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# Consumer-led demand side financing for health and education: an international review

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## **Abstract**

There is increasing awareness that supply subsidies for health and education services often fail to benefit those that are most vulnerable in a community. This recognition has led to a growing interest in, and experimentation with, consumer led demand side financing systems. These can be defined as placing purchasing power into the hands of consumers to spend on specific services at accredited facilities. A common modality is to use a voucher or other evidence of entitlement to a specific level of services. Vouchers have been used in a number of countries across a range of social services. This type of consumer-led demand side financing can be contrasted both with traditional supply subsidies and also third-party purchasing of services common in systems with developed social insurance systems.

Most experimentation has been in the education sector but there are also examples in health, housing and essential nutrition. The international evidence suggests that vouchers have been successful in raising the consumption of key services amongst key groups. Impacts include increase in enrolment and reduced drop-out rates for vouchers for schooling and increased clinic utilisation and compliance with treatment regimes for health programmes. Evidence also suggests that vouchers can be used to target vulnerable groups.

There is less positive evidence on the effect of vouchers on quality services as a consequence of greater competition. Some studies suggest that the problem of adverse selection mean that providers shy away from serving higher risk consumers. Location of services relative to population also means that invariably the areas with more provider choice, particularly in the private sector, tend to be dominated by higher and middle income households. Vouchers on their own may not be able to improve the quality and distribution of services.

There appears to be some scope for extending voucher schemes in low income countries for health services as a way of targeting vulnerable groups and increasing use of key services. Such schemes should perhaps focus primarily on fixed packages of key services aimed at easily identifiable groups. This itself will require the development of capacity in administering the financing schemes and also accrediting providers. Extending demand financing to less predictable services, such as hospital coverage for the population, is likely to require the development of a voucher scheme to purchase insurance. This suggests an already developed insurance market and is unlikely to be appropriate for some time in most low income countries.

Key-words: vouchers, demand-side, financing,

## 1. Introduction

In the last few there has been an increasing awareness that many of the core public health innovations in the health sector have failed to achieve expected objectives. There is a wealth of evidence that suggests that the poor and vulnerable often benefit less from public health spending than wealthier income groups. The primacy of funding and provision of primary health care services is well accepted by enlightened policy makers and health professionals. Yet evidence of the impact on outcomes from supply side interventions, such as spending on rural clinics, remains inconclusive (Filmer, Hammer et al., 2000).

Weaknesses on the supply side has led to some interest in consumer led demand-side financing as a way to improve the targeting of specific groups and also as an instrument for promoting provider efficiency. Consumer led demand-side financing mechanisms have been defined as a “transfer of purchasing power to specified groups for defined goods and services” (Pearson, 2001). They often utilise vouchers where a consumer is given a written entitlement which can be exchanged for a specified service, up to a pre-determined amount at accredited facilities. In other cases consumers do not receive written entitlement but are told to claim a given service from a provider which then claims directly from the financing agency. Some schemes that are voucher-like, such as HMO access in the US, have deliberately steered away from using the term voucher because of adverse connotations with other welfare schemes.

Vouchers and other demand-side financing methods have been used in the US, Europe, a few South American and some other low and middle income countries for a wide range of socially desirable services including health, education, public housing and essential food. Although vouchers have received much recent attention in the public finance literature, they are not a new device. Steuerle et al. mentions that returning war veterans were offered education vouchers in the US from 1944 while vouchers for food date back to the 1960s (Steuerle, Reischauer et al., 1999).

Consumer led demand-side financing can be used in a number of different ways to further public policy objectives. These objectives include:

- as a means of targeting low income or other vulnerable people, as in the case of vouchers for the disabled to pay for transport and higher education vouchers for the poor
- as a means to change behaviour of voucher holder, as in the case of vouchers for women that are breast-feeding or to encourage people to come off drugs
- to promote competition between providers and choice for the consumer as in many of the programmes in North and South America used to stimulate competition between schools

This paper is divided into the following sections. In section two definitions of demand side financing systems are considered and the extent to which actual systems fit these requirements. Section three examines the justification for demand side financing while section four looks at a series of issues associated with implementation. Section five looks at the evidence for the effectiveness of these methods in the health and education sectors around the world.

## 2. What is demand-side financing?

Demand side financing places purchasing power into the hands of consumers to spend on specific services. This is in contrast to providing a direct input based subsidy to providers to deliver a service. Vouchers are often the vehicle for transferring the purchasing power defined as “a subsidy that grants limited purchasing power to an individual to choose among a restricted set of goods and services”<sup>1</sup>.

Bradford and Shaviro have suggested that demand-side financing or voucher schemes have the following four characteristics (Bradford, 1999):

1. Grant to consumers based on personal or household characteristics - these grants are provided in order to enable re-distribution of resources towards those with greater need and/or lower ability to finance these needs.
2. Intermediate choice – users are not confined to one facility but can shop around between facilities for a specified good. Yet the choice is not totally free otherwise the finance method would become indistinguishable from a cash-grant. Users must spend the resources on a specified good at specified outlets.
3. Supplier competition – so that providers are encouraged to compete for the finance provided to the consumer.
4. Declining marginal rate of reimbursement (MRR) – so that the value of the voucher is limited and payment beyond a certain limit is made in full by the consumer (or some other third-party payer). Bradford and Shaviro refer to this as the principle of 100%-0% MRR.

To these criteria we might also add the perhaps self-evident requirement that payment by consumers will be for a service rather than for inputs. Consumers, unlike ministries of education or health, are not primarily interested in ensuring employment of staff or purchasing drugs but in obtaining a specific end-service resulting from the mix of these inputs.

It is clear that while vouchers satisfy each of these characteristics so also do some other forms of finance. A budget given to a public (or private) hospital to pay for staff and non-staff inputs does not meet these criteria since the grant is not personal and no choice is permitted. On the other hand an intermediate public purchaser (for example a district health authority or social insurance fund) that permits patients to obtain care from a range of accredited public and private facilities and then pays for the service (up to an agreed level) based on quantity of service provided also satisfies some of these conditions. As in many areas of public policy there are plenty of grey areas. Some schemes might not fully be described as demand-side financing (based on the above criteria) but nor are they fully supply side input-based mechanisms. Examples include:

- Public purchaser contracting with public hospitals based on numbers of patients treated (partly satisfies criteria 1, 2 and 3 but not 4)
- Per-enrolment funding of state schools based on limited parental choice of school (satisfies 1 and partly 2 and 3 but not 4)

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<sup>1</sup> Random House Dictionary of the English Language, second edition, New York, Random House 1987 quoted in (Steuerle, 2000).

- Block grant funding to private facilities based on a commitment to admit a certain level of non-fee paying pupils or patients (partly satisfies 3 & 2 but not 1 or 4)
- A cash grant given only on condition that the patient makes use of certain services (satisfies 1, 3 and 4 but 2 only partly)

Conversely it is also possible for a mechanism that is styled as a voucher scheme not to properly satisfy these criteria. A example is where the voucher offers no effective choice between provider where there is a monopoly of accredited provision.

It is apparent from this discussion that there is no simple distinction between supply and demand-side financing systems. Rather there is a spectrum of possibilities. Along this spectrum there does, however, appear to be three distinct paradigms. These are:

- Pure supply-side: public facilities are financed according to inputs (normatives) - numbers of staff, historic spending on consumables etc.
- Third-party purchaser: a public or semi-public body contracts with selected public and private facilities on behalf of a population and reimburses on the basis of outputs (pupils enrolled, patients treated, DRGs delivered). In effect the purchaser acts to demand services on behalf of the consumer (an agency relationship)
- Consumer led demand-side: consumers are given purchasing power to obtain selective services from a range of accredited public and private providers. The role of the public sector as purchaser is limited reduced to managing voucher reimbursement, determining services and rates of reimbursement and accrediting providers.

In some cases the difference between a public purchaser and consumer led demand-side finance may simply be that the public purchaser transfers the value of the voucher directly to a provider on proof of use by a targeted consumer rather than giving it to the consumer. This is the case with the charter schools in America, New Zealand and local management of schools in the UK during the 1990s<sup>2</sup>. In these cases choice was confined to the public system. This principle is also behind most capitation schemes to pay for primary health care services in countries such as UK and Sweden. All these systems obey the MRR 100-0% criteria suggested above. In contrast social insurance systems in Europe and social health assistance for the poor in the US all permit patients to be treated in both public and private facilities. They also tend to reimburse facilities for actual services consumed by the patient, perhaps using some co-payment, rather than a fixed value. These do not obey the MRR 100-0% funding principle.

In order to limit the scope of this paper we will concentrate on financing mechanisms that provide consumers with earmarked grants to purchase services. This include mechanisms where the value of the voucher is transferred directly to providers but where otherwise it is the consumer that selects the provider of services. We term this financing 'consumer-led demand-side financing' with vouchers as a prime example This is in contrast to a system of third-party purchasing where funding is allocated to the purchaser for it to take decisions on behalf of consumers (as is the case in many social insurance systems). Inevitably there are grey areas where consumer views are delegated to, rather than represented by, the purchaser. There is no clear cut-line

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<sup>2</sup> Capitation funding based on enrolments, for schools in the UK still remains but choice is now curtailed so that in most areas school entry is based on catchment area. Parents may still apply for school outside catchment provided that spaces are available.

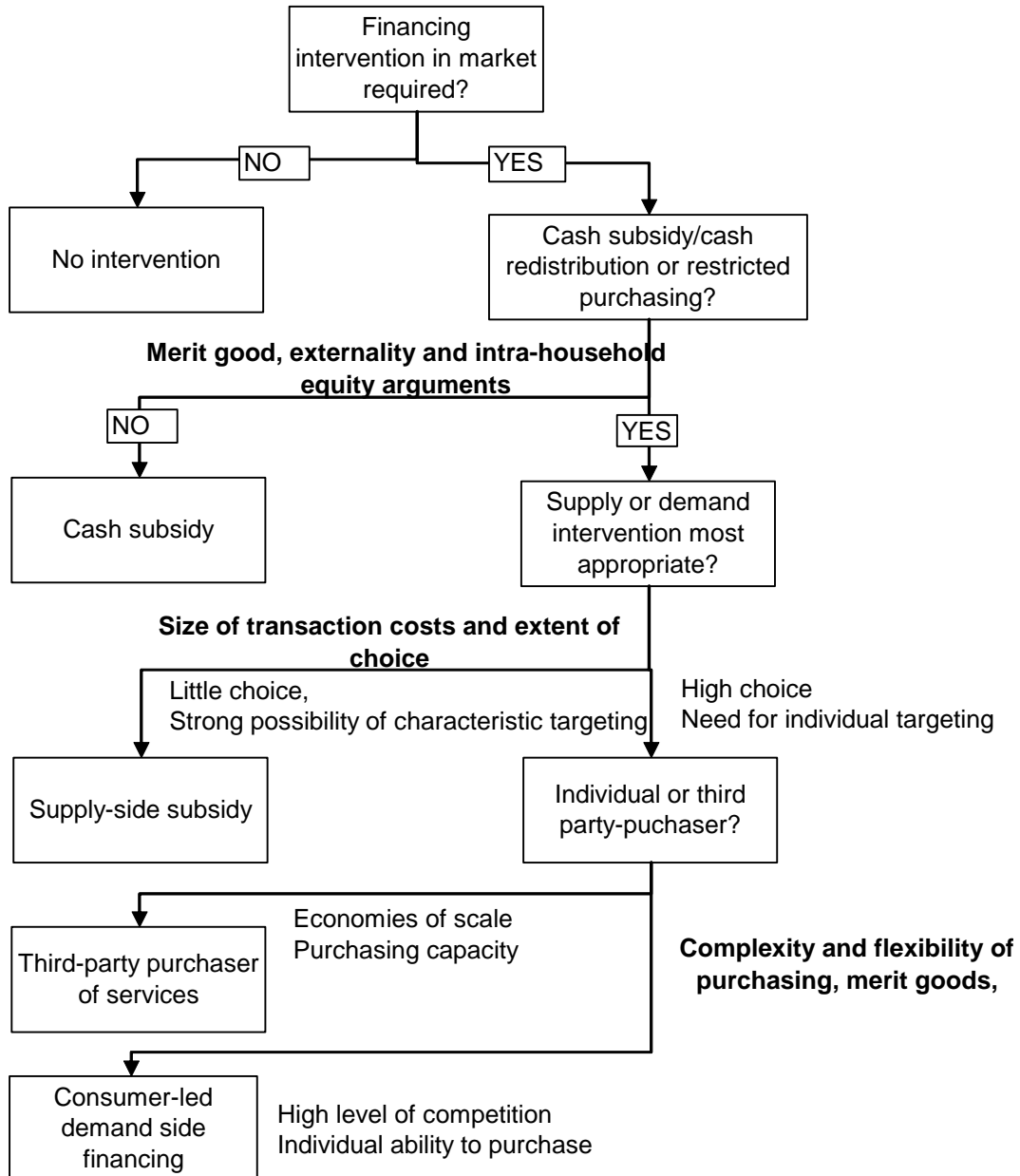
dividing types of financing and the best that can be done is to observe that precise delineation is sometimes impossible!

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### 3. Why use demand-side financing mechanisms?

In this section we examine the main reasons why a government might want to intervene in the financing of a health or education market. The reasons are considered in the context of a series of decisions the result of which lead to different conclusions on the best method of financing intervention. This decision process is depicted in figure one.

**Figure one: choosing an appropriate financing mechanism**





### 3.1 Financing intervention in a market

The first decision is in whether there is any justification to intervene in the market in the first place. This decision depends on issues of social justice, whether to redistribute resources across society and also whether there are efficiency reasons for providing resource re-distributions. Markets may be disaggregated and justification to intervene in one sub-market is not necessarily a justification to intervene across the entire sector. In education, for example while external effects of primary (maternal) education on child health are well established, no such link has been shown for tertiary education and the case for intervention is weaker particularly in a severely resource constrained environment.

### 3.2 Cash subsidy or restricted spending choice?

Based on a positive decision to intervene, the second level of choice is in deciding whether a simple cash subsidy or tax redistribution is sufficient or whether some further mechanism is required that regulates consumption is required.

If a main concern with improved targeting of the poor and vulnerable is to ensure that resources reach these groups then the most direct way is to effect a simple transfer of resources through the tax-benefit system or through a direct cash disbursement to those classed as needy. This is based on conventional economic theory which suggests that unconstrained transfers yield the same or greater increments in individual welfare (utility). See annex one for more discussion.

Deciding instead to direct consumer spending by restricting the use of the transfer implies a policy decision to encourage or enforce the use of a particular service or commodity. This could occur for two main reasons: presence of externalities and merit goods<sup>3</sup>. Firstly, because the social benefits of consuming a particular commodity exceed the private benefits – the case of an externality. Examples of externalities in public policy making are relatively rare. In health they are mainly restricted to services such as vaccination or treatment and prevention of STIs where consumption confers a benefit on people other than those that are vaccinated. A second reason is because the private decision is considered flawed because individuals do not have sufficient information to make an informed decision on the appropriate level of consumption – the case of a merit good. In principle this could include a much wider range of services but this also leads to a potential problem. Intervention based on the merit-good argument is generally treated with suspicion by economists who often see it as a justification for intrusion in almost any aspect of private life<sup>4</sup>. Thurow, for example, argues that “the general economic case for cash transfers is strong enough that the burden of proof should always lie on those who advocate restricted transfers” (Thurow, 1974). In health and education the key to

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<sup>3</sup> It should be noted that the welfare effect of a proven externality and that of a merit good is rather different. In the case of the merit good the argument rests on a third party having access to information that is difficult to convey to the consumer directly but were it possible would alter the individual's perception of her utility function. In the case of the externality the individual's utility function is unaltered but consumption influences the welfare of other consumers that are not accommodated in the individual's own assessment of her welfare.

<sup>4</sup> Based on the merit-good idea a government might feel for example, that having a bath once a day is in the interests of individuals who fail to understand their need for a bath. On this basis a government might legislate so that baths were enforced or subsidised in every household. Bradford and Shaviro do not refer to merit goods at all but rather to intervention based on 'paternalism' (Bradford, 1999).

demonstrating a case for a merit good is to show that consumers lack the adequate knowledge to make informed choices. Even giving them information would not guarantee better decision making since processing requires specific knowledge<sup>5</sup>.

A further reason for restricting choice concerns the allocation of resources within the household (intra-household). One of the early justifications for giving child benefit to the mother rather than the father in the UK was due to the worry that the father would spend the money at the pub rather than on his children. This crude characterisation contradicts the household homogeneity assumption of simple economic models. It is supported by studies, such as the one by Quisumbing, that suggest that women head of household generally give higher priority to the social welfare of children and other members than men (Quisumbing and Maluccio, 1999). Giving cash to individuals may not work since cash can be captured by other household members in a way that vouchers cannot.

A final point is that there may, in fact, be no other way of redistributing wealth in a way that accurately targets poor families. In countries where the tax-benefit system is under-developed, corrupted and depends principally on indirect taxation it may prove difficult to ensure that modifications benefit poorer households. Targeting cash hand-outs to those identified as poor run the risk of being corrupted by the fraudulent behaviour of those distributing the cash. In this case it might be argued that vouchers would reduce the problem since while distributors could benefit directly from cash they might be unable to benefit from a voucher that is only usable by certain categories of individuals. A school voucher for children or a STI voucher for sex workers would not be considered a liquid asset to those distributing in the same way as a cash transfer. A counter-argument, perhaps, is that provided the voucher is sufficiently valuable a way for corrupting the process can always be found. Families receiving a valuable school voucher, for example, might find they are confronted with an impossible wall of bureaucracy preventing the release of the voucher until a payment of sufficient size is made to speed up the process.

### **3.3 Supply or demand intervention**

The third level of choice is whether to intervene using a supply subsidy, third-party purchaser or voucher system. In principle this is a two stage choice: first to decide on whether to intervene on the demand or supply side and second if a demand intervention is chosen, to decide on a third-party purchaser method or a consumer-led method such as voucher

There are two issues in deciding on whether to opt for a supply or demand-side method of financing: firstly the best way of targeting and second the extent to which consumers can exercise choice.

#### **i) Targeting**

Systems that depend on supply-side subsidies may not be good at targeting those in most need. Evidence that the poor, however defined, have inferior access and make lower use of publicly allocated resources and services is now well accepted in countries as diverse as Bulgaria, Ghana, Bangladesh and Cambodia (Demery, 2000; Institute\_of\_Policy\_Studies, 2001). This is for a variety of reasons including physical proximity to facilities, leakage of resources away from diseases proliferating amongst

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<sup>5</sup> Giving a consumer a textbook of medicine does not necessarily enable him to make an accurate diagnosis of his illness and identify the correct treatment.

the poor, ignorance of treatment options and cultural and household constraints preventing health seeking behaviour. A general conclusion is that the public sector needs to do much better in directing services towards poor and other vulnerable groups if targets established in country poverty strategies and embodied in international development goals are to be achieved.

A counter-argument is that if most people in a particular area are considered needy then funding facilities in that area may be quite an effective and cheap method of ensuring that they are able to receive services. In contrast establishing a voucher handling agency to identify and distribute entitlements and later verify and pay providers can be a costly activity.

An assessment of the cost of financing schemes must also take into consideration the relative risk of fund –leakage arising from fraudulent activity under both supply and demand systems. There is an obvious danger that vouchers can be corrupted by those that distribute them to beneficiaries. At the same time the prevalence of informal activity in publicly financed (supply-side) facilities in many countries is well accepted. Partly this is the consequence of a small budget being spread too thinly, partly the result of rent seeking behaviour by those responsible for allocating funding through, for example, kick backs arising from certain procurement decisions and partly the haemorrhage of resources through petty theft of stores. Leakage also arises when inputs designed for the treatment of certain priority diseases is used instead to treat lower priority conditions. It is possible that direct or purchasing of services by patients or an independent purchaser through the use of vouchers could help to reduce this leakage. Implicitly this presumes that this is a more trustworthy or practical solution than through public sector regulation.

## ii) choice and selective purchasing

The second issue concerns whether there are potential gains available from selective purchasing rather than subsidising public facilities. Several benefits are possible from choosing demand-side financing methods. One is that selective purchasing forces some competition between providers of services and may then improve quality. Whether this quality improvement is forthcoming largely depends on how good purchasers or consumers are at assessing quality and also whether genuine choice for services exist. For simple and common services, such as primary education, treatment for STDs or routine pregnancy related services, there is likely to be a range of providers offering services within a given locality at least in relatively densely populated countries. For less common or more complex services this choice may not be available and so any benefits of competition will be lost. In the case of a contract between a purchaser and monopoly facility may be almost equivalent to a supply side subsidy since all patients must attend the service. There may still be some residual benefit from the purchasing arrangement if the contracting process has the effect of making decision making more explicit. A further benefit of demand-side methods is that they may enable consumers to obtain services from local outlets rather than having to travel to a public facility. Again the issue of quality and numbers of providers arise.

In summary the choice of a supply or demand side method of financing pivots around two main issues.

First demand financing may help more accurately to target low income and other needy consumers. This requires a system for identifying those in need and pre-

supposes that targeting by area and self-selection<sup>6</sup> does not effectively identify the poor (for further discussion see section 4.1).

The second issue is whether there are alternative providers offering a service of an adequate standard that consumers could choose for reasons of location, quality and other considerations. If there are then there may be some gain from offering consumers or third-party purchasers the opportunity to contract outside the public sector. This is likely to require the development of a standards agency that will determine and monitor which providers are able to offer services of a specific standard.

If the answer to one or both of these questions is yes then there is probably a case for considering demand-side financing. Even if this is the case further work will be required to determine whether the transaction costs of administering the new financing process and a quality assurance process are justified.

### **3.4 Third-party or consumer-based (voucher) financing?**

If demand-side financing appears to be considered an effective and viable option then the final level of decision making is to determine whether to opt for a third-party purchaser or consumer (voucher) approach. There are two main dimensions in the choice of demand based financing. Firstly the level of transaction costs involved in each system. Secondly the nature of the merit good argument and what this implies about the way in which choice is encouraged.

All financing systems have transaction costs for consumers and financing agents. These costs may be minimised where finance is provided directly to facilities avoiding the need to identify groups of consumers and establish and monitor contracting practices. With third-party purchasing costs are incurred to establish and maintain the purchasing agency and in both providers and purchasers maintaining the contracting process. In the case of vouchers costs are incurred in identifying and distributing them to those that qualify for distribution.

A second consideration is the nature of the merit good argument. Once a case for a merit-good has been made, the further question is whether it is most appropriate to allocate funding to the consumer or leave the purchasing to a more informed body. If voucher use is costless to the consumer they should have the effect of ensuring that a minimum level of the subsidised service is used (see section 4.2 for a discussion for the case where voucher use is not costless). While a voucher prevents a consumer using its value for some other purpose it may not ensure that the consumer makes use of the right type of service at the right time. Voucher systems can also be arranged so that only accredited (i.e. good quality) providers are used but this does not ensure that consumers necessarily receive the correct type of treatment. Potential users must search for the service provider that best fits their needs. In some cases this may be a time consuming and expensive process, one that is possibly best left to an informed third-party purchaser.

It is a common presumption that individuals are often not good at evaluating what is most beneficial, particularly in the health field. Certainly complex diagnosis will be beyond most patients and this leaves them open to the possibility of exploitation. Similarly it has been suggested that often parents cannot judge which school will

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<sup>6</sup> Self selection – while public facilities may be open to all comers, certain characteristics such as waiting times or poor hotel services may mean that in reality only the poor use the services.

most suit their children (West, 1997). In principle the merit good aspects of health care and to a lesser extent education should mean that an informed third party purchaser can do better in selecting quality providers and ensuring a quality service than individuals acting alone. Evidence on the ability of the public sector to contract with the private sector suggests, however, that capability in purchasing techniques is often lacking and that this is a major impediment to successful contracting mechanisms (Mills 1998). There is also evidence that patients in certain circumstances may be quite good at assessing the type of facility that will provide a quality service of diagnosis and treatment for a particular class of illness, symptom or patient. In Tanzania, for example, Leonard found that patients make complex decisions about where to go that appeared to be determined by the nature of the illness and an evaluation of the relative performance of competing facilities in providing effective treatment (Leonard, 2002). Perceptions of quality by patients may accord quite well with expert independent evaluation of protocols used to treat different illnesses.

A related issue is whether a public purchaser is politically able to make selective and possibly controversial contracting decisions. In some countries public-contractors have often found it difficult to move funding from historic public providers. In Russia, for instance the theoretical ability of regional health insurances to move funding from institutions receiving historic allocations has often not been used in practice because managers because of pressure brought to bear by the political hierarchy and managers within the public sector (Twigg, 1999). It is possible, of course, that the converse may sometimes be true where a patient feels obliged to attend a certain facility for treatment through personal or community pressure.

A further issue of consumer versus purchaser efficiency is the extent to which consumers can obtain the lowest prices from providers. If the market is perfectly competitive then it should not matter whether the purchaser is buying in large or small quantities. In the case of markets that are monopolistic, oligopolistic or exhibit monopolistic competition, there are likely to be gains from bulk-purchasing deals that reduce the price of services and act as a foil to the uncompetitive characteristics of the market. In health and education where providers particularly for secondary and tertiary services are few in number the gains from such purchasing should be substantial provided that the regulations for purchasing permit such deals to be developed. In the UK, for example, a report on higher education suggested a student's inability to act as a powerful purchaser was one of the main reasons not to develop a voucher system (Cave, 2001).

In summary the decision over whether to choose a third-party purchaser or consumer based mechanism depends on four issues:

1. Extent of economies of scale and advantages of bulk purchasing
2. Whether consumers have sufficient information that can be assimilated to decide on the provider and level of care required
3. Whether quality is best assured through a process of accreditation of facilities that consumers can then choose or through a direct process of contracting between third-party purchaser and health facilities
4. Whether it is feasible to expect that the capabilities of an intelligent third-party purchaser can be developed to contract for care on an independent basis.

## 4. Consumer based demand side financing in practice

The previous section looked at a decision process that helps to determine whether and which demand side financing system to choose. In this section we discuss a series of issues concerned with the practical application of consumer based demand-side financing.

### 4.1. Targeting services using demand-side financing

As with any system there will be errors of targeting. From the perspective of redistribution the highest priority to receive vouchers are likely to be those with low ability to pay. From an efficiency perspective the highest priority are those with high need or ability to benefit from services. Which groups are chosen depends on the nature of the public policy issues (figure two). In some cases policy will dictate that all households with a given need should receive vouchers regardless of income (types  $P_2$  &  $P_4$ ). This would be the case with a universal system of vouchers for schooling, as with nursery vouchers in the UK. The reason for this type of targeting is to reinforce a behaviour that is considered desirable across society but where the merit good argument or argument about intra-household allocation of resources means that demand may often fall short of genuine need<sup>7</sup>. In other cases funding will be targeted only towards those with both need and low income. Examples include the education voucher systems in Bangladesh and bed-net scheme in Tanzania (see section five for details).

**Figure two: types of targeting**

	Low need	High need
High ability to pay	$P_1$	$P_2$
Low ability to pay	$P_3$	$P_4$

Where identification of high need is difficult, and the costs of mis-targeting are relatively low, then schemes might provide vouchers to all low income or even all people in a given group. One example are characteristic targeting approaches that attempt to identify high priority consumers through an easily identified characteristic. The Nicaraguan voucher system for sex workers to purchase STI treatment is an example of one such scheme. Sex workers in Nicaragua would generally be classified as high risk, a large proportion would be current or future STI sufferers, and a large majority would probably be relatively low income. Thus we would expect many, although not all, to be classified as type 3. In this case the error in terms of giving out vouchers to types 1 2 and 4 would be relatively small and the cost would be low since treatment of STI is not a high cost service.

The crucial question of targeting is whether the benefits of the demand side methods exceed the costs. This is essentially an empirical although it is clear that the level of competition is importance since a lack of choice reduces the market effect so that providers no longer feel obliged to deliver a good service. We can examine the costs of mis-targeting with reference to a loss function. The loss function quantifies the expected loss (cost) of arising the method of targeting including:

<sup>7</sup> Need here is perhaps best defined as the demand that occurs at a given price and income when consumers are in full possession, and can assimilate, available information on the benefits and costs of the service or product.

- Value of benefits accruing to non-target groups (type II error)
- Value of benefits that fail to get to target groups (type I error)
- Cost of targeting regime.

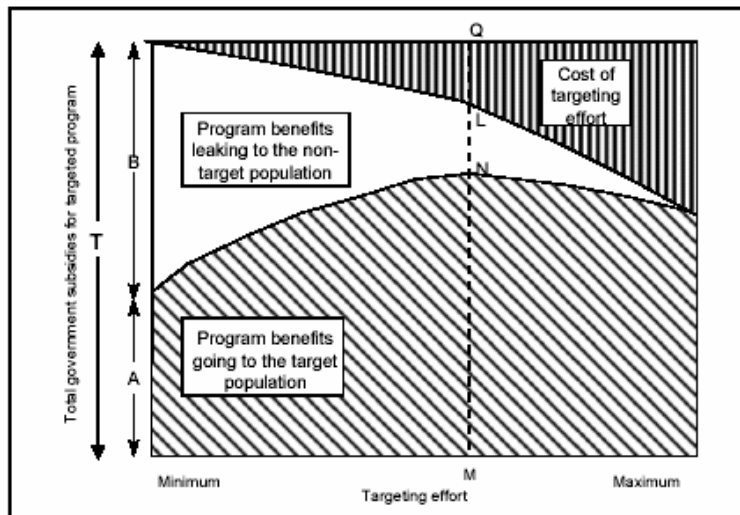
The general Loss function is, therefore:

$$Loss_{demand} = \left( \begin{matrix} [non - target\ group\ receiving\ benefit] \\ + [target\ group\ denied\ benefit] \end{matrix} \right) \times cb + SU$$

Where *cb* is the value of the benefit received by each beneficiary and *SU* is the cost of the targeting method used.

There are many possible scenarios equating to the many different ways in which to target a population. Assume that we wish to provide institutional delivery care to all women who have recently had a child. Our target group becomes currently pregnant women to whom we can direct either through a general subsidy for public services or through the provision of a voucher that can be used at certain accredited facilities. This is an example of characteristic targeting where it is relatively easy to identify the beneficiary group. Bitran and Giedion, in a comprehensive review of exemptions, suggest a graphical representation of the trade-off between cost and accuracy of targeting (Bitran and Giedion, 2003).

**Figure two: trade-off between accuracy and cost of targeting**



Source: (Bitran and Giedion, 2003)

Targeting of pregnant women would be classified in this scheme as requiring minimum targeting effort. Yet there is still likely to be a difference between demand and supply methods both in the cost of the mechanism and the extent to which programme benefits are received by the target population.

On the cost side the demand mechanism is likely to be more expensive since a mechanism will be required to identify and deliver vouchers to pregnant women and also to identify and accredit qualifying public and private facilities.

On the benefit side it may be possible to increase the amount of benefits accruing to the target group. These potential benefits are of two types: market effects and mechanism effects. Market effects accrue because individual beneficiaries have control over resources which they can use for the supplier of their choice. A voucher scheme, that reimburses providers for the value of service given to women, tends to

establish an incentive to attract patients to the accredited providers. Suppliers are forced to deliver a service of reasonable quality since otherwise the consumer may take the resources elsewhere. This means that it may be more likely that staff will concentrate their time and supplies on priority services rather than being used for other purposes. In addition because there may be more providers distance costs are reduced increasing demand for care.

In contrast a simple supply subsidy that pays for the salary of government staff and supplies would appear to offer little incentive to staff to provide more delivery services. On the other hand it would be possible to establish a supply incentive that rewarded staff, perhaps through a bonus system, for each institutional delivery undertaken. It is therefore not impossible that a supply-side payment could mimic the incentives of a demand-side voucher although less likely given traditional systems of financial management used in public facilities used in most low and middle income countries.

The mechanism effect on demand arises through the transmission of information about the importance of the voucher funded service when vouchers are distributed. This effect is suggested in the experience of vouchers for bed-nets in Tanzania (reviewed in section 5) where the act of distribution of vouchers for a priority service indicates to the beneficiaries the importance attached to use of the service (Mushi, Schellenberg et al., 2003).

An additional issue is the externality afforded to the entire health system resulting from the development of a process of provider accreditation. A major issue in many low and middle income countries is the lack of control over the private sector and the impotence of most licensing and other regulatory strategies. Investment in a system for accrediting private providers, even at a rudimentary level, could have significant benefits to health system regulatory mechanisms.

As suggested in figure two, as targeting methods become more sophisticated so their costs increase. This is true of both demand and supply methods. Take, for example, a more sophisticated targeting that attempts to identify not only pregnant women but poor pregnant women. On the supply side this requires providers to identify a method for identifying the poor. This often depends on appraisal of the patient when presenting for treatment. While this can be relatively low cost it tends to be ad hoc and liable to corruption. In Ghana, for example, such ad hoc practices mean that many in practice very few exemptions from user charges go to those in most need (Garshong, Dakpallah et al., 2001).

Using a demand side targeting mechanism for the poor also imposes additional cost over a characteristic targeting mechanism. In this case methods are required for appraising the income or wealth of the individual woman. There is a paucity of good international examples of these mechanisms although there are some good examples such as the community methods used in the Thai Health Card System (Bitran, 1994).

A final consideration concerns the institutional context of any system. The extent to which mechanisms for targeting function depends vitally on the structures that can be put in place to oversee and administer these systems. Demand side systems can be corrupted and captured by powerful elites just as much as the allocation of resource through supply subsidies.



## **4.2 Changing behaviour with demand-side financing**

One objective of vouchers is to reinforce certain behaviour. This can be done in several ways. One way is to provide vouchers for the services themselves. This works if the costs of consuming the service are mostly covered by the voucher and the perceived benefit of using the service is positive. This is probably the case with most education provision in high-income countries where education is valued and relative costs to users, such as travel, are small.

Vouchers for service may not be an incentive where there are other costs of obtaining the services and where there are no clear perceived benefits of the service. So, for example, providing a voucher that covers the direct cost (tuition fee, books etc) for the education of children in a low income country may fail to increase demand significantly since other costs, particularly transport to the school and loss of earning potential of the child are also important. In this case additional value will be required to stimulate demand. Some schemes pay for travel costs and even compensating families for the time the child spends away from income generating activities.

A different design is proposed where the perceived benefit of using the service is zero or even negative. This might be the case with someone struggling to give up addictive drugs. Simply providing the therapy, for example methadone maintenance and counselling, may not be enough for the addict to value use of the treatment service, combined with the costs of giving up the drug, over continued use of the drug. A further strategy is offer an additional incentive to defer the extra costs or enhance the benefits of the beneficial behaviour. There are examples of vouchers for food, clothing and other items being given to addicts on condition that they continue treatment and provide negative urine tests (see for example (Silverman, Wong et al., 1996)). Vouchers are given in preference to cash presumably to prevent the addict spending the additional cash on drugs. Another example are food vouchers distributed to mothers contingent on there continuing with breastfeeding as occurs in a number of US states and parts of the UK<sup>8</sup>. The reason for giving vouchers in preference to cash as an incentive, in this case, is perhaps more to do with intra-household resource decisions rather than a suspicion that the breastfeeding mother would choose to spend funds on inappropriate items.

The design of a voucher scheme requires, therefore, careful consideration of patient perceptions of costs and benefits. If patients perceive that benefits are low then a voucher for service may not be sufficient to stimulate demand without further incentive.

## **4.3 Negative consequences of choice**

An important strand in the literature on education vouchers is the extent to which vouchers encourage market segmentation. Two aspects of choice are important here. The first aspect is parental (consumer) power to choose the best place to educate their children. The second is the provider power to choose to educate those that are

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<sup>8</sup> In Lanarkshire, Scotland vouchers are distributed to pregnant women and new mothers that continue breastfeeding in an effort to raise the low level of breastfeeding, just 12.4% of new mothers (<http://www.scotland.gov.uk/pages/news/2002/01/SE5188.aspx>). Several similar schemes operate in the US. The Indian Health Center of Santa Clara offers food vouchers to all new mothers but additional vouchers for tuna and carrots only to those that are breastfeeding ([http://www.indianhealthsanjose.org/wic/wic\\_services.htm](http://www.indianhealthsanjose.org/wic/wic_services.htm)).

most profitable to the school. Disentangling these two aspects of choice is complex. Both lead to similar outcomes in terms of school selection.

In health care the main issue is whether providers can act to take only the more profitable cases – cream skimming. For a given price per case they will wish to choose those cases that are cheaper to treat – so if providers are remunerated the same amount for all patients undergoing appendectomies then facilities may select less complex cases. If a voucher is for insurance, then insurers may attempt to take only those that are likely to need less care (based on a risk assessment). This is a complex area that is discussed extensively elsewhere (Folland, Goodman et al., 1997). The key point is that more expensive patients may find their choice of provider is less than other patients because they are blocked from certain facilities. This may be a weakness under any type of finance since even supply-side subsidies do not guarantee that a consumer will receive an adequate service. An alternative approach is for providers to cut back on the service to consumers in order to lower costs. One example of this was the schools voucher programme for disabled children in Florida which came under scrutiny recently when it was alleged that schools were reducing spending on books and therapeutic services in order to save money (Anon., 2002).

In schooling this issue is arguably more complex since mix of pupils can be important in determining the performance of other pupils joining the school. In this case both the actions of consumers to select a school and providers to restrict access to certain groups can impede free choice of service. If all pupils left in a school are low-performing or from households with little parental support then this can adversely impact on the school culture so lowering the likely achievement of any new pupil joining the school. Part of the practice of public policy in some countries is to intervene to ensure that schools enrol children from a mix of backgrounds even if this requires restricting choice through the strategic management of catchment areas. It is possible that a choice based voucher system could undermine this by permitting easy to educate public school pupils to opt out of the public system and join the private system leaving more difficult pupils from poor backgrounds in public system sink-schools. Some voucher schemes allow those with means to top-up the value of the voucher. In this case higher income consumers can select higher quality provision. Unless you are a strict egalitarian this may not be thought a problem. It may however affect access if the result of this additional spending is to bid up the price of services so that the value of the voucher, in terms of the service that can be obtained, is devalued.

Open enrolment, where schools, health facilities or insurer carriers are not permitted to turn consumers away may help to prevent such a situation occurring. This is not a guaranteed solution since each may still take measures to exclude the high risk. A health insurer can, for example, offer a plan especially appealing to low risk users. In addition the fact that private schools and hospitals are often situated away from the poorest areas mean that physical access impedes free choice. One study of vouchers for schooling in California identified additional costs, notably the higher cost of transport in reaching facilities, as a disincentive to use of private schools among the poor (Buddin, Cordes et al., 1998). A second strategy to reduce the cream-skimming problem is to calculate the voucher value according to risk (risk rating). This is discussed in the next section (4.4).

As West as argued the argument that the middle classes and brighter pupils will, as a result of choice and selection by better schools, desert public schools is weakened in countries where voucher as are targeted at low income households (West, 1997). In this case the provision of vouchers that enable poor children to move to better

schools may serve simply to increase the socio-economic mix of pupils in better public and private schools. Yet even in these circumstances it is conceivable that the public schools, unless they adjust to the new market realities, will be dominated by children whose parents do not qualify for vouchers but whose parents are not wealthy enough to buy places in better private or more remote but better public schools.

What is apparent from this section is that while choice can bring benefits for individual (poor) families it is also possible that there is a wider negative impact across the community. As Narodowski and Naros suggest this is a primarily a problem with choice based systems of school selection rather than a problem with vouchers per se (Narodowski and Naros, 2002). Even under a system of supply subsidies it is usually easier, as West points out, for better off parents to move into areas with better public schools, where housing costs are also often higher, than it is for poorer households (West, 1997). Further study of individual situations is required to determine whether the benefits of greater choice are offset by any negative effects of segmentation.

#### **4.4 Calculating the value of the 'voucher'**

An important issue is the way in which the value of the voucher is itself calculated. This paper will not attempt to go into technical methodologies but will point out some of the complexities involved in determining the correct value.

One important issue is whether vouchers encourage consumers to use too much or too little services. If families or individuals are given time-limited vouchers then they are likely to want to use them up whether or not they need the service unless there are other costs associated with consumption. Whether this is likely to occur probably depends on the accuracy of targeting both in terms of ability to pay and need for the service. In education this is a relatively straightforward issue. Providing vouchers to all citizens, whether or not they have school aged children, is never advocated. Rather vouchers are given to those with children (the appropriate age) where the need for education is certain. Vouchers targeted at poor families for food are all likely to be used on essential commodities for the family. In contrast one paper suggests that flat rate child care vouchers given to all families regardless of income may be used for unnecessary care just to use up the value of the voucher (Steuerle, Reischauer et al., 1999).

In health care the problem of calculating the size of voucher according to need is probably even more complex than in education. Two people on the same income have vastly different need for care. Much need for health care is unpredictable, but when disease occurs treatment is needed quickly. There is rarely enough time to identify those with medical need (falling into a category qualifying for vouchers) and then distribute the vouchers. In fact a multiple strategy is probably required

For services where demand is highly predictable even certain then vouchers for services are appropriate. This includes predictable curative care such as maternal health care and treatment of STIs for sex worker. Also included would be preventive and chronic care where services are required for all in a certain group. Some of the voucher schemes in the US that cover the cost of outpatient prescriptions for the elderly are introduced on the basis that such costs are almost certain for the particular group. The Yunnan MCH programme is another example where services are predictable for the eligible group (poor, pregnant women).

A second category is where service requirements are unpredictable for individuals but predictable for a group of people. In this case vouchers for insurance can be provided. Choice is still possible but consumers decide first which insurance carrier to utilise their voucher and later the provider of services, usually a list of preferred providers developed by the insurer. This is the basis of the Medicaid (over 65s) voucher programme providing access to HMO plans in the US. It is also the basis of the Colombian health reform which pays for insurance for the poor based on an individual choice of insurance carrier (Savedoff, 2000).

The value of the voucher is also strongly related to the adverse selection issue discussed in section 4.3. If the voucher, either for a bundle of services or insurance, is below what providers or insurance carriers think the individual will cost then they are likely to take steps to exclude these individuals from the scheme. Alternatively the quality of service will decline. Either way inequity to service of a given quality is likely to result. While this is unlikely to be a concern for a simple service such as treatment of STDs, it is much more important where a more complex package of services is provided. Policy makers then have a number of choices. First they can force providers to enrol or treat all-comers while at the same time attempting to ensure that a mix of consumers their use services. So schools would have a mix of pupils of varying abilities. Inevitably this means that choice is restricted in some way.

A second option is to develop vouchers of varying values according to risk-type. In principle this is possible but in practice is likely to become unworkably complex unless risk types can be identified using a simple characteristic such as area of residence.

#### **4.5 Market effects and supply and demand constraints**

A market effect that is often neglected when examining new financing systems is the impact of the financing system on the market prices. Providing vouchers to a sub-group of the population increases their purchasing power and their demand for health services. When consumers use these vouchers in private facilities this could have the effect of increasing the price of services as a consequence of the increase in demand. Whether this occurs largely depends on how whether providers are operating close to full capacity. If their services are fully utilised then the effect of vouchers could be to increase the short and long run price as they invest to increase capacity. If there is much slack in the sector then this price effect is unlikely to be evident.

It should be noted that just because there is excess capacity in the sector as a whole does not necessarily mean that there is no price effect as a consequence of the demand side financing scheme. The authority responsible for administering the financing scheme may accredit only a limited number of providers in order to ensure quality. If there is little capacity in this group then vouchers could have a positive price effect even if there is capacity in the market as a whole.

Increasing demand for socially important commodities will only be successful if sufficient supply of services also develops. A pure market approach might assume that a supply response will occur as a result of increases in demand. Yet economies of scale and other barriers to entry may mean that this response takes some time to occur. Available literature suggests that the largest impact is obtained when supply and demand interventions occur simultaneously. Data from Mozambique, for example, found that the largest positive impacts of interventions to improve literacy and school enrolment was obtained when investments in educational infrastructure occurred together with interventions to increase demand for education (Handa and

Simler, 2000). Similarly the Prevention of Maternal Mortality Network, which conducted a series of operational research interventions to improve the demand for maternal care during the 1990s, also at the same time ensured that the quantity and quality of maternal care was enhanced so that consumers were able to convert willingness to pay for care into effective demand (Maine, 1997).

## 5. Evidence on impact

The potential advantages of vouchers and other demand side measures were summarised in section two. These included:

- Improved technical efficiency through greater supply-side competition
- Improved allocative efficiency with an increased use of key merit goods through earmarked subsidies

Consumer-led demand side funding may also serve equity objectives through improved targeting of purchasing power over basic services for those with needs but little ability to pay.

It was also apparent from the discussion that it is the combination of these factors that make demand-side financing appropriate in some circumstances.

In this section we examine the limited evidence on the impact of demand side financing measures. A structured literature search was carried out on Ingenta, Medline & Science-Direct based on the search terms: financing AND demand side OR costs, demand side AND financing, vouchers, paying AND patients. The search was expanded to include a general internet search (using copernic, a meta search engine) together with a search of specific web-based databases including World Bank, WHO, Population Council, IADB, ADB and OECD. Much of the literature collected was concerned with general discussion or critiques or voucher systems. Those that were left could be divided into three main categories: controlled evaluations, impact evaluations without control and descriptive 'evaluations' with some estimate of impact.

Assessing the impact of any health system change is far from easy. Best practice in assessing impact requires that before and after intervention comparison is made with careful baseline measurements and adjustments for confounding factors. If possible the intervention area should be selected at random and matched with a similar area where there is no intervention. While these standards are routinely applied in the assessment of new treatments their application is much more difficult in the field of public policy. As a result the number of studies in this area that attempt such a rigorous comparison are few. Studies reviewed in this section are divided into three groups. Firstly, those studies where an attempt was made either to match the intervention area to a control or to adjust for confounding factors through the use of multivariate analysis. Secondly studies where impact was measured but without controlling for confounders. Finally studies that report demand-side financing schemes but without an assessment of impact.

The main studies described in this section are summarised in table one. More details on a wider range of schemes are provided in Annex two. Information is provided on content of study and country of origin. Also provided is an indication of type of study: voucher - where a voucher is given, voucher like – where no explicit voucher is given but instead a bundle of services that are made available to specific individuals who have some choice of provider, finally direct payment – where a cash payment is given to a user on condition that a service is used. The table also indicates the type of incentive present in the system divided into direct, where a voucher is given to pay for the target service and indirect, where a voucher is given for some valued benefit on condition that the target service is also consumed.

Table one: some demand-side financing systems

	Demand-side financing	Country	Type	Incentive to consume	Attribution	Positive effect on behaviour	Effect on distribution
<b>Health</b>							
1	Bed-nets for low income	Tanzania	Voucher subsidy	Direct	Nested cas-control study to estimate effect of treated and untreated nets.	Positive effect although slow spread limited impact.	Co-payment deterred poor
2	STI treatment for sex works	Nicaragua	Voucher	Direct	Simple before/after comparison	Yes	Assumed that most are poor
3	MCH vouchers for low income pregnant women	Yunnan China	Voucher	Direct	Simple before/after comparison	Yes	Effect is concentrated amongst the poor
4	Taxi and blanket vouchers as incentive for antenatal care	California, US	Voucher	Indirect	Simple before/after comparison	Yes	Not reported
5	Limited cash transfer as incentive for priority health services (PROGRESA project)	Mexico	Voucher-like	Indirect	Randomised trial/multivariate controls	Yes	Some mis-targeting is evident although analysis suggests that redistribution is better than alternatives.
6	Health services for migrant workers	Wisconsin, US	Voucher	Direct	Descriptive	Not examined	Uptake amongst low income workers good.
7	Food vouchers as incentive for antenatal care	Idaho, US	Voucher	Indirect	Simple before/after comparison	Increase in use	
8	Goods/services vouchers as incentive to remain drugs-free	Baltimore, US	Voucher	Indirect	Simple before/after comparison	Compliance	None reported
9	Vouchers for wheelchairs	UK	Voucher	Direct	Descriptive	Use of scheme	None reported
<b>Education</b>							
10	Vouchers for private schools	California, US	Voucher	Direct	Simple before/after comparison	No	None reported
11	Subsidies to poor families for sending children to school (PROGRESA project)	Mexico	Voucher-like	Direct	Randomised trial/multivariate controls	Yes	Some mis-targeting is evident although analysis suggests that redistribution is better than alternatives.
12	Subsidy to poor families for sending daughters to secondary school	Bangladesh	Voucher	Direct	Simple before/after comparison	Increase in enrolments	Effect higher for girls from poorer backgrounds
13	Per child payment to schools to encourage school enrolment	Pakistan	Direct payment	Direct	Simple before/after comparison	Increase in enrolments	Effect higher for girls from poorer backgrounds
14	Lottery for private school attendance	Colombia	Voucher	Direct	Controlled with multivariate analysis	Yes	None

	Demand-side financing	Country	Type	Incentive to consume	Attribution	Positive effect on behaviour	Effect on distribution
15	Private school vouchers	Chile	Voucher	Direct	Controlled with multivariate analysis	No - compared to supply-side	Some but also evidence of segmentation.
16	Incentives to poor families to ensure that children attend school	Brazil	Voucher-like	Direct	Simple before/after comparison	Reduction in drop-out	Reduction in drop-out main
17	Vouchers for private schools	US, New York	Voucher	Direct	Controlled with multivariate analysis	Very little	Possibly some improvement for African-Americans but this result is disputed.

It is notable that the United States is disproportionately represented in the studies of voucher-type experiments. This is likely to be for several reasons. One reason is that there is simply more documentation and evaluation of US experiments. Many of the experiments, particularly in low and middle income countries, are likely to lack such detailed documentation that is widely available through international sources. A second reason is the fragmented social safety net which means there continue to be substantial segments of the US population that lack access to health insurance, genuine choice in education and other social services which has stimulated many innovations.

### 5.1 Controlled experiments and multivariate studies

Some of the most rigorous evidence on the effects of demand-side financing comes from the experience of initiating a series of market reforms in education in the United States. Two different types of demand side funding have been used in different parts of the United States. Charter schools are independent public schools that follow the state curriculum, cannot charge top-up fees and receive funding, on a per pupil basis, directly from the state (Nores, 1999). In contrast voucher schools may be permitted to charge top-up fees and could be public or private (owned). They may also use admission tests to select pupils.

Statistical analysis of the effects of charter schools in Michigan show insignificant positive and even some negative impacts of greater choice on test schools (Bettinger, 1999). Charter schools are confined to the public sector and one might expect a greater impact of competition when the market genuinely includes both public and private sector. Yet the largest controlled experiment in the US of vouchers yields little evidence of a positive impact. In New York vouchers for admission to private schools were distributed on a random basis to poor families currently enrolled in public schools. Baseline test scores were compared with those obtained a few years later for both those given vouchers and a similar control group. An analysis of more than 2000 children indicated no significant difference for white Americans but did find a significant impact for African-Americans. The difference was put down to attendance of African-American children in the most problematic ('sink') state schools (Howell and Peterson, 2002). Yet a follow up analysis, which included a large sub-sample for which there was no baseline information, found that the difference even for African-Americans was not significant (Krueger and Zhu, 2002). A further study in California, which tested a range of voucher designs on an econometric model of school choice, found that vouchers would mainly subsidise the private education of existing pupils and not have a significant impact on utilisation of private schooling amongst the poor



(Buddin, Cordes et al., 1998). Voucher schemes for education have also been implemented in a number of other US states both for basic education, out-of- hours tuition and extra costs of schooling such as books and computer software mostly aimed at low income groups in the population (Steuerle, Reischauer et al., 1999).

Similarly ambiguous results have been found for analysis of voucher programmes in Milwaukee. The voucher scheme in Milwaukee, Wisconsin was one of the pioneering voucher plans. Initially it permitted 1,000 low-income students to attend private schools (West, 1997). The scheme was extremely controversial and was strongly opposed by the state board association. Supporters suggested that early results indicated increased choice and greater diversity in the school population.

A number of statistically based evaluations were conducted. The first found no significant gains in achievement from those in the scheme attending private schools (Witte, Stern et al., 1995). A further two studies indicated some achievement gain (Green, Peterson et al., 1998; Rouse, 1998). Ladd reviewed each of these studies and paying particular attention to the robustness of the methods used to arrive at the conclusions (Ladd, 2002). Her review suggested that the findings of the most statistically robust study, conducted by Rouse, which took account of the non-random basis of the experiment and consequent selection effects, should be judged the most reliable. This found a small statistically significant effect on maths attainment but none for literacy. Ladd's conclusion was that private schooling might provide some academic advantage over public schools in some disciplines. Molnar, discussing later work done by Rouse, pointed out that some of the positive effects on maths attainment might have been the product of smaller class sizes in private schools (Molnar, 2001). Adjusting for this fact found that public schools compete as well or better even on this indicator of achievement.

It is worth pointing out one further argument, expounded by West, which is that even if statistically insignificant results are found this does not (necessarily) negate the impact of greater choice and involvement of the private sector. Lack of difference may simply reflect improved standards in public schools resulting from the increased competition from private schools (West, 1997). This effect was associated, by some studies, with the general improvement in test scores improvement in failing schools as a consequence of a voucher scheme in Florida. Yet re-examination of the data base for this conclusion found flaws in the statistical methods used to analyse the data (Molnar, 2001).

In Colombia as a way of expanding the use of secondary education and compensate for a lack of capacity in the public schooling system a voucher system was launched in 1992. The programme aimed particularly to increase enrolment amongst the poorest quintile where enrolment in secondary education was around 55%. Known as the Programa de Ampliación de Cobertura de la Educación Secundaria (PACES), a Colombian programme provided over 125,000 pupils with vouchers for free or discounted places in private schools. Initially the voucher covered the cost of most low to middle cost private schools but voucher was not fully indexed over time and significant copayments were required towards the end of the study period (1998). Vouchers were allocated by lottery in areas where demand exceeded supply. An evaluation of the experience found that the impact of the scheme was positive (Angrist, Bettinger et al., 2002). The study found a significant effect of vouchers on completion rates for the 8<sup>th</sup> grade although no impact on drop-out rates was found.

Several studies contrast the experience in Chile with that of Argentina. In Chile responsibilities over the public system was transferred from the Ministry of Education following the 1980 coup. Both public and private schools were financed according to

number of children enrolled multiplied by a per capita payment - equivalent to a voucher paid directly to the supplier. By contrast in Argentina where subsidies have been used to pay the salaries of teachers working in 'free' private schools where no more than nominal charges are made.

The countries offer contrasting experience of two approaches to subsidy and the extension of choice. West suggests that tests administered in Chile after 1988 indicated that private schools had significantly higher results than public schools (West, 1997). By contrast McEwan found no evidence that private non-religious schools offered better outcomes (value added) than state schools (McEwan, 2000). Catholic schools did perform better although it was suggested that in addition to a stronger ethos they also receive greater funding from non-government sources. Across both countries there is no evidence that supply or demand side funding has a larger impact on outcomes or choice. There is also a suggestion that increasing the possibility of schools selection can increase segmentation since private schools are able to attract the brighter and better off pupils with vouchers through selection policies and because they generally live nearer to these schools. The result is that state schools are left with students from poorer socio-economic and weaker intellectual backgrounds. This suggestion is, however, countered by another study which found that segmentation occurred in both countries so that it was not demand-side funding itself that was responsible rather the increased choice afforded under both systems (Narodowski and Naros, 2002). The conclusion remains, however, that systems that extend choice can also lead to greater segregation if procedures are not put in place to overcome barriers faced by certain segments of the population (e.g. preventing cream-skimming, overcoming distance barriers).

The paper by McEwan finds no significant positive effect of market based reforms through vouchers and increased choice on outcomes. The same study does, however, find a significant impact of targeted supply side interventions such as spending on teacher training and classroom materials (McEwan, 2000; Ladd, 2002). Ladd suggests that this means that "targeted investments are likely to be more productive than a large-scale market based reform (Ladd, 2002).

The Progresia project in Mexico is not a genuine voucher scheme but provides a grant to low income families conditional on more than 85 percent attendance of their children at school (grades 3 to 9). A randomised trial (difference-in-difference design)<sup>9</sup> found a significant project impact on enrolment, and effect that was high for girls than boys (Schultz, 2000). The latter finding was probably associated with the larger subsidies given for girls attending junior secondary school. A further study found that the cost of the intervention amounted to between 5.1 and 11.5 percent of the total cost (Coady, 2000).

The Progresia project also included health interventions. In this case low-income families were given a subsidy on condition they obtained a range of health services including nutrition monitoring and supplements for children and lactating mothers, growth monitoring for the under-fives, antenatal care and child immunisations and various adult health promotion clinics (Gertler, 2000). Multivariate analysis found a significant effect of entry into the programme, an increase in utilisation of services and improvement in various measures of well-ness including self-reported illness and fitness levels.

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<sup>9</sup> This compares effects between programmes both before and after implementation and adjusts for time-series and cross-sectional confounding factors.

Across the Progresa pilots the positive impact on school enrolment and health seeking behaviour was concentrated in the poorest groups (Coady, 2000). An analysis of the redistribution effect of the scheme indicated that it performed as well as simple targeted transfers. It was further found that although there was some mis-targeting and that targeting could be improved through increased targeting of very poor communities this may be at the expense of the educational and health impacts. It appeared there was some trade-off between the impact on behaviour through transfers to the neediest and impact on distribution through transfers to the poorest.

The Progresa has now been expanded on a nation-wide basis. A number of other Central and South American countries have developed similar interventions including Honduras, Nicaragua and Colombia. Many of the design features, which aim to increase the demand for health and education through targeted subsidies, are similar to the Progresa project although they have not yet been subject to the same level of rigour in evaluating impact (Legovini and Regalia, 2001).

Evaluations of vouchers for medical curative medical services are extremely rare. A discount voucher for insecticide treated bed-nets in Tanzania, aimed at poor pregnant women and young children, saw some positive impact on bed-net (Marchant, Schellenbeg et al., 2002). The voucher scheme was part of a wider programme of social-marketing of bed-nets and it is not, however, possible, to separate the specific impact of the voucher programme from the overall programme. Vouchers were distributed through public clinics where initial advice was provided. A recent evaluation of this programme using a case-control design that estimates the effect of uptake of both treated and untreated nets, found that the scheme had sold more than 65,000 nets in the four year period between 1996 and 2000 (Hanson, Kikumbih et al., 2003). It found that the cost per death averted from the programme was \$1,599 and per DALY averted was \$56. This compares favourably with the result of other randomised control trials of bed-net in other African countries.

It is difficult from the review to work out the administrative costs of the programme. Annualised start-up and publicity costs are estimated to account only for one percent of the total costs yet other costs, such as part of the personnel bill which accounts for more than 70 percent of the total, are also administrative in contributing additional cost over and above what would be incurred if the net were sold through a private market. The authors do estimate that expatriate costs, which could be considered part of the social-marketing overhead, account for around 17% of the total cost of the programme. It is planned that this scheme will be expanded beyond the two districts it currently serves and the value of the voucher for the poor will be increased.

A number of conclusions are highlighted in the most recent evaluation of the Tanzanian experience (Mushi, Schellenberg et al., 2003). Firstly it several years are required for people to understand and begin to use the scheme properly. The use of mass media and other communication channels could help to speed up this process. Second, while use did begin to increase amongst the poor further subsidy is required to extend use since the co-payment is still quite large for many poor families. Third, targeting of pregnant women is considered effective since the group is easy to identify and benefits, in conferring protection to the newborn as well as the mother, are considerable. Finally, it is suggested that vouchers, in this context, serve both to strengthen the private market for services and as an important strategy in strengthening the public system's role in identifying priorities and people in need of assistance.

Perhaps the largest experiment in health care vouchers has been the offer to convert existing Medicaid (scheme for over 65s) and Medicare (for those on low incomes) entitlements into a 'voucher' that can be used to purchase a Health Maintenance Organisation (HMO) plan (Reischauer, 2000). This option was offered from the mid-1980s although the 1997 revisions improved consistency across the country and information made available to beneficiaries. The reason for introducing HMOs was not to expand choice but to improve the quality of services through systematic management of illness and tackle the endemic problem of cost escalation arising from the fee for service payment system. Although HMO enrolment was initially quite low, improves to the system from 1997 increased the proportion of Medicaid enrolments to 16% (by 1999) and Medicare members to 23 percent (by 1996).

There have been numerous evaluations of the effect of HMOs and the managed care movement on quality as well as costs of medical services. Evaluations suggest that outcomes are as good and in some cases better than under retrospective payment systems while cost containment is invariably better (Robinson and Steiner, 1998). This is a case, however, of a very expensive system being adapted to make it more restrictive in terms of referral and treatment patterns but where access for the group covered is already very good. This is rather different from other voucher programmes where an intervention was introduced that attempted to expand access rather than improve the efficiency of system provision.

## **5.2 Before and after evaluations without controls**

A number of other studies have applied less formal techniques to the evaluation of impact of demand-side financing. This means that the effect of a programme is more difficult to attribute since there is little or no adjustment for confounding factors.

Demand side financing of education has also been tested in Pakistan through the Balochistan education project (Slesinger and Ofstead, 1996). Rather than individual vouchers or payments, payments are made to non-government run schools for enrolling groups of children. Payments are only made to villages without a government school, where there is a village education committee and where there are at least 25 girls between the ages of 5 and 10. Schools may lose their support if attendance drops below a critical level. An evaluation conducted at the end of the project suggests that girls enrolment has increased by 60 percent from 1994 to 1996 while the proportion of girls in primary classes has risen from 20 to 30 percent (World\_Bank, 1999).

For a number of years the district of Brasilia has provided stipends to low-income families in order to encourage them to send their children to school rather than out work. This programme provides a cash stipend plus a deposit into a savings account for each child. Deposits can only be withdrawn once the child completes the eighth grade. Estimates suggest that drop-outs have fallen from 10 to around 0.4 percent and enrolments have risen (Vawda, 1997). A similar programme has been implemented in Bangladesh and studies showed a sharp increase in female enrolment although confounding factors were not taken into consideration (Liang, 1996). Pass rates, particularly for girls continue to be low with only a fifth of girls entering class 6 eventually completing and passing secondary examinations in class 10 (World\_Bank, 2002).

A number of voucher schemes have been developed in the US that have undergone some evaluation but without the benefit of a detailed controlled design methodology. One these was a controversial scheme, aimed at low-income families, developed in

Cleveland which was taken to the Supreme Court for a judgement on its legality. The ruling went in favour of the scheme in 2002 (Anon, 2002). Evaluations of the scheme have focused on test results between private and public schools for children qualifying for vouchers. These have generally failed to find a significant impact of vouchers on achievement with the exception of language skills (Molnar, 2001).

A well reported scheme in Nicaragua, providing vouchers for STI curative care to sex workers and their partners and clients found a high take up and use of vouchers and large declines in rates of syphilis and gonorrhoea are reported (Sandiford, Gorter et al., 2002). The lack of an experimental design and adjustment for confounding factors make it difficult to attribute causation to the programme.

### **5.3 Studies of vouchers with no formal evaluation**

There are a variety of other demand side interventions that are at an early stage and have not yet been subject to formal evaluation.

Vouchers for food have been used in both US states and the UK as an incentive to maintain breastfeeding and present for ante-natal checks. In Idaho, for example, low income pregnant women are given food vouchers in return for presenting for ante-natal checks. During the first year a threefold increase in participation amongst this income group was reported (Machala and Miner, 1991).

In Yunnan Province, China a World Bank loan funded vouchers aimed at poor pregnant women that cover the cost of antenatal, intra-partum and post-natal care as well as care for sick children. These can be shown to obtain free services at hospitals and clinics. Service providers could then return the vouchers to the fund to receive reimbursement. Although the pilot has now finished the evaluation reports have not yet been released into the public domain. Initial results indicate that increases in use of treatment for childhood diarrhoea amongst the poor (Kelin, Kaining et al., 2001).

Various states in the US, including Massachusetts and Oregon have introduced voucher schemes aimed at the near poor that do not qualify for Medicaid. These are funded by a combination of employer and state contributions and offer access to arrange of health plans and HMOs. Voucher schemes have also been developed for the poor, elderly and children to cover the cost of outpatient pharmaceuticals not generally covered by Medicaid or Medicare (Steuerle, Ooms et al., 2000).

One role for vouchers identified by some studies is the usefulness in providing vouchers to groups that are geographically dispersed where a supply subsidy to one or a small number of facilities would not provide accessible and flexible services. One example of such a programme was piloted in Wisconsin where vouchers were provided to migrant workers to co-finance (subsidy of 42-70%) a wide range of medical services (Slesinger and Ofstead, 1996). No formal evaluation of impact is made. The report suggests the main achievement of the programme is in showing that a voucher programme can be useful in targeting a widely dispersed and mobile population.

### **5.4 Incentive based-voucher systems**

Where costs to consumers of obtaining services are high or perceived benefits are low or even negative, further stimulus may be required to encourage consumers to obtain services. A number of interventions have concentrated on incentives to consume this type of service using a voucher approach.

A critical review of financial incentives given to patients to encourage them to use certain target services found that in most cases the incentives had a significant impact on consumption (Giuffrida and Torgerson, 1997). The review design included only those studies that were based on a randomised design, included a control group and provided adequate information for an evaluation. Studies included two to encourage compliance with treatment for tuberculosis (DOTs), two to encourage parents to take their children for dental checks, two to encourage immunisation, two to encourage post-natal checks and one each to encourage compliance with a cocaine dependency programme, anti-hypertensive treatment and weight reducing programme. The review was not limited to the US but all studies satisfying the criteria for inclusion were in fact conducted in the US

The review found that in 10 out of eleven studies a statistically effect of financial incentives on compliance was evident. The review did not investigate whether the value of programme effect exceeded the cost (cost-benefit). A follow-up response to this article also emphasised the need to target to ensure that compliance was being improved among the most vulnerable groups (Meredith, 1998). In other words although compliance appeared to improve there is no evidence on the distribution of benefits.

In Andhra Pradesh, India a key policy target is the level of institutional delivery. In order to increase demand women with a low income are offered an incentive of 250 Rupees (\$5) to deliver in a public or private health facility (Rao, 2003). There is at little evidence whether scheme is having and impact and information on the scheme remains low. A further problem is that staff in hospitals aware of the scheme simply ask for an equivalent amount as informal payment for the delivery.

## 5.5 Summary of impact studies

In order to summarise the evidence discussed in the last sections it is first necessary to decompose the main effects expected from voucher or other demand side financing systems.

The first effect is an incentive effect which encourages individuals to modify their behaviour so that they choose to send their children to school, comply with a treatment programme or utilise key preventive health services. Vouchers rather than income supplements are given because of a merit good argument that suggests that they may not increase use of the target service if the transfer is unrestricted

The second effect is to encourage consumers to exert their market power by choosing the best services from a range of alternative service providers. This should, in theory, encourage service providers to improve their services so that they are listed as an accredited provider and chosen by consumers.

The third effect is to place purchasing power into the hands of those with low economic status and high need for services in order to encourage a redistribution of opportunity to consumer priority services.

Evidence from a range of studies indicate that the incentive effect has often been successful in changing behaviour to ensure compliance with specific treatment regimes. Similar results are to be found in more general programmes including increased utilisation of maternal and general health services, suggested by the Mexican (Progresa) and Yunnan (MCH voucher) experience. Increased enrolments is also indicated in most of the voucher programmes aimed at educating poor children not currently at school. Positive results were indicated most clearly in the controlled Progresa study. Similar results, although attribution of effect is difficult given a less rigorous evaluation methodology, is suggested by experience in Pakistan, Bangladesh and Brazil.

Beneficial effects of greater choice are less evident. In the US, where most children already have access to school, the intended effect of vouchers was to enhance choice and improve quality of outcomes. The controlled studies fail to reveal a positive impact. Some improvement in outcomes was discernible when children were given access through vouchers to religious (Catholic) schools in Chile. Yet this effect is confounded by the greater funding allocated to these schools. The study also suggested little difference in the effect of supply or demand side subsidies on achievement. Most of the evaluations that concentrated on increasing compliance or utilisation did not look at the extent to which quality was enhanced through greater choice of services.

Many of the interventions had a characteristic targeting dimension built in that has likely made redistribution much clearer. Many of the educational enrolment voucher programmes prioritised the education of girls and the results indicate that these groups have benefited most from the interventions. Experience of Progresa in Mexico found that the interventions while not perfect appeared to have at least as good an impact on re-distribution as other similar programmes.

The importance of the adverse selection and other barriers to ensuring targeted distribution of benefits should not be under-estimated. Several of the voucher programmes indicate that greater choice also leads to greater segmentation and this

often hits those in lower socio-economic groups either because they live far from better schools or because measurements of educational potential are influenced strongly by home background and other socio-economic factors. As one analysis suggests “simply put, when given the opportunity to use a voucher to leave failing schools the students who were most disadvantaged were most likely to stay in public schools” (Martindale, 2002). In health care there is a strong suggestion of this segmentation in an HMOs attempt to limit their liability to high risks by making plans mainly available in areas with lower risk populations. This also tends to disadvantage low income individuals. It is apparent that in countries where transport networks are less developed the effect of location would be even stronger so that use of vouchers would tend to be higher amongst groups that are nearer qualifying health or education facilities. Mitigating these problems would require the programme to make some allowance both for the higher provider cost of some students or patients and also to provide some compensation for other household costs of obtaining services.

While the dangers of adverse selection and segmentation are important it is important to realise that they are not associated with vouchers per-se but with greater choice. It is worth observing that other systems that have introduced greater consumer or provider experienced similar problems. In New Zealand, for example, a system of parental choice over public schools “quite rapidly became a system in which schools did much of the choosing” where “the most popular, and hence oversubscribed, schools tended to be those serving the more affluent and white student populations” (Ladd, 2002).

There is an almost complete lack of information on the relative cost-benefit of different voucher arrangements. One of the studies (PROGRESA, Mexico) considered this issue and found that benefit exceeded the costs of the interventions. Further work is certainly required in this area in order to provide policy makers and donors more aware of the relative costs and benefits of demand-side targeting compared to more traditional supply led methods of service provision and benefit transfer.



## 6. Conclusion: scope for vouchers in health in low income countries

It is always important to treat any innovation or new idea with some caution. It is clear that while consumer led financing through voucher and related programmes have had some demonstrable impact in various contexts the effect has not always been as great as expected and there have also been some undesirable outcomes.

Targeting through a demand-side mechanism could have both market and targeting advantages. Market advantages include the increased physical accessibility to services and the increased incentives on suppliers to deliver better services. Advantages of the mechanism are that identifying beneficiaries before they require service may reduce targeting errors and increase awareness of consumers of priority interventions.

Whether these mechanisms work in practice so that the benefits exceed the costs of creating a new mechanism is fundamentally an empirical issue. The degree of ambiguity about the international literature suggests there is no clear cut answer to whether consumer-led demand side financing will improve the distribution and efficiency of resource allocation. Yet at the same time the international evidence does suggest a number of design considerations that will be important to consider in developing a new mechanism and can increase the probability of a new scheme succeeding.

### 1. Vouchers for predictable service packages aimed at identifiable groups

Based on available international evidence consumer led financing appears to have been most successful in raising utilisation of specific and easily identifiable services amongst low use groups. The best use for vouchers appear to be for predictable services that are relatively simple to package. This suggests that groups should be chosen that have reasonably predictable illness including:

- Pregnant women
- Newborns
- High risk groups for STIs
- Sufferers of priority diseases that take some time to treat such as malaria and tuberculosis
- Sufferers of chronic illnesses and disabilities.

Vouchers could be given directly to those suffering the illnesses based on standardised packages of care. Some examples include:

- Pre,post natal and intra-partum care plus early childhood vaccinations
- DOTs therapy for tuberculosis
- Course of malarial drugs plus bed-net on completion of treatment

In the case where there is no externality from non-treatment as in the case of maternal health or chronic non-communicable diseases they might be targeted only at low income groups.

In designing the package to be covered it will be important to consider the barriers to accessing health services both on the supply and demand side. Simply providing

services free of charge, either through supply subsidies or vouchers, does not guarantee use if their other barriers to access. Vouchers may have to include provision of transport to get to clinics, particularly important if a person must travel to a clinic frequently as is often the case with DOTS. It may also be necessary to consider further incentives for compliance as are already given in small measure under sterilisation programmes in a number of South Asian countries. Certainly experimentation is required in order to evaluate the impact of incentives on use of services.

The international evidence on demand-side financing methods does not indicate any significant impact on quality or outcomes compared to supply-side financing. Although the evidence is extremely limited it does serve as a reminder that it may be expecting too much that vouchers or other demand measure would on its own have a large impact on productivity or quality of health services. Other approaches are required.

A central consideration is whether the introduction of consumer led financing is cost-effective. Most of the international literature is silent on this area although the PROGRESA project alone suggests that the benefits of the intervention outweigh the costs. A first step will be to get an idea of how much package of services, including demand side-costs and incentives, can be expected to cost and whether this affordable in the context of the overall budgetary envelope and sector priorities.

## 2. Vouchers that place purchasing power and information in the hands of the disadvantaged

A second principle for voucher or other demand-side financing schemes is to direct funding to those that currently have least ability to utilise household or state finance. The lack of intra-household homogeneity in the control of household finance in many low/middle income countries and the strong evidence that this often translates into low use of services suggests that priority should be given to extending demand-side finance to the weakest groups. In this context providing vouchers to women, the elderly and children, particularly girls, could help to stimulate demand amongst these groups for key services. At the same time these mechanisms could serve to reinforce the importance of using certain services. It is, however, important to be aware that supply costs are not the only important financial elements in household decision making. Payments to cover demand side costs, such as the cost of getting to a skilled practitioner for delivery and even attendant opportunity costs, may need to be factored into the scheme if the barriers to accessing services are to be overcome.

## 3. Development of new structures

Developing consumer led demand financing mechanisms implies a new role for government. Rather than financing facilities they are required to develop mechanisms to compute voucher values, allocate vouchers, and accredit facilities and exchange vouchers for payment. Whether this role is undertaken directly by a government ministry or by a semi-autonomous body, capacity to undertake these functions will have to be developed. Alternatively it may be possible to sub-contract these functions to an NGO since many already have experience in managing credit and financing arrangements and identifying needy groups.

A key requirement for the voucher concept to flourish is to develop a system for accrediting key facilities to be able to accept vouchers in return for service. This is not a licensing system that monitors minimum standards on inputs, rather it is a system to ensure that providers accepted into the scheme are able to provide the

services financing by vouchers at an acceptable level of quality. Given the current domination of service provision by various non-government providers it is important to include both government and non-government providers in the scheme.

A final point is that the development of a mechanism for accreditation is likely to have positive benefits not only for the demand-side mechanism but also for the wider health care system and so it is reasonable that the cost is not considered only in the light of the benefits of the voucher mechanism.

#### 4. Vouchers for insurance

Developing demand-side mechanisms that go beyond the basic services require the development of a system of vouchers for insurance. This necessarily requires the initial development of reputable insurance carriers able to provide scaled up benefits to a large and perhaps high risk population. Although most low income countries have some non-government and even government insurance providers it is likely that few would be in a position to offer these types of insurance services in a competitive way. It is notable that it is taken some years for the voucher idea in insurance, as exemplified by the development of the HMO model, to develop in the US even though the insurance industry is highly developed.

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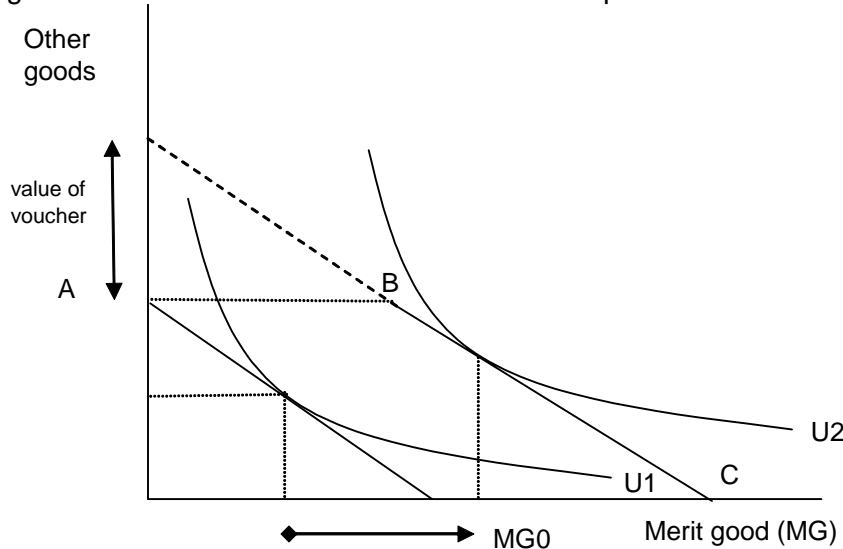
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## Annex one: micro-economics of voucher systems

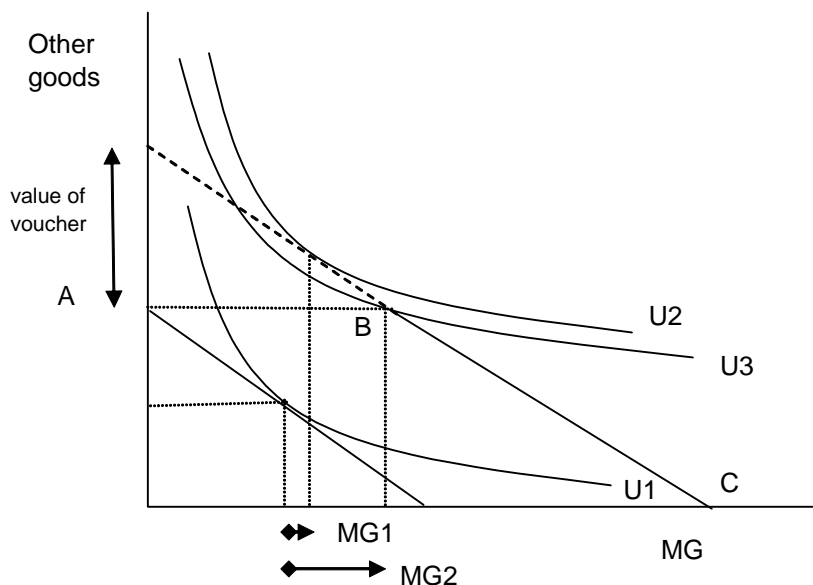
In this section we compare the effect of a cash subsidy with a voucher and a price subsidy. Assume that individuals can choose a combination of a merit good (education, health etc) and all other goods. A voucher has the effect of shifting the budget constraint to the right in the same way as a price subsidy. The difference is that the consumption of other goods cannot be increased beyond the maximum that is purchased under the pre-voucher situation. Hence the constraint shifts up to ABC.

Figure A.1: Effect of a voucher where there is a preference for the merit good



If individuals show a preference for both the merit and other goods the shift in the budget constraint leads to an unconstrained increase to optimised utility of U2 – equivalent to the effect of a similar rise in cash income (figure A.1).

Figure A.2: Effect of the voucher when the merit good is not properly valued



In contrast if consumers do place a low value on the merit good. A cash transfer leads to an increase in utility to U2 but only a small rise in the demand for the merit good (M1). A voucher, however, which constrains the budget line to ABC leads to a

larger increase (M2) in the demand for the merit good and utility to U3. Although it appears that utility is lower, the nature of the merit good implies that utility will be higher if the consumers are fully informed of its benefits (Figure A.2).

Figure A.3: effect of price subsidy when merit good is fully valued

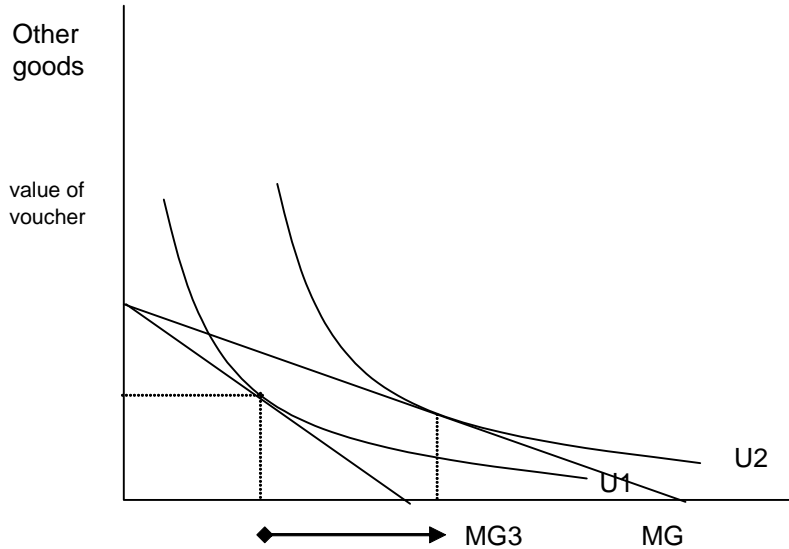
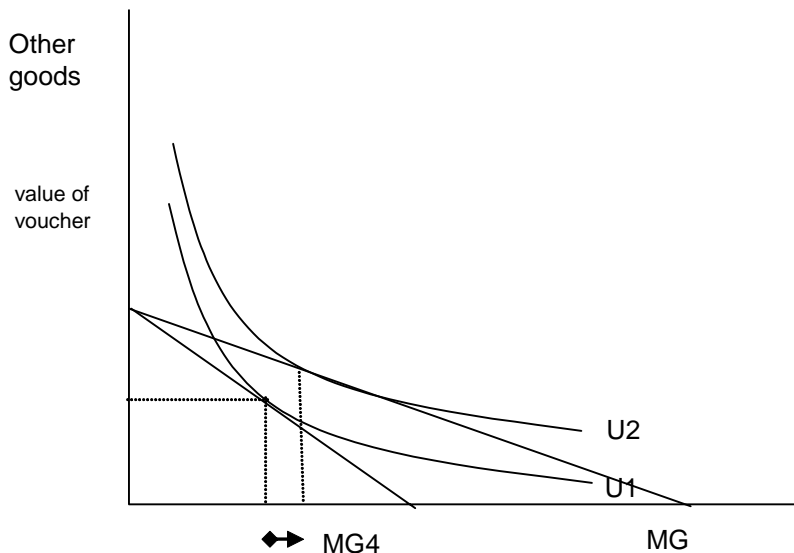


Figure A.3 indicates the effect of an equivalent price subsidy when the merit good is highly valued. Demand for the merit good increases substantially (M3). In these circumstances the effect of the voucher, cash transfer and supply subsidy is similar.

The final figure (A.4) shows the effect of the price subsidy when the merit good is under-valued. In this case the increase in the demand for the merit good is only very small. The effect on demand (M4) is much smaller than the effect of the voucher since consumers are not constrained to spend the increase in real income.

Figure A.4: effect of price subsidy when merit good is under-valued



This is a simplified analysis. It does not take account of any possible second round effect on prices resulting from the increase in demand for the merit good. Neither does it incorporate the effect of the consumer costs, such as transport and waiting, of consuming the merit good.



## Annex two: demand-side financing evaluation studies

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
<b>HEALTH</b>	.	.	.	.	.	.	.
Tanzania	Discount voucher for insecticide treated bed-nets	pregnant women/ young children	17% price reduction	Selected public and private outlets	Part of a larger social marketing programme for bed-nets. Impact	Only 28% of women had heard of scheme. Major reason for not buying (subsidised) net was affordability. Suggest poverty targeting required.	Marchant, T., J. A. Schellenbeg, T. Edgar, R. Nathan, S. Abdulla, O. Mukasa, H. Mponda and C. Lengeler (2002). "Socially marketed insecticide-treated nets improve malaria and anaemia in pregnancy in southern Tanzania." <i>Tropical Medicine &amp; International Health</i> 7(2): 149-158. Hanson, K., N. Kikumbih, J. A. Schellenberg, H. Mponda, R. Nathan, S. Lake, A. Mills, M. Tanner and C. Lengeler (2003) "Cost-effectiveness of social marketing of insecticide-treated nets for malaria control in the United Republic of Tanzania." <i>Bulletin of the World Health Organisation</i> , 81: 269-276.
US (California)	Taxi & blanket vouchers (with control group) to increase of antenatal services amongst poor (randomised trial).	Poor pregnant women	Value of subsidy	Range of outlets	Taxi vouchers had a significant impact (22% higher) on use of services over the other 2 groups.	Most taxi vouchers were not used, but still appeared to have a positive effect. Possibly the voucher distribution reinforced the importance of the service.	Melnikow, J., M. Paliescheskey and G. K. Stewart (1997). "Effect of a Transportation Incentive on Compliance With the First Prenatal Appointment: A Randomized Trial." <i>Obstetrics &amp; Gynaecology</i> 89(6): 1023-1027.

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
Australia	voucher for self-admission for fixed number of days to psychiatric unit.	One psychiatric patient	No financial implications, main reason for voucher was to introduce some choice & participation into care process	.	Anecdotal case report. Patient did self admit.	Illustrates voucher as a way of increasing participation in decision making.	Little, J. and D. Stephens (1999). "A patient-based voucher system for brief hospitalisation." Australian and New Zealand Journal of Psychiatry 33: 429-432.
Mexico	PROGRESA project - cash transfer to poor households on cognition that medical care is obtained (randomised trial). Requirements 1. nutritional supplements for 0-2, pregnant/lactating mothers, 2. growth monitoring for under 5s, 3. preventive medical care including pre-natal, well baby,	Families below poverty level	Subsidy equivalent to around 25% of annual income of those living in extreme poverty.	Government clinics	Significant positive impact (using difference in difference multivariate methodology) on public health care utilisation, nutrition monitoring, health status of adults and children (measured by self-reported illness rates & sick days) and	Does not measure financial impact and cost-effectiveness -- see next study.	Gertler, P. (2000). The impact of Progresa on health: Final Report. Washington, International Food Policy Research Institute

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
	immunizations, 3. health, hygiene and nutrition habits education programmes.				fitness levels (distance walked before getting tired).		
Mexico	PROGRESA project - financial and economic analysis. Focuses on administrative costs & additional costs to families of obtaining benefits.	Families below poverty level paid to the mothers of children attending school (more than 85% attendance required).	Subsidy equivalent to around 25% of annual income of those living in extreme poverty.	Government clinics and primary schools	Costs, including administration and private costs of consumption, found to be between 5.1 and 11.3% (depending on whether initial sensitisation and targeting costs are included).		Coady, D. P. (2000). The application of social cost-benefit analysis to the evaluation of Progresa. Washington, International Food Policy Research Institute

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
Nicaragua	Donor supported voucher scheme for treatment of STIs.	High risk groups - sex workers, clients and partners.	Full cost of high quality ('best practice') sexual health services (for limited time period).	10 contracted (public & private) clinics competing on basis of price and quality.	Over 6 years 15,000 vouchers distributed, prevalence of gonorrhoea fell by 5.25% syphilis 10.25% per year. Cost per patient \$6.7 (compared to \$7.6 average cost of other STI patients).	Although reduction in STI prevalence is attributed to the scheme, no evidence is provided in the paper that this takes account of other confounding factors. Not a randomised design.	Sandiford, P., A. Gorter and N. Salvetto (2002). "Vouchers for health: using schemes for output-based aid." Public policy for the private sector Note Number 243(World Bank, Washington).
US (Wisconsin)	Vouchers for migrant workers to pay for a range of health services including dentists, doctors and hospitals.	Migrant workers living in remote parts of the state.	Cover between 42 and 70 percent of the bill.	Wide range of providers.	Take up by 677 participants offering 1,794 vouchers.	Report suggests that the experiment shows how health services can be extended to a geographically disparate group that can not be provided for through a small number of (directly funded) dedicated facilities.	Slesinger, D. and C. Ofstead (1996). "Using a voucher system to extend health services to migrant farm workers." Public Health Rep 111(1): 57-62.
US (South Central Idaho)	Food vouchers to attract clients into pre-natal care.	Low-income pregnant women.	Health services together with food vouchers.	All physicians offer care for low-income women on rotating basis.	Tripling of participation during first year among target group.	.	Machala, M. and M. Miner (1991). "Piecing together the crazy quilt of prenatal care." Public Health Rep 106(4): 353-360.

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
US (Baltimore)	Vouchers that could be exchanged for goods and service given to heroin addicts as incentives for returning opiate-free urine samples.	Heroin addicts on methadone maintenance programmes.	Vouchers increasing in value with opiate-free weeks (\$1.5 - \$5.5).	No choice of provider but vouchers exchangeable at many high-street shops.	Positive urine samples decreased significantly.	.	Silverman, K., C. J. Wong, S. T. Higgins, R. K. Brooner, I. D. Montoya, C. Contoreggi, A. Umbricht-Schneiter, C. R. Schuster and K. L. Preston (1996). "Increasing opiate abstinence through voucher-based reinforcement therapy." <i>Drug and Alcohol Dependence</i> 41(2): 157-165.
UK	Vouchers for electric wheelchairs operated by health authorities.	Severely disabled people	Base voucher of £2,000 can be topped up by users.	Range of outlets although some areas choice quite limited.	Administrative cost was 15% of expenditure - independent assessment found that this cost could have been lower with better planning. Increased access to mobility. Significant unmet demand remains and choice was insufficient in some areas.	.	Sanderson, D., M. Place and D. Wright (2000). <i>Evaluation of the Powered Wheelchair and Voucher Scheme Initiatives, Final Report</i> . York, York Health Economics Consortium, University of York



Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
US	Vouchers for HMO registration by elderly	Medicaid (over 65s) recipients (replaces direct fee for service under these schemes).	Varied across the country.	Choice of HMO plans. Very little choice in some areas.	Low initial take up but by 1999 16% of Medicare participants.	Initially little regulation over type of information provided or value of voucher. 1997 rules have led to more consistency and requirement for information.	Reischauer, R. D. (2000) Medicare vouchers, Vouchers and the provision of public services, C. E. Steuerle, V. D. Ooms, G. E. Peterson and R. D. Reischauer, Washington D.C., Brookings Institution Press: 552.
US	Critical review of 11 studies (only these passed criteria for inclusion) that paid patients to receive care. Although US and non-US studies evaluated only US studies passed criteria for inclusion (including randomisation, control group, financial incentives not including travel payments and adequate information to perform the evaluation.	Groups requiring incentive to stay in a priority programme. Included participation in tuberculosis treatment (2), dental care for children (2), immunisation (2), post-natal care (2), treatment programme for cocaine dependency (1), anti-hypertensive treatment (1) & weight reducing programme (1).	Ranged from \$5 to \$1000.	Varied	10 out of eleven showed significant statistical effect of a financial incentive on compliance.	No information on the cost-effectiveness/benefit of such interventions.	Giuffrida, A. and D. J. Torgerson (1997) "Should we pay the patient? Review of financial incentives to enhance patient compliance." British Medical Journal, 315,(7110): 703-707.

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
<i>Others (no impact data)</i>	.	.	.	.	.	.	.
China (Yunnan)	Vouchers for MCH care	Low income, pregnant women.	Vouchers for fixed number of antenatal, postnatal and delivery care and treatment for infants under 3 months.	Range of public and private facilities	Not known	Evaluation is being conducted under a World Bank project which finances the scheme. Results not yet known.	Kelin, D., Z. Kaining and T. Songuan (2001) A draft report on MCHPAF study in China and quoted in A. Soucat and A. Wagstaff NHP and the poor: an integrated framework for improving the outcomes for the poor, session 8
India (Andhra Pradesh)	Payments to low income women for institutional delivery (Sukibhava scheme)	Low income women for first two deliveries.	250RS for delivering in public or private hospital	Any public or private hospital in selected districts.	No evaluation	Funding limits coverage. Continued informal payments and other costs reduce effectiveness. Information on scheme is also often lacking.	Rao, V. (2003) Update and assessment of government - private collaborations in the health sector in Andhra Pradesh, Hyderabad, prepared for IHSD, Harvard School of Public Health/DFID under Medium Term Health Strategy and Expenditure Framework ( MTSEF )
US (Oregon)	Vouchers for insurance	Workers with income below 170% of poverty line and without Medicaid.	Sliding reimbursement of insurance premiums depending on income.	Employer based insurance plans or alternative if not employer plan not available.	.	.	.

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
US (Massachusetts)	Vouchers for insurance	Workers with income below 200% of poverty line and without Medicaid.	Cost shared between employers and state - vouchers given to employers.	Range of HMOs and other insurers.	.	.	Steuerle, C. E., V. D. Ooms, G. E. Peterson and R. D. Reischauer (2000) Vouchers and the provision of public services, Washington D.C., Brookings Institution Press.
US (Massachusetts)	Prescription drugs for elderly.	Over 65s, non-Medicaid and low income	Up to \$750 per year - certain drugs restricted.	Any registered pharmacy.	.	.	
US (Pasco County)	Prescription drugs for children. Funded by a foundation.	Uninsured children for families without Medicaid.	Awards between \$5 and \$60 assessed by paediatrician according to need.	Participating stores. Clinical team purchases medicines.	.	.	
US (St Louis)	Subsidy to purchase medical services not available at free city facilities.	Underinsured individuals with medical conditions not treated at city facilities.	Payment direct to facility.	Certain pharmacies agreed by foundation.	.	.	
	.	.	.	.	.	.	.

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
<b>EDUCATION</b>							
US (California)	Multivariate effect of vouchers on choice of schooling.	Any	Tests a varying range of voucher values on school choice.	Public or private schools	Very low price and relatively low income effect of vouchers on school choice. Study suggests that universal vouchers would simply subsidise existing choice for private schools but not increase utilisation among the poor.	.	Buddin, R. J., J. J. Cordes and S. N. Kirby (1998). "School choice in California: who chooses private schools?" <i>Journal of Urban Economics</i> 44(1): 110-134.
US (Wisconsin)	Vouchers for poor students to attend private schools.	Poor children attending failing public schools.	Voucher for private school - adjusted with inflation.	Any participating private school	Significant impact on achievement levels in maths. Other effects ambiguous.	.	Ladd, H. (2002) Market-based reforms in urban education, Washington D.C., Economic Policy Institute.

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
US (Cleveland)	Tuition for primary/secondary schools.	Parents of K-3 grade children, selected by lottery.	Subsidy up to \$2,500 depends on family income. Reimbursement to parent/guardian.	Any public or private school in Cleveland area.	Evaluation looked at levels of achievement in tests. When confounding factors such as class size are included significantly higher only language scored better.	.	Molnar, A. (2001) School Vouchers: The Law, the Research, and Public Policy Implications, Sage and Direct Instruction Projects, CERAI-01-17, Columbia University
Puerto Rico	Vouchers for public and private schools up to \$1,500	Low income families	.	Any public or private school including religious school	Voucher scheme declared unconstitutional.	.	.
Mexico	PROGRESA project (see Gertler above for health impact) - subsidies to poor families for child participation in grades 3-9	Families below poverty level paid to the mothers of children attending school (more than 85% attendance required).	Grants for poor families with children enrolling in grades 3 to 9. Higher rates were given for girls in junior secondary school as enrolment	Public schools	Significant impact on enrolment from grades 4 to 6. Effect higher for girls than boys.	Appears to be a decreasing effect on enrolment over time - perhaps because families given subsidies later in the programme are those most difficult to get back who enter the programme primarily for the subsidy.	T.P.Schultz (2001). School subsidies for the poor: evaluating the Mexican Progresa poverty program. New Haven, Yale University

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
			usually declines.				
Bangladesh	Incentives to girls to attend secondary school - direct subsidy and payment to school	Secondary school age girls	Stipends to girls to cover costs of attending school including transport, books plus direct payment to school	Both secular and religious schools can be chosen.	Sharp increase in female enrolment almost double that for boys. Other confounders not adjusted for. Reductions in dropout and increase in attendance also recorded. Repetition rates were higher and pass rates slightly lower, perhaps the result of keeping more children in		Liang, X. (1996). Bangladesh: female secondary school assistance. Washington, Human Development Department, World Bank

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
					school.		
Pakistan (Balochistan)	Payment to schools to encourage increased primary schooling for girls. Female participation rate in primary schooling is only 15%.	Villages without a government school, with village education committee and having at least 25 girls age 5-10.	Grant is given to school not child to pay salary and small expenses such as books. If enrolment falls to below a threshold (60%) for 2 consecutive months the school is put on probation. Beyond this the school is closed.	NGOs or private operators establish and run schools.	Pupils enrolled are reported but no impact figures on enrolment or drop-out rates.	Small fee is still charge parents - contrasted with urban areas where schooling is totally free. Poorest of poor not accessing these schools. Absence of female teachers may make replication difficult.	Liang, X. (1996). Pakistan: Balochistan Pilot Fellowships. Washington, World Bank, Human Development Department

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
Colombia	Lottery for secondary school vouchers.	Any family winning lottery with school age children.	Partial cost.	Private secondary schools.	Higher completion but no significant effect on drop-out rates reported. Less likely to marry and worked less than lottery losers.	.	Angrist, J., E. Bettinger, E. Bloom, E. King and M. Kremer (2002). "Vouchers for private schooling in Colombia: evidence from a randomised natural experiment." <i>The American Economic Review</i> 92(5): 1-24.



Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
Argentina and Chile	A number of studies compare the experience of Argentina and Chile with education subsidies for the private sector. Chile uses a system of demand based subsidies whereas Argentina employs wage based supply subsidies.	All school age children.	Subsidy given to private schools either based on payroll (Argentina) or per enrolment (Chile). Acceptance of subsidy means schools must adhere to rules set down by government and cannot charge families top-up amounts.	Free choice of public or accredited private school.	Effect on subsidy on private sector has been large. No evidence that private non-religious schools were superior in either country. Significant impact for catholic schools. There is no significant difference between the method (supply or demand subsidy) of funding private schools. Evidence that the influence of selection and perhaps location can lead to greater socio-economic segmentation in schooling.	Suggestion that the positive effect of catholic schools may be due to the higher levels of funding from other sources.	McEwan, P. (2000). Private and public schooling in the Southern Cone: a comparative analysis of Argentina and Chile, NCSPE, Colombia University

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
					Suggests that demand side financing not a determinant of segmentation, rather segmentation is seen in both countries. Other factors are responsible including segmentation and perhaps policies permitting greater choice.		Narodowski, M. and M. Naros (2002). "Socio-economic segregation with (without) competitive education policies: a comparative analysis of Argentina and Chile." <i>Comparative Education</i> 38(4): 429-451.
Brazil	Incentives to families to ensure that their children (7-14) attend school. This is not a voucher scheme as but a straight cash benefit.	Stipends to poor families as incentive to attend school.	\$128 per month regardless of size plus a deposit into a saving programme for children if the child is promoted to next grade. Withdrawal	Free choice of school	Estimated that drop-out rate has fallen from 10 to 0.4% and enrolment rates have risen.		Vawda, A. (1997). Brazil: stipends to increase school enrolment and decrease child labour: a case of demand-side financing. Washington, Human Development Network, World Bank

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
			s are possible on completion of 8th grade.				
US (New York)	Examines the effect of vouchers on later achievement. The New York scheme was a random competition for private school vouchers among low income public school students. Comparisons were based on multivariate comparisons of control and intervention group (randomised trial)	Low-income students attending public (state) schools.	\$1400 per year for 3 years	Private schools in New York area.	Several studies have analysed the data. Studies have compared baseline and later test scores for control and intervention group.	.	.

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
	.	.	.	.	Found significant effect on baseline compared to later test scores for African Americans using vouchers in private schools. No significant effect of white-American children.	Explain the difference as the result of African-Americans attending the lowest quality public schools.	Howell, W. G. and P. E. Peterson (2002). The education gap: vouchers and urban schools. Washington, Brookings Institution Press.
	.	.	.	.	Contradicted the significant finding for African-Americans found the Howell study once the children (44%) with missing baseline tests were included.	Focus on intent to treat - i.e. those families offered a voucher whether or not they take up the offer. However a second analysis also looks at those that actually move to private school with similar results.	Krueger, A. B. and P. Zhu (2002). Another look at the New York City school voucher experiment, Princeton University
Others (no impact data)	.	.	.	.	.	.	.

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
US (national)	Federal grants to low income students for post-secondary education	Low income based on parental and student income	Grant value varies - not 100% of cost.	6000 participating institutions	.	.	Steuerle, C. E., V. D. Ooms, G. E. Peterson and R. D. Reischauer (2000) Vouchers and the provision of public services, Washington D.C., Brookings Institution Press.
US (Minnesota)	Education expenses for primary & secondary including books, tutoring, computer software/hardware	Low/low-middle income families	Tax deduction/c redit to \$1,000 per child (\$2,000 per family). Paid direct to institution.	Post-secondary institution	.	.	
US (Cleveland)	Tuition for primary/secondary schools.	Parents of K-3 grade children, selected by lottery.	Subsidy up to \$2,500 depends on family income. Reimbursement to parent/guardian.	Any public or private school in Cleveland area.	.	.	

Country	Intervention	Target group	Subsidy	Choice	Impact	Notes	Reference
	Extra tuition	Parents of K-3 grade children, selected by lottery.	Subsidy up to \$500 depends on family income. Reimbursement to parent/guardian.	Any person with teaching certificate & state approval.	.	.	
US (Albany NY)	Vouchers for private school - privately funded.	Anyone attending Giffen memorial primary school.	Up to \$2,500 voucher to 100 students	All private primary schools.	.	.	
US (Vermont)	Increase choice of school for areas without public schools.	Any children from towns without public schools.	Paid directly to school	Any public or approved private school within or outside Vermont.	.	.	