smith, proposed that if everyone pursued their own interests, supply and demand would be controlled by the ‘invisible hand’ of competition, and equilibrium would be reached; but this is not always the case, and the previous example proved this. If the boys acted in pursuit of their personal interests, they would both ask the girl out – but they could not both have her, so either one won and the other inevitably lost, or nothing happened. Smith’s philosophy is often cited by those in favour of ‘laissez-faire’ economies but we have seen that egocentricity does not always work. The idea of compromise as a key element in game theory was suggested by John Nash, and although it was somewhat misconstrued in his dramatised biography, ‘A Beautiful Mind’[4], one particular scene portraying his central discovery aptly emphasises the underlying message of the dating tale previously discussed: Nash exclaims, “What if no one goes for the blonde? We don’t get in each other’s way, and we don’t insult the other girls. That’s the only way we win. That’s the only way we all get laid.” Judging by the exquisite beauty of Nash’s wife in the film, it would be hard to contest his dating expertise.

The same logic illustrates that game theory does not just apply to flirtation tactics, but also to who to flirt with. Men’s magazines often recommend that their readers rate themselves from one to ten[6], and then choose a partner two levels beneath themselves. This corresponds to game theory: if men only ever allowed themselves to date women with high ratings, they would face the possibility of eternal bachelordom, which, despite any protestations of the contrary, is never favourable. With this in mind, men should follow their magazines’ advice to pursue a ‘lower-risk’ option – maybe a woman who is less intelligent or leaning on the plump side. They should not go for the option which would give them maximum happiness (the glamour model) but one which is more realistic, since the possibility of growing old alone is too worrisome. This answers the question of why not all economists end up with beautiful women[5].

Now we have selected an appropriate female and successfully exchanged numbers, there lies the bewildering quandary of deciding when to call her. Let us consider Rosenthal’s ‘centipede game’. Whilst one could draw upon various analogies to explain its theory, the idea of ‘who calls first’ is just as fitting. It is a teenage faux pas to be the first person to call the other, so a game emerges where the two ‘players’ wait for the other to succumb. Ideally each player would like to be the first to be called, but there is also the danger of waiting too long that the person loses interest while the other is holding fire. Although it carries an element of shame, the only rational answer is to call immediately after the date. The same idea can be applied to deciding when to ‘dump’ ones partner since while it is ultimately an undesirable option[7], the countdown

3 Considering her earlier greed in nominating two boys, perhaps everyone gets what they deserve.
4 It is suggested that Nash refuted Smith’s economic theory altogether while this was not the case in reality.
5 Although their obsession with statistics might be a factor.
6 Ten being the most attractive.
7 Assuming the couple like each other.

comes into play when we note the loss of face posed by being the ‘dumpee’ as opposed to the ‘dumper’.

Game theory’s expediency with regards to dating is unquestionable, but it is also incredibly versatile because it can be applied to any situation where there is strategy involved, in which winners and losers can potentially emerge. After love, university is next on most teenagers’ list of priorities. Let the university equivalent of the knockout blonde be Oxbridge and the process of application compare to approaching the girl. A hopeful applicant might receive an offer from his/her second choice institution, but miss out on Oxbridge. The choice lies in whether to take a gap year and reapply, gambling on the possibility of rejection a second time and not securing the other offer again. Game theory would suggest that it would be wiser to accept the offer from the second choice university the first time around, since while maximum happiness might have come from the potential Oxbridge placement, the risk of having to find a job at McDonalds having received no offers in round two and the prospective expense of funding a gap year ought to nudge the student away from the idea of reapplication.

On a broader scale, game theory was famously utilised by Chris “Jesus” Ferguson in the world poker championship to work out the other players’ tactics, and made him one of the most successful players ever. It is also generally accepted as the theory behind the OPEC crisis. Various Middle Eastern countries had initially united to protect the price of oil, but later wielded their power against Western nations to coerce them into withdrawing support for Israel in the Yom Kippur War. Faced with the choice of losing a resource upon which their country depended, the USA eventually surrendered to their bargain. Moreover, the parallels between the concept of backward induction raised by the ‘centipede game’ and the nuclear arms race with the Soviet Union become clearer with knowledge of the contribution of game theorist, John von Neumann, in helping the American government to decipher Russian strategy. When we substitute Russia for the boy, America for the girl, and the power of one to bomb the other for the potential to make the call, Neumann’s logic seems even more apparent.

The consequences of not adhering to the principles of game theory were learnt by British Airways, when it had to pay in excess of £270 million as a fine for its price-fixing scandal with Virgin Atlantic. The two companies colluded on over six occasions between 2004 and 2006, agreeing to illegally raise fuel surcharges from £5 to £60 per ticket. Like the boys in our dating analogy, the firms’ bitter rivalry prevented their communication outside of the few deals they made, and both sought to ‘beat’ the other by dominating the air travel market. Like the prisoners with their dilemma, they could have both kept quiet and neither would have been penalised, but if one airline leaked the plot to the courts as Virgin did, that which had not confessed would be punished while the other would escape without a scratch. Had British Airways been more sagacious, it would have either not cheated in the first place, or used game theory – it would have turned itself in earlier. Virgin, on the other hand, was able to benefit from the extra profits from its fraud and overtook its rival in terms of sales while BA recovered from the hefty fine[8].

The simplest ideas are said to be the best, and this is certainly applicable to the case of game theory. Its original pioneers could not possibly have comprehended its extensive applications to life – love, politics, business, sociology, poker, nuclear warfare – the

8 BA’s profits swiftly dropped by £53 million in just one year following the court rulings.

list is endless. Love, however, is definitely the most important: what could be more important than the force that keeps our race in existence? While it might be argued that the examples here mentioned do not apply to more complex adult relationships, that teenage experiences have substantial influence over human behaviour in later life cannot be challenged. Though love may be the area to which game theory has been the least applied hitherto, its connection is undeniable. After all, they don't say, "love's a game", for nothing.

Reference:

http://news.bbc.co.uk/1/hi/business/5260120.stm
http://news.bbc.co.uk/1/hi/business/6959725.stm
'A Beautiful Mind' (2006)
Game Theory: A Very Short Introduction (Very Short Introductions) - Ken Binmore

"Which economic idea or policy has the most power to improve our lives?"

It has been described by the former Chief Economist of the World Bank and Nobel Prize winner Joseph Stiglitz[1] as the 'single initiative [that] could do more to make globalization work than any other.' Yet the reformation of the system of global reserves and issuing a universally-recognised and stable form of 'fiat money' (paper money that can be readily exchanged into hard currencies) – an idea suggested several decades ago in the writings of Keynes[2] – remains to be realised. The case for its implementation, given its unique ability to aid global financial stability, increase global aggregate demand and finance equitable development projects in third world countries whilst narrowing the income gap between MEDCs and LEDCs, however, is rendered stronger at present than ever before.

Buffeted by financial crises and economic instability, governments of the developing world have sought to increase their holdings of reserves in order to boost liquidity – a phenomenon that the Federal Reserve Chairman Ben Bernanke[3] describes as the 'global savings glut'. Indeed, developing economies hold over $3 trillion in reserves, increasing at a rate of over 15% a year, typically, in dollar-denominated assets, such as T-bills. However, at the core of the problem is that the developing countries earn a figure for real return on American bonds that is much lower than what they would expect to achieve if that money were spent on high-yielding investments in other developing countries. Stiglitz estimates that the opportunity cost of the market for US securities to developing countries to stand at over £300 billion per annum; a figure that is approximately sufficient to achieve the Millennium Development Goals[4], which include the eradication of extreme poverty and a reduction of the mortality rate among children under the age of five by two-thirds. Herein lies the claim that the reforming of the global reserve system has the most power to improve the lives of everyone – but in particular, the world's poor.

Increased demand for T-bills not only reduces the cost of borrowing for America, but is in effect, a loan from the poorer countries to the rich, providing a cheap way for Americans to borrow and finance consumption (the attractiveness of credit has made the resulted in the US household savings rate to become negative[5] for the first time since 1933). The costs of this are numerous. Firstly, as cited previously, instead of lending money for programmes to help their own people, poorer economies are lending to the world's largest economy, and the rate of return is far less that what could be expected if investment was to be made within the home country. Secondly, the continual demand for T-bills ensure that Americans benefit from cheap credit and consequently save less and this has almost certainly exacerbated, if not been responsible in part for the present credit crisis.

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[1] Joseph E. Stiglitz, *Making Globalization Work*, (Penguin Books, 2007) pp. 268

[2] John Maynard Keynes, *Proposals for an International Clearing Union* (1942)

[3] Remarks by Federal Reserve Chairman Ben S. Bernanke (Sandridge Lecture, Virginia Association of Economics, Richmond, Virginia, March 10, 2005)

[4] Joseph E. Stiglitz, *Making Globalization Work*, (Penguin Books, 2007) pp. 249

[5] www.moneyweek.com/ Article: James Ferguson, *King Dollar is still on his throne – but how long can his reign last?* (November 11, 2005)

Finally, the reserve system can contribute to global instability. Reserves aim to act as a financial insurance or buffer – yet it is counter-intuitive that the majority of reserves are vested in a single currency, which itself is not immune to exchange-rate fluctuations (the dramatic fall in the value of the dollar from 2002 to 2004 reinforces this point). Just as sound investment practice entails portfolio diversification to dilute risk, global financial turbulence could be minimised if the reserves were held in a number of currencies. But switching to another reserve currency or merely spending the reserves is not straightforward. Countries which have built 'war-chests' of reserves are unable to sell significant amounts of dollar-denominated assets without depreciating the dollar to the extent that the value of their remaining reserves fall, making the dollar is no longer suitable as a reserve currency. This is compounded by the fact that in order to finance foreign reserve savings, the USA takes on a daily debt to the tune of $2 billion from poorer countries, which will again, undermine the strength of the dollar[6]. Even if governments switch to holding reserves in other currencies such as the Euro, as China has started to do, the self-defeating circle will repeat for the new reserve currency.

Reform of the global reserve system is therefore required on the premises that it negates these costs and consequences, and ensure a better deal for the developing world in the future. Under new proposals, as global income increases, each country contributes a proportional amount to the IMF or a specifically-created institution and in exchange, receives global banknotes equal in value to the contribution. Whilst the net assets of a country remain unchanged, they receive a stable asset that is liquid enough to be readily spent in times of crisis, or in times of prosperity, be invested in equitable development projects offering higher rates of return rather than in government bonds. (In essence, this can be seen as an extension of the issuance of SDRs – Special Drawing Rights – by the IMF, to include all countries willing to participate and not restrict its issue to one-time use). This would thus break the 'mutual hostage' situation that arises in the current situation, as LEDCs are no longer forced to recycle money back to the west for the latter to sustain their deficit spending to buy their goods. The global banknote itself, would have is own index-linked exchange rate, reflecting the relative rates of a basket case of currencies over a period of time, making it significantly more stable in value than conventional currencies.

As such, global financial stability would be enhanced; consequently all countries, including the United States, would benefit in the long-run, by being able to cope better in response to exogenous shocks which adversely affect the economy. Furthermore, it would aid the efficiency of development projects, since soundly-run developing economies will have a source of liquidity that can target the investment on a need-based approach; empowering national and local governments would be far preferable to the conflicting interests of multinational aid programmes, which often bear the caveat of IMF conditionality. The spending of global banknotes is not itself inflationary, as local currency is not being spent, but it can increase global aggregate demand that is deficient (the 'deflationary bias') under the system current, facilitating the expenditure of income set aside as reserves, which otherwise would not have occurred, causing an acceleration in world economic growth.

[6] Russ Juskalian, *'Making Globalization Work' presents brave observations* (USA Today, October 2, 2006)

This also negates to some extent, the imbalance of trade. Countries would be able to run small current account deficits without having to decrease net assets in a given period, as reserve accumulation would be decoupled from the trade deficits of reserve currency nations[7], mitigating the problematic zero-sum nature of the narrowing of one country's trade deficit representing the increase of another. Though the sum of global deficits will match the sum of global surpluses, a 'cushion' equal to the issuing of the world banknote will offset the deficits[8]. Notably, the cycle of a US trade deficit (currently at $827 billion[9]) and the simultaneous selling of their government securities that give rise to the aforementioned problems, would slowly be reversed. Conversely, countries which ran current account surpluses and bought foreign bonds due to a lack of domestic demand would regain the forgone purchasing power. This represents a net increase in global aggregate demand that is necessary not only so that equilibrium can be achieved nearer to full global employment, but also so that crucial investments are made where they are needed so that lives are saved where they are now lost.

But if excess bonds are not being bought, what could the issuing of the new global banknote finance in a way that our lives could be improved? One of the world's greatest problems in development is the issue of funding for global public goods – those whose benefits can be reaped by governments and citizens worldwide. Global health, and the spread of diseases such as HIV/AIDS or malaria is but one area in which investment in research and development of medicines is currently far below the socially optimum level. Global banknotes could, therefore, subsidise scientific research into finding potential cures for these and diseases that have claimed the lives of millions. Simply using some of the global banknotes to extend existing immunisation schemes could also save many lives. Alternatively, global banknotes could be invested in potential high-return areas such as finding cleaner alternatives to fossil fuels, or providing primary education to every child. Though the cost of the latter scheme is estimated to be only $10-15 billion a year[10], the expected returns would be huge, as the labour productivity of the world's workforce is augmented. The remaining banknotes can be issued to alleviate the burden of debt on poor countries, be allocated to governments on an income per capita basis, or awarded on competitively to private organisations wishing to undertake high-impact development projects, thereby encouraging innovation in the way in which welfare for third-world citizens can be augmented.

Yet arguably the greatest achievement of the new reserve system is that a strong message would be sent from the international community to the developing world, signalling a strong worldwide consensus that the issues which plague these countries are of global concern, and Western governments are indeed committed to ensuring greater equity. It would also create a method whereby there is a means to impose an externality charge for countries which produce excess greenhouse emissions for example. Under the new global

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[7] Bruce Greenwald et. al, *A Modest Proposal for International Monetary Reform*, (Columbia University, January 4, 4006)
[8] Joseph E. Stiglitz, *Making Globalization Work*, (Penguin Books, 2007) pp. 265
[9] *Economic and Financial Indicators, The Economist*, (Mar 3rd – 9th 2008)
[10] Shantanayan Devarajan et. al, *Goals for Development: History, Prospects and Costs*, (World Bank Policy Research Working Paper 2819, April 2002)

reserve system, issue of the global banknotes can be systematically curtailed to countries which confer such negative externalities outside their national borders, so addressing the age-old problem of the 'tragedy of the commons'. Whilst previously there were little incentives for economic powerhouses such as the US to limit atmospheric pollution, governments would now be financially liable for taking such a blasé approach to a global problem that could threaten to displace millions of citizens from their home countries due rising sea levels by the end of the century. Thus failure for countries to meet obligations such as the Kyoto protocol or deforestation quotas would result in a 'fine' (cutback in global banknotes received). The proceeds may be redirected in compensation to the sufferers – a method by which the externality can be internalised.

Furthermore, the issuing of the global banknote would create greater incentives to further open governance and alleviating 'democratic deficits'. Akin to trade sanction impositions upon rogue countries, despotic national leaders could see their issue of the global banknote withdrawn, furthering pressure from the international community to create a framework that maximises the effectiveness of economic management – one which is transparent and accountable to the public. Likewise, the allocated issue of global banknotes can be suspended from countries still pursuing nuclear proliferation for example, thereby acting as a tool to maintain the political peace in lieu of furthering economic prosperity.

Hence the reform of the global reserve system and the introduction of a worldwide banknote, is, in the minds of a growing number of orthodox economists as well as 'third way' thinkers, the cornerstone to ensuring equity and stability as well as enabling the irreversible tide of globalisation to work better for all parties. The scheme is uniquely versatile in addressing a wide range of policy areas – more so than any other initiative; offering potential worldwide benefits in improving living standards and economic. Its priority nature for developing economies is especially evidenced by the huge opportunity cost of the current system; one that could itself finance the achievement of the fundamental MDG targets, such as halving poverty rates by 2015, and significantly lowering the income inequality gap between rich and poor economies both in the short and long run. It is a monumental travesty that the primacy of politics over economics – as so many times before in history – means that the posturing of egocentric figures ensconced on the levers of power in developed nations whose currencies the majority of reserves are held, may prevent this idea from being anything more tangible than a mere vision of a better world.