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ABSTRACT

In this article we explore some of the theoretical developments over the last 40 years which led to the emergence of the field of market design. This new field has had a substantive impact on policy, especially after the highly successful auctions of the mobile telephony licences in the mid-1990s in the US. The auctions replaced an inefficient allocation system where licences were allocated to applicants via a lottery and subsequently sold for large windfalls. These auctions raised substantial amount of revenue for the US government and were adopted worldwide, including in Australia.

First, I provide a brief history of market design in cases where monetary payments can be used as the basis to allocate goods and services. This history starts with the game theoretical foundations of non-cooperative behaviour – as typically the interests of different individuals are in conflict, for example, when buying or selling goods and services – and then moves on to mechanism design and auction theory and practice. Second, I will review a very large experiment in Brazil where markets were created to avoid electricity rationing in 2001. The choice of this example is not inconsequential. It is meant to illustrate that such an approach to public policy can be successful even in developing countries with weaker institutions. I will then provide some concluding comments.

Keywords: Auction theory, game theory, market design

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Market Design for New Leaders

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"Some men see things as they are and ask why. Others dream things that never were and ask why not."   George Bernard Shaw

1. Introduction

I have been asked to write about market design to 'potential new leaders.' To be fair to the reader, I must disclose my lack of appreciation for much of the academic literature on leadership.[1] By and large, this literature seems to put considerable effort into differentiating leadership from management. However, my own reading of the literature suggests that ultimately leadership is often equated in some fashion to 'good management'.

This chapter, however, is not really written for managers, good or bad. Instead it is written for thinkers who aspire to be in a position to influence policy and society. It is written for those who want to engage with some of the key issues of our time such as the ageing population, climate change and how to promote the well-being of all Australians in an increasingly complex and interconnected world.

It is also written for those who are dissatisfied with the current public policy scene in Australia that is perceived as failing in at least three important aspects. First, the political debate around policy seems to be driven not by considerate and informed public debate but rather by the ability to encapsulate messages into 30 second news grabs. Second, senior public servants are often perceived, rightly or wrongly, as significantly risk averse and too close to politicians given their own career concerns and the fixed term nature of their appointments. Third, industry associations are often seen as promoting self-interest and contradictory policies. For example, industry leaders manifest their support for various social welfare programmes while at the same time argue for lower taxes and a reduction in the public deficit.

Yet the message of this chapter is one of hope. This chapter reviews research and public policy development in the area of market design.   At first sight this might seem technical and remote from reality, but it has proven crucial to improve the business of government.

In Australia, government spending accounts for over 30% of the total value of the goods and services produced, ranging from health services such as pathology tests to jet fighters. The government also

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[1]Surprisingly, 'leadership' only became a popular word during the twentieth century and a subject of academic study after World War II. See J. C. Rost (1993), *Leadership for the Twenty-First Century*, Praeger.

allocates, on behalf of society, licences to explore public resources such as timber, radio frequency for mobile telephony and oil, gas and minerals. Market design can lead to the efficient allocation of resources owned by society and ensure that we receive fair value for them.

Market design can also be used to solve complex problems that emerge in a variety of areas from energy conservation to reduction of health risks. To understand the potential impact of market design, consider obesity and the associated health problems faced by more than 4 million Australians. The dollar value of the burden of the disease (netting out the financial costs of $8.2 billion borne by individuals) has been estimated at $49.9 billion per annum.[2] Most of this money is spent in addressing the adverse impact of obesity on people's lives rather than on reducing or preventing obesity.

In keeping with Shaw's quote, how about putting out for tender a contract that will make payments based on outcomes such as a reduction in obesity or in the onset of diabetes in particular geographic areas or for a defined population (such as over 50s)? I urge the reader to check out the website http://www.socialfinance.org.uk/work/sibs before coming to a premature conclusion that I have lost my marbles. Through a Social Impact Bond, investors finance particular interventions (for example, lifestyle change programs) delivered by reputable service providers. Investors are paid by the public sector on the basis of improved social outcomes (for example, reduced incidence of obesity in the population); no improvement means no payment. This can be approached as a market design problem: from defining what is to be tendered, the tender rules, the schedule of payments but also importantly some of the micro rules such as what happens under default and rules to minimise gaming of the system.   Such designed markets can provide an innovative way to attract new investment and new solutions that may bring substantial benefits to individuals and communities. Market design

In this chapter we explore some of the theoretical developments over the last 40 years which led to the emergence of the field of market design. This new field has had a substantive impact on policy, especially after the highly successful auctions of the mobile telephony licences in the mid-1990s in the US. The auctions replaced an inefficient allocation system where licences were allocated to applicants via a lottery and subsequently sold for large windfalls. These auctions raised substantial amount of revenue for the US government and were adopted worldwide, including in Australia.

These theoretical developments and extensive experience in market design offer an opportunity to promote a 'better business of government' agenda. The objective of this chapter is to impart some of this knowledge to those aspiring to influence policy outcomes in Australia. As the examples in this chapter illustrate, the possibilities are numerous and the potential beneficial impact on people's lives can be substantial.

This chapter is organised in two parts. First, I provide a brief history of market design in cases wheremonetary payments can be used as the basis to allocate goods and services. This history starts

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[2]Access Economics (2008), *The Growing Cost of Obesity in 2008: Three years on*. Available at www.diabetesaustralia.com.au.

with the game theoretical foundations of non-cooperative behaviour – as typically the interests of different individuals are in conflict, for example, when buying or selling goods and services – and then moves on to mechanism design and auction theory and practice. Second, I will review a very large experiment in Brazil where markets were created to avoid electricity rationing in 2001. The choice of this example is not inconsequential. It is meant to illustrate that such an approach to public policy can be successful even in developing countries with weaker institutions. I will then provide some concluding comments.

2. Market Design: Theory and Practice

Market design as a field emerged somewhat separately from game theory. However, game theory has provided the foundations for analysing the non-cooperative behaviour that underpins market design.

2.1 Non-cooperative Game Theory, Auction Theory and Mechanism Design

Game theory is the study of the interaction among self-interested agents. Here our focus is on the analysis of equilibrium in non-cooperative games. To be more precise, we refer to theories about how we expect individuals to behave in strategic situations when their interests are in conflict. We look at equilibrium behaviour – when the strategic behaviour of individuals induces a situation or outcome in which economic forces are balanced. Key contributions in this area include those from John C. Harsanyi, John F. Nash Jr. and Reinhard Selten who were jointly awarded the 1994 Nobel Prize in Economics "for their pioneering analysis of equilibria in the theory of non-cooperative games".

The starting point is the definition of a 'Nash equilibrium' in which each player is assumed to choose the strategy (or action) that maximises his net gains, taking into account the strategies of all other players. The Nash equilibrium is the outcome that results when all players are choosing their preferred strategies knowing that everyone else is also choosing their preferred strategies and no player finds it profitable to deviate from their strategies while the other players keep theirs unchanged.

To illustrate, let us consider the well-known 'prisoner's dilemma' game. This has numerous applications to social planning, although it is beyond the scope of this chapter to examine them all. The story goes along the following lines.

Two individuals have jointly committed a crime. They are both arrested and put in solitary confinement. The police don't have enough evidence to convict the pair for the crime they committed but are confident that they can convict both of them to a lesser charge that attracts a one-year jail sentence. The standard sentence for the actual crime is 3 years. Simultaneously, the police offer each prisoner an opportunity to testify against his partner in exchange for lenience and serving no time in jail while the partner, who stays silent, will get three years in prison on the main charge. However, if prisoners testify against each other, both will be sentenced to 2 years in jail.

This game can be represented in a matrix form that includes the outcomes of the possible actions by the two prisoners (let us call them Al and Biff):

	Biff stays silent	Biff confesses
Al stays silent	(-1,-1)	(-3,0)
Al confesses	(0,-3)	(-2,-2)

Numbers in parentheses represent the sentences of Al and Biff, respectively, for the various possibilities. I have added a minus sign to the numbers to remind the reader that these are punishments not prizes and so a player will prefer, for example, -1 to -3 or 0 to – 1.

What is the Nash equilibrium of this game? Let's look at it from Al's perspective. If Biff stays silent, then Al had better confess to go free rather than stay silent (in which case he will serve one-year imprisonment). If Biff confesses, then again choosing to confess yields Al a better outcome (shorter term of imprisonment) than staying silent. Clearly no matter what Biff chooses, Al is better off confessing. As Biff faces the same problem, he too is better off confessing. That is, the Nash equilibrium of the game is for both prisoners to confess and serve two years in jail although they would be better off if they both had remained silent. To understand why the option (stay silent, stay silent) is not a Nash equilibrium, just note that if Al stays silent, Biff is better off deviating from remaining silent and confessing. By doing so he goes free rather than serve a year in jail.

To sum up, the Nash equilibrium concept is predicated on the idea that players choose actions or strategies that are best for them assuming that their opponents do the same. This apparently simple but powerful idea has been used extensively in economics and was generalised by Harsanyi[3] to games with

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[3]who incidentally started his academic career at the University of Queensland.

incomplete information and by Selten to games where players move sequentially rather than simultaneously.

One can readily understand how games of incomplete information - where there is uncertainty about how bidders value an object for sale or about the costs of potential suppliers who wish to participate in a government tender - are related to market design. Consider a seller (the government) who wants to allocate a public resource but does not know how potential buyers value the resources. Efficiency requires the resource to be allocated to the buyer who places the highest value on it. Harsanyi's notion of Nash equilibrium for the case of incomplete information (called a Bayesian Nash equilibrium) provides the tools to analyse the behaviour of the seller and buyers and to predict equilibrium. As in a Nash equilibrium, under a Bayesian Nash equilibrium players choose the best action assuming that other players do the same. The key difference is that their actions are contingent on their information (or their types – such as the values that bidders place on the object for sale in the case of an auction) which is not known to the seller.

In this instance, the allocation mechanism somehow induces buyers to reveal (directly or indirectly) their values for the object for sale. It turns out that in any auction higher valued bidders bid higher[4], the resource is allocated to the highest valued bidder. The rub is that different auction formats will result in strategic bidders following different strategies, which might have consequences for the revenue raised by the seller.

Bill Vickrey, who was awarded the 1996 Nobel Prize in economics for his pioneering work on auctions[5], proposed a mechanism that can lead buyers to reveal their true valuations. Under a second-price sealed-bid auction (now known as a 'Vickrey Auction'), bidders simultaneously submit sealed bids to the seller, and the bidder with the highest bid wins the object *but pays the second highest bid*. It can be shown that buyers in a Vickrey Auction bid their true valuations.   For those who wish to understand why this is so I have set out the detailed reasoning in the box.

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[4]While counterintuitive, this is not always the case. See, for example, McAdams, D. (2002a), "Bidding Lower with Higher Values in Multi-Object Auctions", MIT Sloan Working Paper # 4249-02.

[5]Unfortunately Vickrey passed away three days after being awarded the prize.

Although there are sound reasons why Vickrey auctions as described above are not used in practice[6], there is a substantial body of literature that aims to implement Vickrey's ideas through dynamic auctions where bidders have an opportunity to revise their bids. Indeed, auction theory is a specialised field of research[7] and its insights have been extensively used around the world since at least the 1990s by governments in allocating public resources and buying goods and services, and also by the private sector.

Auction theory is also closely linked to the field of 'mechanism design'. Much of economic theory, including part of auction theory, is devoted to understanding existing economic institutions and markets to explain or predict equilibrium outcome. Mechanism design aims to reverse the direction of this process. It begins by identifying desired outcomes and asks whether mechanisms (institutions, markets) could be designed to achieve the desired outcomes. Outcomes could include the provision of a public good (such as public education or defence) or the allocation of public resources (that is, who is awarded the resource and the associated payments).

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[6] For example, bidders might be concerned that the seller can exploit this information (that is, the values revealed in this auction) in future auctions by setting a higher reserve price.

[7] See, for example, F. M. Menezes and P. Monteiro, 2008, An Introduction to Auction Theory, Oxford University Press.

The field of mechanism design has its origins in the work of Leo Hurwicz in the 1960s. He shared the 2007 Nobel Prize in Economics with Roger Myerson and Eric Maskin. Auction theory can then be seen as a particular of mechanism design. This connection is evident in a number of ways. For example, the Vickrey-Clarke-Groves mechanism to finance a public good in the presence of externalities – that is, my consumption of a good impacts on other people's consumption -- charges each individual the harm they cause to other bidders, and ensures that the optimal strategy for a bidder is to bid their true valuations of the objects. It is a generalization of a Vickrey auction for multiple items. Another example includes the work of Roger Myerson (with David Baron) on how to regulate a monopolist, such as an electricity distributor, when costs are unknown. The same principles were applied by Myerson to characterise the optimal auction; the auction that maximises the expected revenue of the seller. These two problems are connected because the seller in an auction is also a monopolist who faces buyers and does not know the values that buyers assign to the object for sale.

As we will see next, when the allocation of public resources is concerned, economic efficiency is often more important than revenue maximisation. However, efficient auctions can raise significant amounts of revenue for the government.

2.2 From Theory to Practice: Auctions as a public policy tool

Auctions have emerged as the preferred approach to the allocation of publicly-owned resources, including radiofrequency spectrum, electricity, timber, and oil and gas exploration licences. The reason for the emergence of auctions is their ability to allocate resources to parties who have the highest value for them.

Auctions are superior to the commonly used mechanism known as a 'beauty contest'.   Under this allocation methodology, government specifies criteria and invites private firms to demonstrate their ability to meet them.   Defining the correct criteria and making accurate evaluations places a costly compliance burden on the Government and creates opportunities for favouritism and corruption. To see this, consider the example where instead of selecting on the basis of the highest monetary bid(?) a mineral exploration or production licence is allocated exclusively on the manner in which a miner treats indigenous communities and remediates the environment after extracting the minerals. A key issue is how to evaluate competing proposals – after all these are essentially promises of actions that will be taken ex-post and in some instances decades from now and so judgement has to be exercised. There is a risk that the winner of the beauty contest is not the most efficient party but rather the party that is best at writing proposals.

In contrast, a well-designed auction allocates the licence to the party that is more efficient at extracting the resources and raises more funds to compensate indigenous communities and mitigate adverse impacts on the environment as defined in the licence requirements.   The auction monetises these objectives, which otherwise would be evaluated qualitatively. The government can then use the proceeds of the auction to fund environmental mitigation and to compensate indigenous communities. By selecting an appropriate reserve price, if the auction cannot raise enough resources to provide

compensation for indigenous communities and to care for the environment, then the licence is not allocated.

Moreover, unlike beauty contests, well-designed auctions can raise substantial revenue for government. For example, the government has raised over $2 billion in the recent sale of the spectrum of frequency that was released from the switch from analog to digital TV, which will be used for the provision of 4G mobile services.

The revenue raised in the 4G auction can be seen as capturing economic rents that might not be captured by our company tax regime (which is designed to tax accounting profits) as the 4G revenue includes both a normal return to investment and also economic profits (rents). Economic rents are returns in excess of the normal return and are usually either firm- or location-specific. The former emerge, for example, because of a particular technology, know-how, or entrepreneurship skills. The latter are associated with the business's location in Australia, such as in the case of mineral resources or oligopolistic industries. Given the direct and indirect costs of taxation[8], an auction can be seen as a more efficient form of taxation as given its lump sum nature it does not distort investment behaviour.[9] This was an important reason for the recent decision of the Australian government to use cash bidding for oil and gas exploration licences in mature areas.

In addition to allocating public resources efficiently, and being an effective mechanism for taxing economic rents, auctions can also be used to solve complex problems. For example, consider the market for electricity where supply and demand need to be balanced continuously on time. Australia is one of the few countries that have a market for establishing the wholesale price of electricity in real time. Electricity generators submit bids (schedules specifying how much they are willing to supply at various prices) which are added. An equilibrium price is found at the point where the aggregate supply schedules meet the system demand. All bids below that price are successful and all bids above that price are unsuccessful. The value of electricity traded in the *National Electricity Market* reached $11.2 billion in 2011-12.

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[8]Direct costs include not only the administrative costs of collecting the tax but also compliance costs. Indirect costs are what economists refer to as the deadweight losses associated with taxation; taxes distort economic behaviour and such distortion entails a cost, as society is deprived of the economic benefits of the activity suppressed by taxation. Typically the indirect costs are substantially larger than the direct costs of taxation.

[9]This is a basic result in the economics of taxation. To understand this, consider the decision whether or not to invest $100 in additional extraction capacity and for simplicity consider only equity investment. Suppose the required rate of return is 10% (this is the opportunity cost of capital) and the corporate tax rate is 33.3%, then if this project returns only $10, it does not go ahead because of the tax. Indeed, the project has to generate at least $15 (to cover the tax of $5 and meet the required rate of return of $10) for the firm to undertake. In contrast, the auction licence fee had already been paid and, therefore, it is sunk and should not impact on this investment decision.

As another example, take Victoria's *BushTender*, an auction-based approach that was trialled in two Victorian regions in order to allocate funds to biodiversity conservation.[10] The auctions involved the use of a simple auction mechanism to determine payments that farmers in Victoria were willing to receive to undertake certain environmental actions such as protecting the habitats of certain species, weeding or fencing particular areas. The process can be summarised as follows: landholders within the trial areas registered an expression of interest, and were subsequently contacted to arrange a property visit, during which a field officer assessed the quality and significance of the native vegetation on the site and discussed management options with the landholder. A BBI (*Biodiversity Benefit Index*) for each site was calculated. Landholders then identified the actions they proposed to undertake on the site, and together with the field officer prepared a management plan as the basis of their bid. Successful bids are all those bids at points to the right of the threshold-BBI curve, which depicts the value of the marginal bidder's BBI. The surplus from the contract is the horizontal distance between each successful bid point and the threshold-BBI curve.
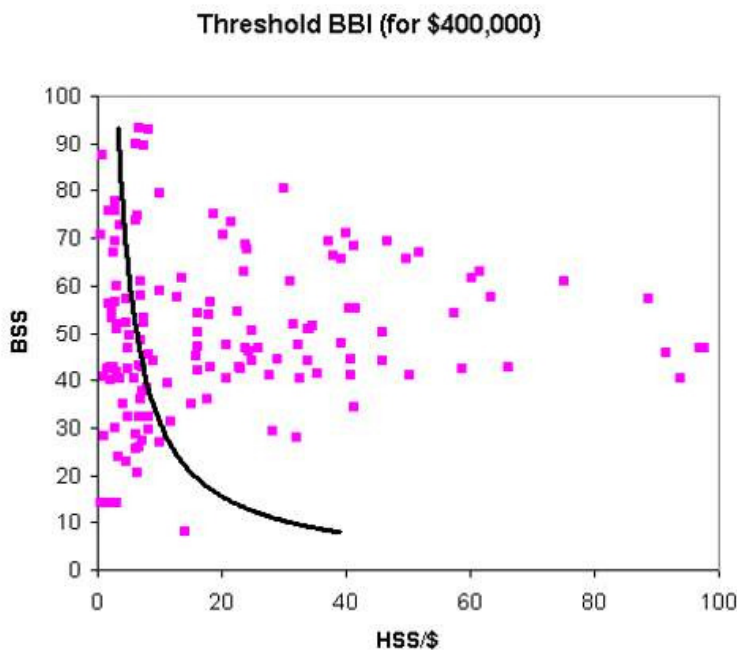

Figure: Threshold-BBI and Bid Data (Stonehamet al, 2003)

This auction offered large cost savings to the governments in comparison to a hypothetical fixed price scheme, where the agency would pay each successful landholder the same price (the price of the

[10]See, for example, G. Stoneham, V. Chaudri, A. Ha and L. Strappazon (2003). Auctions for conservation contracts: an empirical examination of Victoria's BushTender trial. *Australian Journal of Agricultural and Resource Economics.* Vol. 47:4, pp. 477–500.

marginal offer). Specifically, for the same budget of around $400,000, a one-price auction would give approximately 25% less biodiversity (from 1,165,000 to 874,000 biodiversity quality (BQ) units) than a discriminative price auction. Expressed in another way, a budget of approximate $2.7 million (almost seven times more than the actual budget) would be required for the one-price auction to get the same quantity of BQ units as the discriminative price auction. Direct benefits from the bush auctions consist of the efficiency gains in information revelation, cost minimisation and contract specification. Indirect efficiency gains include more flexibility in other policy decisions such as offsets for infrastructure development, and providing education to landholders at least in terms of the attitudes towards conservation.

Tenders, the flip side of auctions, are used by governments around the world to buy goods and services varying from complex weapon systems, to roads and health services. Different from an ordinary auction where buyers compete to obtain a good, a service or a licence by making bids, a tender involves sellers competing to obtain business from the buyer. The most common application of tenders is for e-procurement of 'standard goods', a strategy used to reduce spending as part of strategic sourcing. With this type of 'reverse auction', the objective of cost minimisation becomes the low hanging fruit without causing any distortion to the market. Saving is achieved through increased competition and productive efficiency from economies of scale and scope. Not only are costs minimised, a range of potential non-price benefits can also be realised, including decreased transaction costs, increased transparency, less bureaucracy and faster acquisition processes. World Bank (2003) estimates that the government e-procurement contributes to the efficiency gains of a reduction of 10 to 20% in prices due to increased competitiveness, and a 50 to 80% fall in transaction costs.

An example of these dynamic reverse auctions is the tender process for the supply of blood products in the UK National Health System. Tenders may either be open or restricted, i.e. companies must be invited to submit a tender. Moreover, potential suppliers must submit additional information regarding their technical, economic and financial capacity. The process serves several objectives ranging from efficient price and quantity to technical competence of the suppliers, high level of delivery performance and lower risk. The saving from this process was estimated to be from £18 to 48 million across England alone.

I hope to have convinced the reader by now that auction mechanisms can contribute considerable efficiency gains to society and ought to be part of the repertoire of approaches used by modern governments in allocating resources and procuring goods and services. However, not all efficient markets need to involve an auction. Other types of market design can serve well in some specific circumstances. In the next section, we investigate a very large market design in Brazil.

3. A market to avoid electricity rationing in Brazil

Around 2000, Brazil was producing roughly 90 per cent of its electricity from hydroelectric sources. Confronting a severe drought, in May 2001 the Brazilian government implemented a program requiring an average 20 per cent reduction in electricity consumption for the country. The program assigned end-users a consumption entitlement (quota) based on about 75% to 80% of average past consumption. The details appear in the table below. Careful design included allowing for changed circumstances and a well-designed public information campaign.

Table 1 (Reproduced from Maurer (2012)[11]

	2000 Consumption	Reduction Target	Financial Charges (Penalties)	Bonuses?	Individual Cuts?
Residencial	Till 100 kWh/mo	Optional	No	2 to 1 saved	No
Residencial	From 101 till 200 kWh/mo	20%	No	1 to 1 saved beyond target	Yes
Residencial	From 201 till 500 kWh/mo	20%	50% of tariff, if above target	1 to 1 saved beyond target	Yes
Residencial	Above 500 kWh/mo	20%	200% of tariff, if above target (1)	1 to 1 saved beyond target	Yes
Industrial/Commercial (High Voltage)	Above 500 kWh/mo	15% to 35%	MAE price for consumption above target	No (2)	Yes (3)
Industrial/Commercial (Low Voltaqe)	Above 500 kWh/mo	20%	MAE price for consumption above target	No	Yes (3)
Rural	No limit	10%	No	No	Yes
Public Services	No limit	15% to 35%	No	No	Yes

(1) Corresponds approximately to MAE price

(2) May trade quotas. In the wholesale market, if load > 2.5 MW

(3) Cuts by number of days to achieve target, unless company "buys" quotas in the market

Up to entitlement, consumers paid the regulated price. However, under-consumption was rewarded with cash payments and over-consumption penalized. For residential consumers the penalty varied from 50% to 200% of the regulated price whereas for industrial consumers the penalty was linked to the cost of generating electricity in such a constrained world (approximately US$ 300/MWh). For the benefit of the reader, average wholesale electricity prices in Australia at that time ranged from $37/MWh in NSW to $56/MWh in South Australia.

Consumers were allowed to trade entitlements. Smaller users traded with the retailer/distributer

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[11] L. Maurer (2012), 'Brazil 2002: Sensible Rationing to Alleviate Prolonged Electricity Shortfall'. Presentation available at *https://www.iea.org/media/workshops/.../savingelectricity/Brazil2002.pdf*.

whereas there was a market for trading entitlements for larger users. This meant that firms that were not efficient users of electricity could sell their entitlements to more efficient firms and use the proceeds of the sale as compensation for reduction in production or shut down.

The program was an unqualified success as indicated by Figure 1 below. There was not a single black-out or brown-out. It achieved over 20% reduction in consumption over 8 months, almost country-wide. Estimates suggest that at least 1-1.5% of the Gross Domestic Product was saved vis-à-vis the impact that rolling, unplanned black-outs would have had in the economy. Within a year, enough rain had fallen to repeal most of the policy, which by then had been extremely successful in avoiding electricity rationing and mitigating adverse impacts on economic growth. The red lines below signify approximately the period of operation of the scheme.

Figure 2: Reproduced from Tracy (2010)[12]
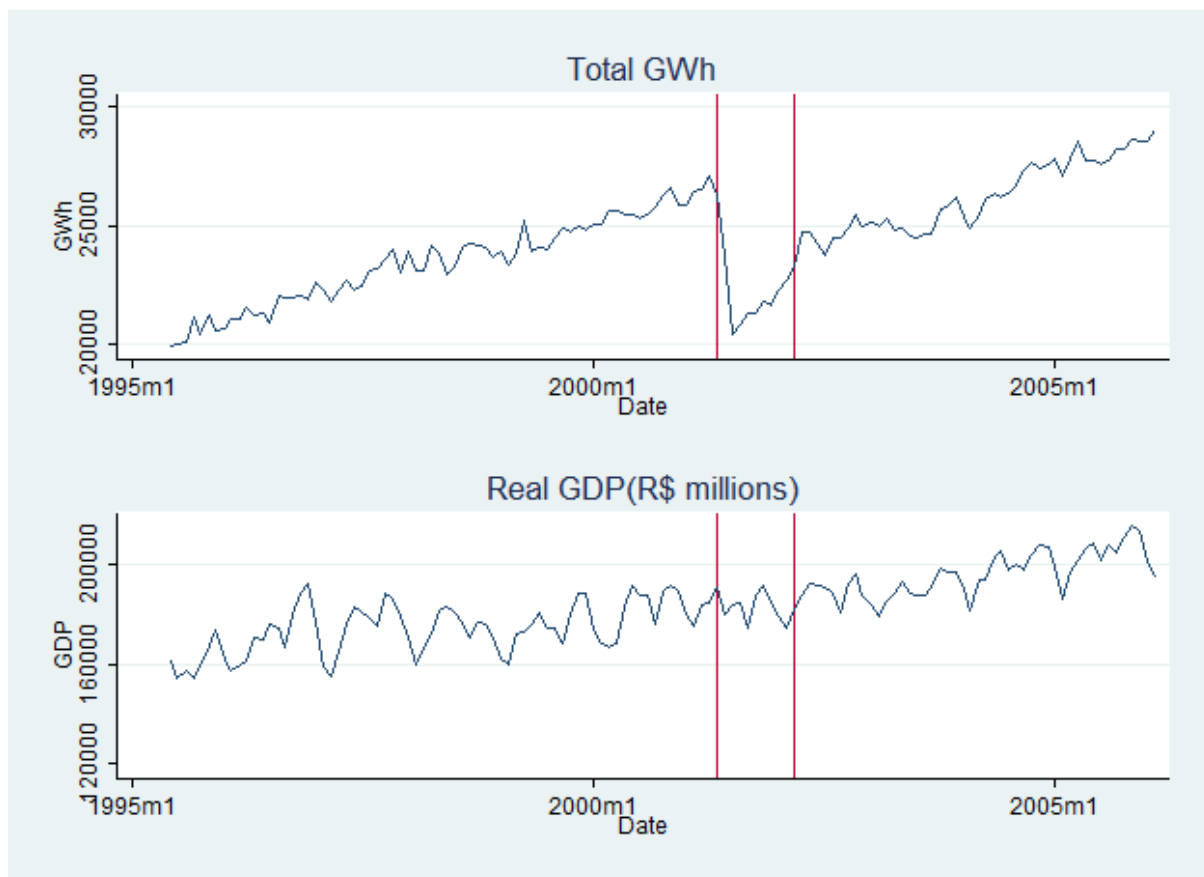
A survey was undertaken to document the choice of energy saving strategy chosen by consumers. The result of the survey is revealing of the power of incentives in changing behaviour. The most common

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[12] B. Tracy (2010), 'Demonstrating the limited implications of an energy-output causal relationship through intervention analysis applied to Brazil.' Mimeo.

action taken was essentially costless but potentially accounted for a significant reduction in consumption; it consisted simply of turning off lights! This is an illustration of how small adjustments in each margin (that is, consumers make small adjustment in their behaviour by watching less TV, switching off lights more often, etc.) ,as a response to price changes, can lead to big reductions in electricity consumption. Average individual consumption of electricity was reduced to 1994 levels. Energy efficiency became a part of the decision making process to buy appliances and white goods, changing from being mentioned by 8% of consumers before the crisis to 58% of consumers after the crisis.

Table 2: Top 5 most popular actions taken by consumers

Switching off lights
Replacing light bulbs
Less time watching TV
Less ironing
Turning off freezer

Source: Maurer (2012)

4. Concluding Comments

Market design has emerged as a key approach in achieving better public policy outcomes in a variety of settings.   In particular, market design allows policy makers to tailor a mechanism such as an auction to the particular circumstances and thereby achieve their aims. As illustrated, auctions enable resources to be allocated to those who place the highest value on them as well as raising substantial revenue for the government. Auctions, along with other forms of market design, can be used to solve complex problems that emerge in variety of areas from energy conservation to environmental protection. Market design has successfully been implemented even in developing countries where institutions are less strong.

It is important that the benefits of market design are considered by potential new leaders, who are in a position to influence policy and society. Propagation of these ideas could lead to an improved government agenda, whereby well-designed markets can utilise competitive forces to enable the best use of public resources. As a result, efficiency gains and a fair return for society could be achieved along with increased transparency, maintenance of quality, sustainable industry, corruption mitigation and minimisation of costs.

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