

## Who benefits from public spending on health care in Asia?

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**May 2005**

**Acknowledgements:** The European Commission, INCO-DEV programme (ICA4-CT-2001-10015), funds the EQUITAP project from which this paper derives. Analysis for Hong Kong by the Health, Welfare and Food Bureau, Government of the Hong Kong Special Administrative Region..

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## Abstract

We examine the benefit incidence of public health care subsidies in eleven Asian territories, including India, Indonesia and two provinces of China. The use of concentration indices and a high degree of consistency in the application of methods provide results that, unlike much of the existing evidence, are comparable across countries. Unlike many studies that examine utilisation data only or assume constant unit costs, we exploit detailed health accounts to allow for variation in unit expenditures across health services, facilities and regions. We distinguish between hospital and non-hospital care and between inpatient and outpatient care. We examine not only the distribution of quantities of health care but also that of the value of subsidies. Hong Kong is the only territory that achieves a strong pro-poor distribution of all public health services. Public health care is more moderately pro-poor in Malaysia and Thailand and is evenly distributed in Sri Lanka. In the remainder of the low-income territories examined, the better-off receive more of the subsidy than the poor. The pro-rich bias is greatest in Nepal, Heilongjiang (China) and Indonesia, followed by India, Gansu (China), Bangladesh and Vietnam. The pro-rich bias is stronger for inpatient care than hospital outpatient care. In most territories, non-hospital care is pro-poor. But the greater share of the subsidy goes to hospital care and so this dominates the overall distribution. While public health subsidies are typically not pro-poor, they are inequality reducing in all cases but for Nepal. This is because a given subsidy represents a greater proportionate increase in the living standards of the poor. Relative differences in welfare are narrowed. Hong Kong, Malaysia, Sri Lanka and Thailand have demonstrated that the allocation of sufficient public resources coupled with a policy of universal access can ensure greater benefits to the poor than is currently realised in many health systems throughout the developing world. Growing incomes not only make such policies more feasible, they also make them more effective, with respect to the target efficiency of spending, by availing the private sector opt-out.

**Keywords:** public health care, benefit incidence analysis, Asia

**JEL Classification:** H2, H4, I1, I3

# 1. Introduction

Ensuring that public spending on health care and other services is pro-poor is an important objective of many national governments and international agencies. It is central to the mission of the World Bank and is a key component of the Heavily Indebted Poor Countries Initiative and the International Monetary Fund's Poverty Reduction and Growth Facility. Underlying the objective is the contention that distributional concerns, to a large extent, justify public spending on health care. The ultimate targets may be reduced health inequality and greater equity in the distribution of health care. Public spending on health care may also be justified as an instrument for the redistribution of welfare. In low-income countries, where information and administrative constraints are particularly binding, in-kind transfers, such as public health care, are more feasible and potentially more efficient than cash transfers in alleviating poverty and reducing inequality (Besley and Coate 1991). The validity of such distributional justifications rests upon the empirical question of whether public subsidies for health care are in fact targeted on the poor.

Benefit incidence studies, many conducted by or in association with the World Bank, generally find that public spending on health care in developing countries is not concentrated on the poor (van de Walle 1995; Castro-Leal, Dayton et al. 2000; Mahal, Sing et al. 2000; Sahn and Younger 2000; Filmer 2003). A review of the evidence identifies only five countries in which the poorest fifth receive at least their population share of public expenditure on health care (Filmer 2003). Greater pro-rich bias in hospital-based care is a consistent finding (Filmer 2003). The inference frequently drawn is that a pro-poor health policy should seek to shift resources from tertiary to primary care (van de Walle 1998).

In this paper, we extend the evidence base and use concentration indices to compare degrees of inequality in benefit incidence using methods applied with a high degree of consistency across eleven territories, including India, Indonesia and two provinces of China, that account for a substantial share of the Asian population. One limitation of many benefit incidence studies is the crudeness of the unit cost data used to value services (van de Walle 1998; Sahn and Younger 2000). Deficiencies of public accounts systems mean that the available unit costs are frequently little better than guesstimates and reflect little of the variation in the quality of services across

levels of facilities and regions. Many studies opt to examine utilisation data only or use costs, assumed constant across individuals, simply as weights to aggregate across services. We overcome this limitation by employing detailed health accounts, available for most of the study territories, which document the distribution of public expenditures across health services, facilities and regions. Many benefit incidence studies do not take account of variation in fees paid and so assume that net public expenditure per unit is the same across all users. When there are effective fee waivers for the poor, the benefit to the poor will be underestimated. Where the survey data allow, we subtract user fees paid by the individual from gross public expenditure per unit of service. We also examine the sensitivity of the estimated distribution to informal payments that can erode the real value of the subsidy to the individual. We distinguish between hospital and non-hospital care and inpatient and outpatient care. We identify not only whether each service is pro-poor i.e., the poor are more likely to receive the subsidy, but also whether it is inequality reducing.

Our analysis reveals substantial variation across the study territories in the incidence of public subsidies for health care. Public spending is strongly pro-poor in Hong Kong. At lower levels of income, Malaysia, Sri Lanka and Thailand are considerably more successful than the other study territories, and most developing countries for which benefit incidence studies have been conducted, in directing public spending on health care toward the poor. We discuss the ingredients of this success, not least of which appears to be the scale of public expenditure.

In the next section, we describe the magnitudes of public spending on health care in the study territories and the charging policies adopted. Data and methods are discussed in section 3 and results are presented in section 4. In the final section we consider reasons for the differences in the distribution of public spending on health care and discuss the implications for policy.

## **2. Public spending on health care and charging policy**

The contribution of government revenues to total expenditure on health (TEH) varies a great deal across the territories we examine; from 15% in China and India to 50% or more in Sri Lanka, Hong Kong, Malaysia and Thailand (Table 1).<sup>1</sup> Given such differences in the magnitude of the public subsidy to health care, its distributional

impact would vary considerably across the territories even if there were no variation in the benefit incidence. In fact, as we show below, the subsidy is largest precisely in those territories in which it is most pro-poor. Variation in levels of spending inflates differences in distributional impact.

### **TABLE 1**

The extent to which the public subsidy is targeted on the poor will depend upon user charging policy both because the price effect on utilisation may vary with income and because exemptions may shield the poor, raising the subsidy to them. The extent and the nature of charging vary across the study countries (Table 2). Sri Lanka is the only country that provides most public health care free of charge. Fees are levied in Malaysia but they are kept very low. A visit to a public clinic costs the equivalent of around 25 US cents, inclusive of medication; a very small fraction of fees in the private sector. Charges for public hospital care are also very modest in comparison with the private sector. In Thailand, since the introduction Universal Coverage (UC) in October 2001, the fee for ambulatory care is only 70 US cents and hospital admission is free for UC members. Relative to incomes, Hong Kong's point-of-service charges are minimal.<sup>2</sup> In the other countries, charges are levied on most hospital-based care. In India, charges are made for hospital beds but, at least in principle, not for consultations. Non-hospital ambulatory care is (officially) free in Bangladesh, India, Nepal (partially) and Vietnam. Family planning is free in most countries but, somewhat paradoxically, not in Sri Lanka. Of course, there are often substantial discrepancies between the official charging policy and its implementation in developing countries (Ahrin-Tenkorang 2000). For example, the Vietnamese data we analyse show substantial payments for care at commune health centres, which are supposed to be free. Similarly, there is evidence of payments for, supposedly free, primary care in India (Banerjee, Deaton et al. 2004). 'Free' medicines are often in short supply and must be purchased. Charging is most extensive in China, Indonesia and Vietnam, where charges are imposed on virtually all non-preventive services.

There are no formal procedures for exempting the poor from charges in China and India. This, combined with the extent of charging in China, can be expected to have a substantial distributional impact. In Vietnam, a village committee grants exemptions only to those considered indigent. Although charges are imposed on virtually all services in Indonesia, the poor are exempted through a health card system.

Exemptions for the poor also exist in Bangladesh, Hong Kong, Malaysia (on discretion), Nepal and Thailand. Again, there are well-known problems with the implementation of fee-waiver schemes (Ahrin-Tenkorang 2000; Tien and Chee 2002). Price discrimination by quality of hospital inpatient care relieves the charges incurred by the poor in India and Malaysia. Less consistent with the targeting of health care subsidies on the poor are the exemptions offered to civil servants in Bangladesh, Hong Kong, Malaysia and India.

**TABLE 2**

### **3. Data and methods**

We examine individual utilisation of public health care in relation to living standards. Data are from the most recent official health or socio-economic surveys that provide information on both utilisation of public health care and a suitable measure of living standards (Table A1). All are nationally representative but for the two surveys of Chinese provinces. Our preferred proxy for living standards is household (per adult) equivalent consumption, which includes the value of goods produced by the household for own consumption and a use value of housing and durable goods. The equivalence scale used is  $e_h = (A_h + 0.5K_h)^{0.75}$ , where  $A_h$  is the number of adults in household  $h$  and  $K_h$  the number of kids (0-14 years).<sup>3</sup> Household expenditure, rather than consumption, is used for Hong Kong, where household production is much less significant. For Malaysia, the only available measure of living standards included in the health survey is household income. This is likely to give an underestimate of the living standards of rural households engaged in the informal agricultural sector. It is, however, the measure that has been used in previous incidence studies of Malaysia (Meerman 1979; Hammer, Nabi et al. 1995).

We present distributions for three categories of public health care: hospital inpatient care, hospital outpatient care and non-hospital care. The latter is an aggregate of visits to a doctor, polyclinic, health centre and antenatal care (see Table 3). For the two Chinese provinces, the surveys cover only hospital care but distinguish between five levels of facilities, the lower levels of which are equivalent to polyclinics/health centres. In Nepal, the survey does not allow a distinction between hospital inpatient and outpatient care. For inpatient care, the reference period is 12

months except in Bangladesh (3 months) and Sri Lanka (2 weeks). The number of days of inpatient care is usually recorded but in Malaysia and Thailand it is the number of admissions and in Sri Lanka it is only whether there was any admission. For all other care, the reference period is somewhere in the range of a fortnight to a month except in Bangladesh (3 months) and the number of visits is recorded except in Sri Lanka where the survey only records if there was any visit and in India where the number of treatment episodes at a health centre is recorded.

**TABLE 3**

Utilisation data do not capture variation in the value of subsidies across services, facilities, geography and individuals. Further, one cannot simply aggregate units of utilisation across services to get the total health sector subsidy. Both extensions require weighting an individual's use of a specific service by an estimate of the value of the unit subsidy that individual receives. The service-specific public subsidy received by an individual is,

$$S_{ki} = q_{ki}c_{kj} - f_{ki}, \quad (1)$$

where  $q_{ki}$  indicates the quantity of service  $k$  utilised by individual  $i$ ,  $c_{kj}$  represents the unit cost of providing  $k$  in the region  $j$  where  $i$  resides and  $f_{ki}$  represents the amount paid for  $k$  by  $i$ . Where possible, we distinguish between facilities, eg, local, district, teaching hospital, as well as services, eg, inpatient / outpatient, but do not index this to

avoid clutter. Unit costs are computed as  $c_{kj} = \frac{TRE_{kj}}{\sum_{i \in j} q_{ki}w_i}$ , where  $TRE_{kj}$  is total

recurrent public expenditure and  $w_i$  is an expansion factor necessary to inflate sample to population utilisation. The total public subsidy received by an individual is computed as  $S_i = \sum_k \alpha_k S_{ki}$ , where  $\alpha_k$  are scaling factors that standardise utilisation reference periods across services.

National Health Accounts (NHA), available for Bangladesh, the Chinese provinces, Hong Kong, Sri Lanka and Thailand, are used to disaggregate expenditure figures by facility, in addition to service and region. For example, in each of the two Chinese provinces, for inpatient and outpatient care, unit subsidies are specific to 5 levels of facility and at least 13 districts. Detailed health accounts for Sri Lanka also

allow net expenditure figures to be computed across a range of services and regions but it is not possible to distinguish between expenditure on hospital and non-hospital ambulatory care. Full NHA are not available for India, Indonesia, Malaysia, Nepal and Vietnam. For India, we use the unit subsidies computed by Ajay Mahal and colleagues (Mahal, Sing et al. 2000). These vary across 960 sub-groups (i.e., 3 facilities, 16 major states, urban-rural, male-female and 5 income quintiles). For Indonesia, public health expenditure review figures allow the disaggregation of expenditure for each of 30 provinces by hospital inpatient care, hospital outpatient care and non-hospital care.<sup>4</sup> For Malaysia, expenditure data were disaggregated to 5 levels of public hospitals but geographic disaggregation was not undertaken since the utilisation data could not be analysed by this dimension. Incomplete health accounts for Nepal allow disaggregation by hospital and non-hospital care by region (Institute of Policy Studies 2003). For Vietnam, we use public accounts and hospital costing estimates to compute unit costs by service and facility but it is not possible to allow for regional variation (World Bank 2001; World Bank 2003).

Some individuals make payments in excess of production costs. Since we are primarily interested in who gets the (positive) subsidies from the health care system, we set negative values of the subsidy to zero. Survey estimates of aggregate user fee revenues may not match the official figures. Apart from sampling error and non-sampling error due to recall bias, unofficial payments may be an important source of discrepancy. Such payments do not contribute to government revenue and one might argue that they are irrelevant to the allocation of the public subsidy. On the other hand, it seems perverse to maintain that an individual paying a bribe equal, for example, to the cost of providing a health service is the beneficiary of a subsidy. The real value of a subsidy is the difference between the real resource value of the services consumed and the payment made for those services. So, we use reported, and not official, fees in computing the subsidy. In effect, we treat unofficial payments as rent extracted by the suppliers of public health care. There are two circumstances in which this treatment of user fees is inappropriate. First, unofficial payments may be required to fill the gap between the cost of care provided and the available government budget. Then, unofficial payments then cancel out from the computation of the real subsidy since they should be added both to costs and payments. Second, one may be interested only in the incidence of the nominal subsidy – the difference between the cost incurred by the government and the payment the government receives.<sup>5</sup> In each case,



the subsidy should be computed from official user fee revenue. In the data, however, one cannot distinguish between official and unofficial payments. For Bangladesh, Hong Kong and Vietnam, we estimate the distribution of official user fee revenue by scaling all reported payments by the ratio of total official user fee revenue to aggregate payments calculated from survey data (World Bank 2003). This allows us to test the sensitivity of the results to different treatments of unofficial payments.<sup>6</sup>

For China, India, Malaysia, Nepal and Sri Lanka either the survey data do not contain payments made by individuals for *public* health services or the data are not considered sufficiently reliable e.g., payments for public and other care are likely to be confused. For these countries, we assume, for a given service, facility and region, that all pay the same charge. Health accounts are used to calculate total net expenditure i.e. total expenditure less total user charge revenue, on a service-facility-region basis. These net expenditures are then apportioned to individuals in proportion to the utilisation distributions estimated from the survey data. For Indonesia, survey estimates of individual payments for public care are not considered sufficiently reliable and expenditures net of user fees cannot be computed accurately at the province level. We therefore apportion expenditures gross of fees according to the distributions of utilisation.

Evaluation of the distribution of a subsidy requires reference to some target distribution, the choice of which implies imposition of a distributional objective. One alternative is to establish whether the subsidy is *pro-poor*, in the sense that the poor receive more of the subsidy than the better-off. In this case, the distribution of the subsidy should be compared with population shares. The concentration index (Kakwani, Wagstaff et al. 1997) provides a summary index of this comparison that is negative if the poor generally receive a dis-proportionate (to population) share of the subsidy. A negative concentration index indicates that the subsidy helps close the absolute gap in living standards between the rich and poor. A second, less ambitious, objective is that the subsidy be *inequality reducing*. This requires that the share of subsidy received by the poor exceed its share of total consumption. The Kakwani index (Kakwani 1977), equal to the concentration index less the Gini coefficient, can be used to establish whether the subsidy is inequality reducing. A negative Kakwani indicates that the subsidy reduces inequality in living standards.

## 4. Results

The shares of public health care utilisation consumed by the poorest and the richest fifth of the population are presented in Table 4. Hong Kong displays the clearest pro-poor distribution of public health care, with the poorest fifth consuming much more than one fifth of all types of public health services. Public health care is also pro-poor in Malaysia and in Thailand (not hospital outpatient), with the gradient stronger for non-hospital care than it is for hospital care. As far back as 1974, (Meerman 1979) found no income bias in total public spending on health care in Malaysia but pro-poor spending on rural clinics and mid-wife delivered births. By the 1980s, total public spending on health care was pro-poor (Hammer, Nabi et al. 1995). In Sri Lanka, the poorest fifth consume slightly more than one fifth of hospital-based care and slightly less than a fifth of non-hospital care. In the remainder of territories, non-hospital care (visits to doctor, polyclinic, health centre and antenatal care) tends to be marginally pro-poor while hospital-based care is clearly pro-rich. The poorest 20% receive less than 10% of all inpatient care in the two Chinese provinces, India, Indonesia and Nepal (inpatient and outpatient care) and only slightly more than 10% in Bangladesh and Vietnam. In all these cases, with the slight exception of Vietnam, the richest 20% get more than 30% of all inpatient care. Such rich-poor differences undoubtedly to a large extent reflect urban-rural disparities. Hospitals are concentrated in cities, while the poor are concentrated in the countryside. But a pro-rich distribution of inpatient care is not inevitable, as is demonstrated by Hong Kong, Malaysia, Sri Lanka and Thailand. In general, hospital outpatient care is only slightly less pro-rich than inpatient care, with the poorest fifth receiving a share that is much less than a fifth everywhere except Hong Kong, Malaysia and Sri Lanka. In contrast, only in Nepal do the poorest fifth receive less than a fifth of public care delivered outside of hospitals.

**TABLE 4**

The distributions of public health care across the full distribution of total consumption are reflected in the concentration indices given in Table 5. With the exceptions of Hong Kong and, to a lesser degree, Malaysia, Sri Lanka and Thailand, all concentration indices for hospital-based care are positive, indicating pro-rich bias. Departures from proportionality, i.e., a concentration index of zero, in the distribution

of hospital care are significant in all cases except for Thailand and Sri Lanka (inpatient care).<sup>7</sup> There is little evidence of pro-rich bias in the distribution of non-hospital care. The respective concentration index is significantly positive only for Nepal. The index is actually significantly negative, indicating pro-poor bias, in Hong Kong, India, Indonesia (outpatient and antenatal care at health centres), Malaysia, Thailand and Vietnam. In Bangladesh and Sri Lanka, one cannot reject the hypothesis of no bias in the distribution of non-hospital care.

In general, the Kakwani indices are significantly negative indicating that the share of public health care consumed by poorer individuals exceeds their share of total consumption. Public health care is inequality reducing, despite the fact that it is typically not pro-poor. It closes the relative gap in living standards but not the absolute gap. This redistributive effect is strongest in Hong Kong followed by Malaysia, Thailand and Sri Lanka. Non-hospital care is more inequality reducing than hospital-based care. The Kakwani indices for inpatient care in Bangladesh, Heilongjiang and India are not significantly different from zero, indicating no effect on inequality. In Indonesia, the Kakwani indices for hospital care are significantly positive, suggesting that inequality is actually increased.

#### **TABLE 5**

Poorest and richest quintiles' shares of the public health subsidy by service and in aggregate are given in Table 6. Hong Kong is clearly the exception with almost 40% of the value of the subsidy going to the poorest 20% of individuals. The next closest are Malaysia with 23%, Sri Lanka with 21% and Thailand with 20%. In all other territories, the poorest fifth receive much less than one fifth of the value of the subsidy. In Nepal, only 5% of the total subsidy goes to the poorest 20%, while 45% goes to the richest 20%. The share of the poorest fifth is close to 10% or less in the two Chinese provinces. Only in Hong Kong, Malaysia, Sri Lanka, Thailand and Vietnam do the richest 20% absorb less than 30% of the public subsidy to health care.

#### **TABLE 6**

Concentration and Kakwani indices for the public subsidy to each category of care and in aggregate are presented in Table 7. The indices for each health service

category are generally close to the respective values in Table 5, suggesting that variation in utilisation and not in unit subsidies is the dominant determinant of the distribution of the public subsidy. There are, however, some exceptions. Discrepancies between the index for utilisation and that for the subsidy can arise from variation, across the income distribution, in the specific services and facilities utilised (with consequent differences in unit costs), from geographic variation in the subsidy to specific services and from variation in the users fees paid. The concentration indices for the subsidy to inpatient care in Bangladesh and both inpatient and outpatient care in Vietnam are slightly smaller than the respective indices for utilisation, which is consistent with discrimination in favour of the poor in the fees levied. In Bangladesh, fees for tertiary hospital inpatient care are substantial and affordable only by the better-off. Fee exemptions operate, as they do to a lesser degree in Vietnam. In Gansu and Heilongjiang, pro-rich bias in inpatient care is also ameliorated in moving from the distribution of raw utilisation to that of the money value of the subsidy. But in these cases, differential fees cannot explain the change since we do not have data on fees paid. In Nepal and Sri Lanka, the distribution of the inpatient subsidy is actually more pro-rich than that of utilisation. Geographic variation in hospital costs, with better-off urban dwellers making greater use of high cost hospitals, seems a likely explanation. This is also true for outpatient care in Bangladesh, Gansu and Heilongjiang. In Bangladesh, charges are much less for outpatient than inpatient care and the tendency for the better-off to pay more is strong enough to weaken the pro-rich bias in inpatient but not outpatient care.

Indices of the distributions of the total subsidies are given in the final column of Table 7. In general, these are closest to the indices for inpatient care, reflecting the large share of public expenditure absorbed by inpatient care. Only in Bangladesh, Indonesia and Malaysia does the inpatient share of the total subsidy fall below 50%. In Hong Kong, India, and Vietnam, the share is 80% or more. In Hong Kong, Malaysia and Thailand, the total subsidy concentration indices are significantly negative, indicating a pro-poor distribution of the public subsidy to health care. In Sri Lanka, the index is zero. In all other territories, the concentration index is significantly positive. The better-off receive more of the public subsidy to health care than the poor. This pro-rich bias is most marked in Nepal, followed by Heilongjiang, India, Gansu and Indonesia. The bias is less in Bangladesh and even more moderate in

Vietnam due to a more even distribution of inpatient care and, in the case of Vietnam, the offsetting effect of pro-poor non-hospital care.

In Bangladesh, Hong Kong and Vietnam, we are able to test the sensitivity of the results to the treatment of unofficial payments. Scaling reported payments such that they sum to official user fee revenue gives an estimate of the official payment made by each individual. Subtracting this estimate, rather than reported payments, in the computation of the unit subsidy gives a concentration index of 0.1707, rather than 0.1588, for Bangladesh. The effect is greater in Vietnam, where the concentration index rises from 0.0886 to 0.1606. This reflects the large magnitude of unofficial payments in Vietnam (World Bank 2001; World Bank 2003). The distribution becomes more pro-rich when unofficial payments are taken out because the better off make more payments and we assume the ratio of unofficial to total payments is constant. Since payments are subtracted from given costs and the magnitude of the adjustment to payments is greater for the rich, the subsidy to the rich must rise relative to that to the poor. If unofficial payments fall even more disproportionately on the better-off, the effect would be even greater. There is very little impact on the distribution in Hong Kong, which is not surprising given that unofficial payments do not exist the difference between reported and official user fee revenue reflects sampling and non-sampling error only.

Personal health services do not account for all public expenditure on health. Substantial resources are absorbed by services that have public good characteristics, such as public health programmes, administration, medical education and research. In Sri Lanka, for example, such collective services account for 35% of total public expenditure on health. If all individuals benefit equally from such services, then they have a concentration index of zero and move the distribution of the total subsidy in the direction of equality. The benefit may vary, of course, but it is very difficult to estimate such variation. One possibility is to assume that utilisation of personal health services reflects demand for health and so the benefit obtained from collective services. On this assumption, expenditure on collective services can be allocated in proportion to the total utilisation of health care. Doing this for Sri Lanka gives a concentration index for collective services of  $-0.0994$ . The index for the total subsidy becomes slightly negative (from 0.0010 to  $-0.0356$ ) but remains insignificantly different from zero. The effect is modest, despite the large share of collective services in total spending, because the subsidy to collective services is allocated in proportion

to total utilisation, which is the main determinant of the distribution of the total subsidy. Given the unit subsidy to inpatient care is much larger than for other care and that inpatient care is typically more pro-rich than total utilisation, in general, this adjustment will make the distribution of the total subsidy appear more pro-poor. It is likely that benefits from collective services are more evenly distributed than personal services and so allocating collective services in proportion to utilisation of personal service gives an upper bound on the magnitude of their inequality. In most cases, taking account of expenditures on collective services would result in a more even distribution of the subsidy with the impact positively related to the share of total spending on such services.

With the exception of Nepal, all Kakwani indices are significantly negative, indicating that the public subsidy is inequality reducing. The subsidy falls as a proportion of household consumption as the latter rises and so reduces the *relative* gap in welfare between the rich and the poor. The Kakwani index is largest in magnitude in Hong Kong, followed by Malaysia, Thailand and Sri Lanka. These are precisely the four territories in which the public subsidy to health care is largest (Table 1). The progressivity of the subsidy is inflated by its magnitude to give a far larger redistributive effect in these four territories than elsewhere.

## TABLE 7

## 5. Discussion

The public health system of Hong Kong is clearly an exception amongst those examined in this paper. It achieves a pro-poor distribution of all public hospital and non-hospital care and hence of the total public subsidy to health care. This is the product of a universally accessible public system, with minimal user charges from which the poor are exempted. The availability of private health care offering better amenities, coupled with rationing by waiting time in public facilities, gives the better-off and those covered by employer-provided private insurance the alternative to opt-out of the public system, ensuring that the subsidy goes disproportionately to the poor. Of course, it is the high income of Hong Kong that makes such a system affordable. Amongst the low/middle income countries examined, Malaysia, Thailand and Sri

Lanka are distinct. In the first two countries, the public health subsidy is distributed to a slight advantage to the poor and it is evenly distributed in the third country. In the remainder of the Asian territories we have examined, the better-off receive more of the subsidy than the poor. The pro-rich bias is stronger for inpatient care than hospital outpatient care. In most territories, non-hospital care is pro-poor. But the greater share of the subsidy goes to hospital care and so this dominates the overall distribution. The pro-rich bias is greatest in Nepal, followed by Heilongjiang (China), India, Gansu (China) and Indonesia. While public health subsidies are not pro-poor in the majority of the Asian territories examined, they are nonetheless inequality reducing in all territories but for Nepal. The subsidy going to the poor is typically smaller in absolute terms but it provides a greater proportionate increase in the living standards of the poor. Relative differences in welfare are narrowed.

Our results are generally consistent with the majority of benefit incidence studies showing that the poor receive a lesser share of public health expenditures in developing countries than the better off (van de Walle 1995; Castro-Leal, Dayton et al. 2000; Mahal, Sing et al. 2000; Sahn and Younger 2000; Filmer 2003). Greater pro-rich bias in hospital-based care is also a consistent finding (Filmer 2003). But we also show that the stylised fact of pro-rich bias in the distribution of the public health subsidy is not an incontrovertible rule. It does not hold in Malaysia, Thailand and Sri Lanka. The policy interpretation on these findings requires consideration of three questions. First, in the many instances in which the poor do not get their share of the subsidy, does this necessarily represent a failure of public policy? Second, does the fact that non-hospital care is distributed more favourably toward the poor than hospital care mean that a pro-poor policy should seek to divert more resources from hospital to non-hospital based services? Third, why is it that public health care is more pro-poor in Malaysia, Thailand and Sri Lanka than in other developing countries of Asia?

The answer to the first of these questions largely depends on the objectives of the subsidy. If the aim is to ensure that the poor get more public health services than the better-off, then the objective is clearly not being achieved in most cases. Alternatively, subsidising health care may be part of a wider policy to reduce relative differences in living standards between rich and poor. With one exception (Nepal), the subsidy achieves this objective. It is inequality reducing. But those concerned about inequalities within the health sector may not be content with reduction in general

economic inequality. From this perspective, is the fact that the poor get less of the subsidy necessarily a failure? Despite its name, benefit incidence analysis informs of the incidence of public health expenditures, rather than the benefits from these expenditures. Even though the poor get a lower than proportionate share of the subsidy, the impact on their health can be greater if the marginal product is declining with the initial level of health (given a positive relationship between income and health) (Filmer, Hammer et al. 2002). Further, the analysis describes the distribution of the subsidy and does not identify the impact of the subsidy on the distribution of health care, nor health. The poor would be less able to afford health care in the absence of public provision, while the crowding-out effect will be greater for the better-off. Consequently, the poor may get less of the subsidy but experience a larger net effect on total health care utilisation (Filmer, Hammer et al. 2002). While the distribution of the subsidy is not pro-poor, the subsidy can still shift the distribution of health care in a pro-poor direction. These hypotheses are consistent with evidence showing that public spending has no significant effect on health of the non-poor but a positive marginal impact on the health of the poor (Bidani and Ravallion 1997; Gupta, Verhoeven et al. 2003; Wagstaff 2003).

The evidence shows that, on average, the better-off typically receive most of the subsidy. But this is informative of the distributional implications of a policy change only if marginal changes in the subsidy were delivered in strict proportion to current utilisation (Younger 2003). Of course, many policy reforms will deliver marginal gains that differ from average gains (Lanjouw and Ravallion 1999). For example, the political power of higher-income classes may allow them to capture most of the initial public spending on health but as their lower health needs are satisfied, additional programmes may disproportionately benefit the poor. Then additional public spending will shift the distribution in a pro-poor direction. There is some evidence, admittedly not particularly strong, that this holds for primary care in Indonesia (Lanjouw, Pradhan et al. 2002).

So, caution should be exercised in interpreting evidence of pro-rich bias in the distribution of the public health subsidy. It does not mean that public policy is not shifting health care resources toward the poor. Turning to the second policy-relevant question, we have seen that public spending is concentrated on hospitals and the poor receive less of this than they do from spending on primary care. One might conclude that a pro-poor health policy should redistribute resources from hospital to primary



care services. Such thinking underlay the WHO Alma Ata Declaration. But more than a quarter of a century later, hospitals continue to absorb the greatest share of public health budgets and the primary care that is delivered is all too often grossly deficient in quality and there is pro-rich bias in its distribution (Filmer and Pritchett 1999; Filmer, Hammer et al. 2000; Filmer, Hammer et al. 2002). WHO itself recognises that the policy emphasis on primary care has not been a resounding success (World Health Organisation 2000). Public primary care is often viewed as a poor service for the poor. Malaysia and Sri Lanka have followed an alternative approach that has apparently been successful in directing resources to the poor. Primary care was never adopted as the priority service for the poor. Instead, the emphasis has been on universal access to all levels of care. Perhaps as a consequence, it can be observed in our results that the distributions of spending on hospital care are much more even than in other low/middle-income territories. It is the more even distribution of hospital care in Malaysia and Sri Lanka, and also in Thailand, and not the balance of resources between hospital and non-hospital care, that is responsible for more pro-poor distribution of the public subsidy in these countries. This provides some support for the shift in policy advocacy from prioritisation of primary care to a “new universalism”; essential services, defined by cost-effectiveness, provided to all (World Health Organisation 2000).

From principles of economic efficiency, there is no clear logic for prioritising primary care for the receipt of public subsidies (Filmer, Hammer et al. 2002). Within the health sector, market failures seem milder in primary care. The demand elasticity for primary care is low, with the result that public provision simply crowds out private provision. Filmer, Hammer and Pritchett reason that externalities and insurance market failures dictate that priority be given to traditional public health measures and to high cost, low probability interventions delivered in hospitals. Empirically, this is supported by evidence from Indonesia that households are able to self-insure against mild and moderate illness but not severe illness (Gertler and Gruber 2002). The health system of Hong Kong is, to an extent, consistent with this logic. Only 30% of outpatient services are provided in the public sector, while 95% of bed-days take place in public hospitals. A weakness of this argument, acknowledged by its proponents, is that it ignores equity. Given differences in the distributions of hospital and non-hospital care, redirecting public funding away from primary care is not immediately attractive from an equity perspective. But the experiences of Malaysia,

Sri Lanka and Thailand, not to mention Hong Kong, show that hospital care need not be pro-rich. If it is sufficiently financed, then widely distributed hospital care can be both affordable and accessible to the poor. The need to improve the quality of primary care and to redefine the role of the state in its provision is widely recognized (Commission on Macroeconomics and Health 2001; OECD and WHO 2003). By bringing hospital level care closer to the community, the “close-to-the-client” model of care proposed by the Commission on Macroeconomics and Health, to an extent, resolves the equity-efficiency trade-off in the proposal of Filmer, Hammer and Pritchett. The policies followed in Malaysia and in Sri Lanka are somewhat consistent with this model. Many hospitals are small in scale and not particularly well equipped. But their wide geographical distribution makes them accessible to the rural poor. In many low-income countries, such as Bangladesh, resources are more concentrated in large, well-equipped hospitals in urban centres that are inaccessible to the poor. The policy choice is not simply between hospital and primary care but concerns the models of hospital and of primary care adopted and the distribution of resources across different levels of facilities.

Part of the answer to our third policy relevant question has already been given. Public health care is more pro-poor in Malaysia, Sri Lanka and Thailand than in other low/middle-income countries because of the emphasis on universality, the spending priorities adopted and the geographic distribution of resources. But the scale of public funding to health care is an additional factor that differentiates these countries. The relative contribution of public spending to total health financing is clearly correlated with the distributional incidence of that spending (see Figure 1). Excluding outlier Hong Kong, a simple bivariate linear regression suggests that, on average, a 10% increase in the government funded share of revenues is associated with a 0.07 fall in the concentration index of the total public subsidy. Of course, this is not an estimate of a causal effect. Nonetheless, there are reasons to believe that the scale of funding affects its incidence. More resources allow a wider geographic distribution of public health facilities. Fewer resources are inevitably concentrated on relatively few hospitals in cities away from the poor, rural population. By financing almost two-thirds of health care from government revenues, Malaysia ensures that one half of its population lives within 10 kilometres of a public hospital and within 4.6 km of a public clinic.<sup>8</sup> Malaysia’s modern road system further helps in reducing the geographic barrier to care for the rural population. It is not only geographic but also

financial barriers to access that are lower in these three countries. There are virtually no fees for public health services in Sri Lanka and in Malaysia and Thailand fees are low, with relatively effective exemptions of the poor. Of course, policies arise from the broader economic, political and cultural context that impact on both the scale and the distribution of public spending making it difficult to identify the effect of the former on the latter. Racial divisions in post-independence Malaysia motivated the expansion in access to health care as part of a consistent government policy implemented over two decades to eliminate poverty and reduce economic, and particularly ethnic, disparities (Hammer, Nabi et al. 1995). The early adoption of democracy and female suffrage in Sri Lanka contributed to the high priority given to health care and a wide geographical distribution of health resources in response to the lobbying of local politicians.

### **FIGURE 1**

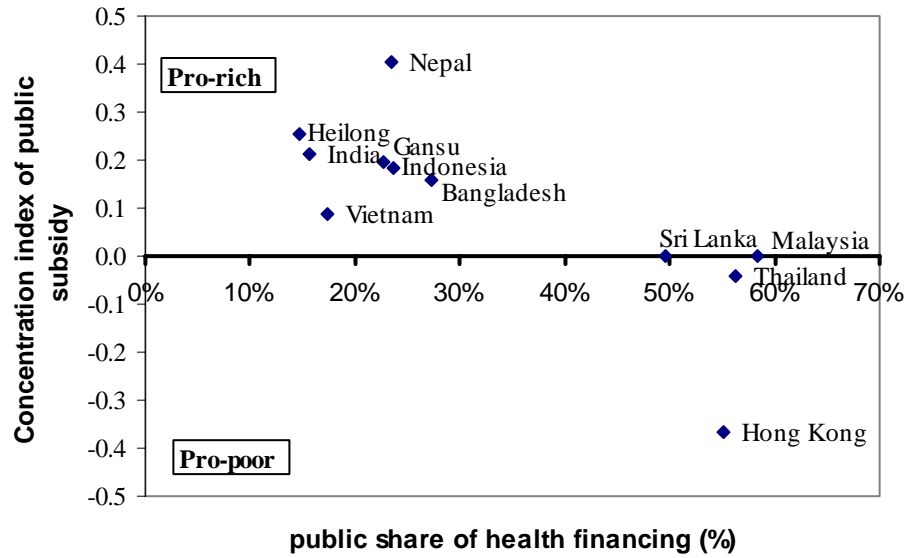
While relatively high levels of public spending can ensure adequate technical quality in the public sector, universality of access leads to long waiting times and minimal amenities, creating incentives for the better-off to opt-out of the public sector. These incentives become stronger as the economy grows, as it has done most impressively in Malaysia and Thailand, and there is an expansion of middle and higher income groups with not only the desire but also the means to purchase higher quality care in the private sector (Hammer, Nabi et al. 1995). It is no coincidence that the four territories with the most pro-poor public spending on health care – Hong Kong, Malaysia, Sri Lanka and Thailand - also have considerably higher national incomes. Redistribution has to be affordable. Only in these four territories are there clear discrepancies between the distributions of public and private care (Figures 2a & 2b). In Bangladesh, India and Indonesia, the distribution of private sector care is only slightly more pro-rich than is care in the public sector. In Bangladesh, private outpatient and ambulatory care (not in figure) are actually slightly pro-poor, while the public sector equivalents are slightly pro-rich. This is due to the tendency for the poor to use unqualified providers operating in the private sector. In Hong Kong, Malaysia, Sri Lanka and Thailand, private sector care is clearly distributed in favour of the better-off while care in the public sector tends to be pro-poor or distributed equally between rich and poor. In these territories, the combination of universal public

provision, a private sector offering an attractive alternative, and incomes that make demand for this alternative effective leads to redistribution through public provision in precisely the way that theory predicts (Besley and Coate 1991). This suggests that effective targeting of public spending on health care does not only depend upon policies concerning the public health system -the scale and the allocation of public spending. Also important is the broader course of economic development that influences the supply and demand for private health care and so the incentives and opportunities for the better-off to opt out of the public sector and so release resources for the poor.

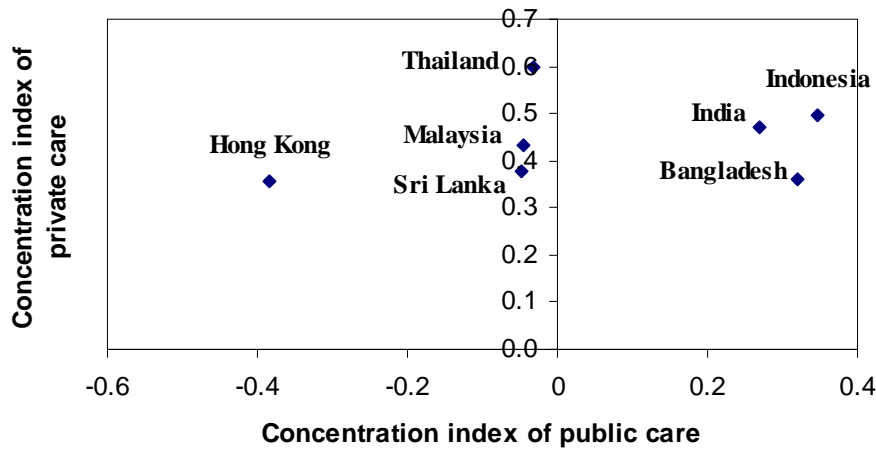
## **FIGURE 2**

In summary, our analysis shows that the pervasive outcome of a pro-rich distribution of public health care subsidies in most Asian countries is not unavoidable but that effective targeting is easier to realise at higher national incomes. Hong Kong, Malaysia, Sri Lanka and Thailand have demonstrated that the allocation of sufficient public resources coupled with a policy of universal access can ensure far greater benefits to the poor than may have hitherto been assumed. But higher incomes not only makes such policies more feasible, it also makes them more effective, with respect to the target efficiency of spending, by availing the private sector opt-out. This seems to be a lesson worth keeping in mind as the other Asian countries are growing from low to lower-middle income status.

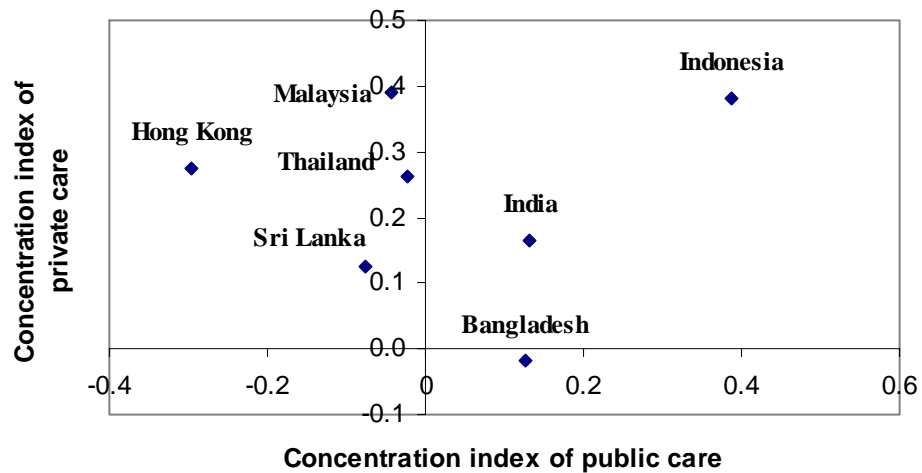
**Figure 1: Public health spending - financing contribution and incidence**



**Figure 2a: Distribution of public and private hospital inpatient care**



**Figure 2b: Distribution of public and private hospital outpatient care**



**Table 1: Percentage of total expenditure on health financed from General Government Revenues**

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Bangladesh	(1999)	27.23%
China – National	(2002)	15.21%
- Gansu province	(2002)	22.75%
- Heilongjiang province	(2002)	14.78%
Hong Kong SAR	(2001-02)	57.17%
India	(1996)	15.60%
Indonesia	(2001)	23.71%
Malaysia	(1996)	58.30%
Nepal	(1995-96)	23.50%
Sri Lanka	(1996-97)	49.50%
Thailand	(2000)	56.28%
Vietnam	(1998)	17.30%

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Sources: National health accounts estimates, except: India and Malaysia –World Health Report, 2002 (WHO); Nepal -(HMG/Nepal 2000; Hotchkiss, Rous et al. 1998); Vietnam (World Bank 2001).

Note: Years are closest available to those of the surveys used for distributional analysis.

**Table 2: Charges and exemptions for public health care**

	Charged services	Free Services	Income / poverty related fee waivers	Non-poor groups exempt from charges
<b>Bangladesh</b>	Secondary services (nominal registration fee for inpatient/outpatient); Inpatient care in major hospitals.	Most primary care (/local services); medicines within facility; immunization; some reproductive healthcare.	Poor exempt or pay lower charge	Civil servants (selected services)
<b>China</b>	Inpatient (incl. medicines); Outpatient (incl. medicines).	Vaccination; immunisation; family planning.	None	Old Red Army soldiers and Retirees
<b>Hong Kong SAR</b>	Inpatient (incl. medicines); outpatient (incl. medicines); dental.	accident & emergency (until Dec. 2002)	Welfare recipients exempt	Civil servants & dependents (reduced rate for IP); hospital staff & dependents.
<b>India</b>	Inpatient bed charge; outpatient registration charge; certain medicines; tests/x-rays; dental	Hospital consultation and certain medicines. Primary care/health centre/polyclinic consultation and medicines. Family planning. Vaccinations and immunisations.	None formally. Indirect relation to income through price differentiation in inpatient care. Informally, "poor" can be exempted partially or fully from charges.	Civil servants
<b>Indonesia</b>	All medical care and medicines.	None	Poor exempt from all charges. Indirect relation of inpatient charges to income through price discrimination.	Charges determined at local government level. Some better off local govts. provide free health centre care
<b>Malaysia</b>	Hospital inpatient and outpatient. Primary care. Dental care. Diagnostics and x-rays.	Family planning and vaccinations / immunisations. Outpatient ante and post natal care. Treatment of infectious diseases on 3 <sup>rd</sup> class wards. Dental care for pregnant women and pre-school children.	Hospital directors have discretion to waive fees for destitute. Upper limit on charges for 3 <sup>rd</sup> class ward patients	Infants less than 1 year (outpatient). State rulers, Governors and families. Civil servants (incl. retired) and dependents. Local authority employees and dependents.
<b>Nepal</b>	All medical care and medicines. Nominal charge for outpatient varying with facility.	Emergency services; selected vaccines, immunisation and reproductive health services. 60% subsidy for medicines at Health Posts and Primary Care centres.	Poor either exempt or pay reduced charge but not fully implemented.	None
<b>Sri Lanka</b>	Family planning services. Patients occasionally asked to buy medicines / supplies.	All medical and medicines except family planning.	When charges made, staff generally exempt the poor informally.	None
<b>Thailand</b>	All medical care and medicines. After Oct 2001, fixed fee (30 Baht) UC scheme means very minimal co-payment.	Non-personal health care; EPI vaccination	Poor exempted from user fees and co-payments. Informally, those "unable to pay" are exempted.	children <12; elderly >60; public health volunteers; monks.
<b>Vietnam</b>	Fees for most services introduced in 1989. Medicines rarely provided free of charge.	Outpatient services at commune health centres.	Fee exemptions for individuals who have certification of indigency from neighbourhood or village People's Committee.	Families of health personnel, certain classes of patients (like handicapped, TB), orphans.

**Table 3: Measures of health care utilisation**

	Hospital care		Doctor visits	Non-hospital care	Antenatal care	Comments
	Inpatients	Outpatients		Polyclinic/ health centre		
<b>Bangladesh</b>						
Reference period	last episode in previous 3 months		last episode in previous 3 months		3 months	Care at satellite and community clinics also included but not child immunisation.
Measurement unit	# days	# visits		# visits		
<b>Gansu &amp; Heilongjiang (China)</b>						
Reference period	12 months	2 weeks	N/A	2 weeks	N/A	Data on hospital care only. Low level hospitals are equivalent to polyclinics.
Measurement unit	# days	# visits		# visits		
<b>Hong Kong SAR</b>						
Reference period	12 months	30 days	30 days	N/A	N/A	Hospital outpatient includes visits to specialist and A&E. Doctor visits is general outpatient visits.
Measurement unit	# days	# visits	# visits			
<b>India</b>						
Reference period	12 months	2 weeks	2 weeks	2 weeks	2 weeks	
Measurement unit	# days	# visits		# treatment episodes	# visits	
<b>Indonesia</b>						
Reference period	12 months	1 month	N/A	1 month	1 month	Puskesmas (IP and OP) and supplementary Puskesmas (OP) included in health centre /polyclinic. Polindes & Posyandu in antenatal care.
Measurement unit	# days	# visits	N/A	# visits, # days for inpatient	# visits	
<b>Malaysia</b>						
Reference period	12 months	2 weeks	N/A	2 weeks	N/A	
Measurement unit	# admissions	# visits		# visits		



**Table 3: Measures of health care utilisation**

	Hospital care		Doctor visits	Non-hospital care	Antenatal care	Comments
	Inpatients	Outpatients		Polyclinic/ health centre		
<b>Nepal</b>						
Reference period		30 days	N/A	30 days	N/A	Data does not allow distinction between hospital IP and OP.
Measurement unit		# visits	N/A	# visits	N/A	
<b>Sri Lanka</b>						
Reference period	2 weeks	2 weeks	2 weeks	2 weeks	N/A	
Measurement unit	Any admission	Any visit	Any visit	Any visit		
<b>Thailand</b>						
Reference period	12 months	1 month	N/A	1 month	N/A	A distinction is made between public and private care only for the last 2 IP admissions and the last episode of other care. Assumed all care received in same sector.
Measurement unit	# admissions	# visits		# visits		
<b>Vietnam</b>						
Reference period	12 months	4 weeks	N/A	4 weeks	N/A	No distinction between public and private sector for IP care. Since vast majority of hospitals were public, assumed all IP is public.
Measurement unit	# days	# visits		# visits		

Notes: IP – inpatient; OP – outpatient; N/A – not available.

**Table 4: Percentage of total public health care utilization to poorest and richest 20% of individuals**

	Household consumption per equivalent adult	Hospital care		Non-hospital care
		Inpatient	Outpatient	
<i>Poorest 20%</i>				
Bangladesh	7.39%	12.10%	12.53%	23.02%
Gansu (China)	5.25%	7.75%		14.41%
Heilongjiang (China)	5.98%	6.60%		12.13%
Hong Kong	6.83%	38.61%	38.54%	38.47%
India	10.50%	8.88%	14.36%	24.33%
Indonesia	9.22%	3.66%	7.18%	20.54%
Malaysia	7.11%	21.58%	21.01%	32.29%
Nepal	6.68%		7.20%	15.02%
Sri Lanka	8.17%	23.00%	21.99%	19.10%
Thailand	6.96%	21.84%	17.10%	28.31%
Vietnam	9.09%	10.74%	9.37%	23.51%
<i>Richest 20%</i>				
Bangladesh	46.27%	47.69%	24.23%	28.65%
Gansu (China)	53.63%	39.17%	17.74%	
Heilongjiang (China)	51.61%	46.09%	28.43%	
Hong Kong	44.48%	6.08%	10.96%	10.04%
India	35.69%	34.72%	27.59%	20.36%
Indonesia	40.32%	48.30%	43.27%	17.38%
Malaysia	44.36%	15.19%	15.61%	8.49%
Nepal	45.43%		33.30%	22.32%
Sri Lanka	44.91%	15.68%	14.29%	24.78%
Thailand	47.00%	19.22%	15.64%	6.12%
Vietnam	39.16%	27.39%	35.07%	6.29%

Notes:

1. Non-hospital care includes visits to a doctor, polyclinic, health centre and antenatal care.
2. In Gansu and Heilongjiang there is no data on non-hospital care but low-level hospitals, equivalent to polyclinics and health centres, are included.
3. In the Nepal survey, it is not possible to distinguish between hospital inpatient and outpatient visits.

**Table 5: Distribution of public health care utilization – concentration and Kakwani indices**

	Household consumption per equivalent adult	Hospital care		Non-hospital care	
		Inpatient	Outpatient	inpatient	outpatient antenatal
<b>Bangladesh</b>					
Concentration index (/Gini)	0.3832 (0.0024)	0.3189 (0.0641)	0.1269 (0.0344)		0.0474 (0.0691)
Kakwani index		-0.0643 (0.0641)	-0.2563 (0.0345)		-0.3358 (0.0692)
<b>Gansu (China)</b>					
Concentration index (/Gini)	0.4728 (0.0057)	0.2963 (0.0440)			0.0446 (0.0240)
Kakwani index		-0.1765 (0.0261)			-0.4282 (0.0415)
<b>Heilongjiang (China)</b>					
Concentration index (/Gini)	0.4473 (0.0056)	0.3824 (0.0490)			0.1820 (0.0278)
Kakwani index		-0.0649 (0.0640)			-0.2004 (0.0317)
<b>Hong Kong</b>					
Concentration index (/Gini)	0.3728 (0.0039)	-0.3170 (0.0371)	-0.2741 (0.0272)		-0.2707 (0.0217)
Kakwani index		-0.6899 (0.0354)	-0.6469 (0.0271)		-0.6435 (0.0217)
<b>India</b>					
Concentration index (/Gini)	0.2520 (0.0006)	0.2700 (0.0119)	0.1315 (0.0092)		-0.0497 (0.0132)
Kakwani index		0.0179 (0.0216)	-0.1206 (0.0161)		-0.3018 (0.0418)
<b>Indonesia</b>					
Concentration index (/Gini)	0.3068 (0.0010)	0.4487 (0.0263)	0.3620 (0.0189)	0.0007 (0.0593)	-0.0251 (0.0043)
Kakwani index		0.1420 (0.0263)	0.0552 (0.0187)	-0.3061 (0.0593)	-0.3318 (0.0043)
<b>Malaysia</b>					
Concentration index (/Gini)	0.3682 (0.0056)	-0.0457 (0.0125)	-0.0430 (0.0219)		-0.2397 (0.0184)
Kakwani index		-0.4139 (0.0130)	-0.4112 (0.0220)		-0.6080 (0.0185)
<b>Nepal</b>					
Concentration index (/Gini)	0.3664 (0.0047)		0.2594 (0.0515)		0.0819 (0.0283)
Kakwani index			-0.1070 (0.0502)		-0.2845 (0.0281)
<b>Sri Lanka</b>					
Concentration index (/Gini)	0.3572 (0.0117)	-0.0490 (0.0350)	-0.0758 (0.0119)		0.0613 (0.0406)
Kakwani index		-0.4062 (0.0132)	-0.4330 (0.0264)		-0.2959 (0.0135)
<b>Thailand</b>					
Concentration index (/Gini)	0.3957 (0.0100)	-0.0335 (0.0275)	-0.0236 (0.0207)		-0.2099 (0.0296)
Kakwani index		-0.4292 (0.0286)	-0.4193 (0.0224)		-0.6056 (0.0305)
<b>Vietnam</b>					
Concentration index (/Gini)	0.3459 (0.0088)	0.2279 (0.0443)	0.3043 (0.0578)		-0.1146
Kakwani index		-0.1171 (0.0456)	-0.0408 (0.0585)		-0.4596

Notes:

1. Non-hospital care includes visits to a doctor, polyclinic, health centre and antenatal care.
2. In Gansu and Heilongjiang there is no data on non-hospital care but low-level hospitals, equivalent to polyclinics and health centres, are included.
3. In the Nepal survey, it is not possible to distinguish between hospital inpatient and outpatient visits.
4. Robust standard errors in parenthesis. Where standard error is not provided, index is computed as weighted average across a number of services.

**Table 6: Percentage of total public health care subsidy to poorest and richest 20% of individuals**

	Hospital care		Non-hospital care	Total subsidy
	Inpatient	Outpatient		
<i>Poorest 20%</i>				
Bangladesh	14.56%	11.21%	23.02%	16.30%
Gansu (China)	7.31%		9.56%	8.16%
Heilongjiang (China)	6.57%		12.31%	10.46%
Hong Kong	38.87%	38.79%	38.29%	38.84%
India	10.71%	18.59%	26.24%	12.50%
Indonesia	3.30%	6.27%	19.82%	13.42%
Malaysia	21.24%	18.92%	32.29%	23.05%
Nepal		4.22%	6.03%	5.05%
Sri Lanka	21.03%	21.39%		21.16%
Thailand	21.26%	17.72%	31.16%	20.07%
Vietnam	11.51%	10.23%	23.32%	14.87%
<hr/>				
<i>Richest 20%</i>				
Bangladesh	44.45%	23.81%	28.65%	34.49%
Gansu (China)	35.62%		21.27%	30.17%
Heilongjiang (China)	35.86%		29.34%	31.44%
Hong Kong	6.07%	10.76%	12.23%	6.95%
India	36.27%	19.25%	11.27%	32.98%
Indonesia	52.00%	46.10%	18.17%	31.30%
Malaysia	16.30%	16.60%	8.49%	14.50%
Nepal		51.86%	38.17%	45.64%
Sri Lanka	17.87%	16.97%		17.56%
Thailand	19.94%	14.67%	5.21%	16.97%
Vietnam	24.67%	34.37%	4.29%	17.48%

**Table 7: Distribution of public health care subsidy – Concentration and Kakwani indices**

	Hospital care		Non-hospital care	Total public subsidy
	Inpatient	Outpatient		
<b>Bangladesh</b>				
Concentration Index	0.2494 (0.0909)	0.1444 (0.0371)	0.0474 (0.0691)	0.1588 (0.0499)
Kakwani Index	-0.1338 (0.0909)	-0.2388 (0.0372)	-0.3358 (0.0692)	-0.2244 (0.0499)
subsidy shares	47.99%	25.33%	26.69%	
<b>Gansu (China)</b>				
Concentration Index	0.2442 (0.0509)	0.1199 (0.0373)		0.1970 (0.0365)
Kakwani Index	-0.2286 (0.0439)	-0.3529 (0.0360)		-0.2758 (0.0332)
subsidy shares	65.42%	34.58%		
<b>Heilongjiang (China)</b>				
Concentration Index	0.3232 (0.0605)	0.2192 (0.0474)		0.2527 (0.0385)
Kakwani Index	-0.1242 (0.0652)	-0.2281 (0.0510)		-0.1946 (0.0424)
subsidy shares	60.09%	39.91%		
<b>Hong Kong</b>				
Concentration Index	-0.3193 (0.0355)	-0.2762 (0.0264)	-0.2444 (0.0232)	-0.3104 (0.0300)
Kakwani Index	-0.6919 (0.0356)	-0.6491 (0.0265)	-0.6173 (0.0232)	-0.6831 (0.0301)
subsidy shares	82.47%	13.36%	4.17%	
<b>India</b>				
Concentration Index	0.26273 (0.01547)	0.00296 (0.04381)	-0.13246 (0.02319)	0.2115 (0.0147)
Kakwani Index	0.0122 (0.01928)	-0.2476 (0.02113)	-0.3830 (0.03281)	-0.0390 (0.0165)
subsidy shares	83.68%	9.62%	6.65%	
<b>Indonesia</b>				
Concentration Index	0.4819 (0.0249)	0.3948 (0.0189)	-0.0074 (0.0047)	0.1823 (0.0081)
Kakwani Index	0.1752 (0.0248)	0.0880 (0.0187)	-0.3142 (0.0047)	-0.1245 (0.0080)
subsidy shares	26.54%	14.86%	58.59%	
<b>Malaysia</b>				
Concentration Index	-0.0418 (0.0126)	-0.0180 (0.0235)	-0.2397 (0.0184)	-0.0810 (0.0118)
Kakwani Index	-0.4100 (0.0131)	-0.3863 (0.0235)	-0.6080 (0.0185)	-0.4493 (0.0123)
subsidy shares	37.02%	38.53%	24.45%	
<b>Nepal</b>				
Concentration Index	0.4932 (0.6343)		0.2987 (0.0502)	0.4049 (0.0424)
Kakwani Index	0.1268 (0.0605)		-0.0677 (0.0487)	0.0384 (0.0405)
Subsidy shares	54.58%		45.42%	
<b>Sri Lanka</b>				
Concentration Index	0.0258 (0.0401)	-0.0470 (0.0216)		0.0010 (0.0278)
Kakwani Index	-0.3313 (0.0252)	-0.4042 (0.0172)		-0.3561 (0.0284)
Subsidy shares	68.00%	32.00%		
<b>Thailand</b>				
Concentration Index	-0.0242 (0.0308)	-0.0392 (0.0227)	-0.2506 (0.0325)	-0.0404 (0.0195)
Kakwani Index	-0.4199 (0.0317)	-0.4348 (0.0242)	-0.6463 (0.0335)	-0.4361 (0.0210)
Subsidy shares	50.74%	45.16%	4.18%	
<b>Vietnam</b>				
Concentration Index	0.1952 (0.0454)	0.2846 (0.0665)	-0.1173	0.0886 (0.0434)
Kakwani Index	-0.1495 (0.0471)	-0.0599 (0.0667)	-0.4623	-0.2573 (0.0458)
Subsidy shares	86.88%	2.13%	10.98%	

## Appendix

**Table A1: Description of sample surveys**

Country	Survey year	Survey name	Institution conducting survey	Survey coverage	Survey design	Sampling unit	Response rate	Sample size (indvs)
<b>Bangladesh</b>	1999-2000	Health and Demographic Survey (HDS) 2000	Bangladesh Bureau of Statistics (BBS)	National	Stratified.	Household & Individual	99%	56,010
<b>Gansu (China)</b>	2003	National Health Household Interview Surveys	Ministry of Health	Gansu province (poor in west China)	Stratified, cluster sample. Self-weighting.	Household	100%	15535
<b>Heilongjaing (China)</b>	2003	Heilongjiang Health Household Interview Survey	Health bureau of Heilongjiang province	Heilongjiang province (north-east China)	Stratified, cluster sample. Self-weighting.	Household	100%	11572
<b>Hong Kong SAR</b>	April-June 2002	Thematic Household Survey in the second quarter of 2002	Census & Statistics Department, Government of Hong Kong SAR	National	Stratified. Sample weights applied	Household (non-institutional; individual (institutional))	78,4% (non-institutional); 97,2% (institutional)	31672
<b>India</b>	1995-96	National Sample Survey 52 <sup>nd</sup> round	National Sample Survey Organisation	National	Stratified, cluster sample. Weights applied.	Household	100%	629,024
<b>Indonesia</b>	2001	Socioeconomic Survey (SUSENAS)	National Board of Statistics	National	Stratified, cluster sampling. Self-weighted	Household	98%	889,413

<b>Country</b>	<b>Survey year</b>	<b>Survey name</b>	<b>Institution conducting survey</b>	<b>Survey coverage</b>	<b>Survey design</b>	<b>Sampling unit</b>	<b>Response rate</b>	<b>Sample size (indvs)</b>
<b>Malaysia</b>	1996	National Health and Morbidity Survey II	Public Health Institute, Ministry of Health	National	Stratified, cluster sample. Weights applied.	Household	86.90%	59,903
<b>Nepal</b>	1995/96	Nepal Living Standards Survey	Central Bureau of Statistics (CBS)	National	Stratified, cluster sample. Weights applied.	Household	96.60%	18,855
<b>Sri Lanka</b>	1996/97	Consumer Finance Survey	Central Bank	Excluded Northern Province due to civil war.	Stratified.	Household	98%	39928
<b>Thailand</b>	Jan-June 2002	Socioeconomic Survey	National Statistical Office	National	Stratified.	Household	80%	17,489
<b>Vietnam</b>	1998	Living Standards Survey	General Statistical Office	National	Stratified, cluster sample. Weights applied.	Household	70%	28623

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## Notes

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<sup>1</sup> See O'Donnell, O., E. Van Doorslaer, et al. (2005) for detail on the financing of health care in these and other Asian territories.

<sup>2</sup> For example, US\$10-15 all-inclusive per diem for inpatient care and US\$5-10 per outpatient episode against a background annual PPP-adjusted GDP of US\$22,911 per capita in 2003.

<sup>3</sup> Parameter values have been set following the advice of Deaton, A. (1997). pp. 241-270). While emphasising the difficulty of identifying equivalence scales, Deaton suggests, on the basis of Rothbarth scales estimated for India, Indonesia, Pakistan and Sri Lanka, that the best approximation available is that a child costs roughly half that of an adult. The economies of scale parameter is set at 0.75 on the basis of the estimates of 0.72 and 0.87 estimated from Indian and Pakistani data.

<sup>4</sup> To disaggregate expenditure on non-hospital care into that on inpatient and outpatient services, we assume the non-hospital inpatient-outpatient ratio of *unit* costs is the same as that for hospital care in the same province.

<sup>5</sup> Meerman (1979), in a classic benefit incidence study of Malaysia, claimed that identification of the distribution of the benefit from public spending is infeasible. He argued for a less ambitious objective of identifying the beneficiaries from public spending and charging to them the (net) public sector costs.

<sup>6</sup> The scaling may also be seen as a correction for any recall bias that consistently raises reported payments above actual payments.

<sup>7</sup> For Sri Lanka, the recall period for hospital inpatient care is only 2 weeks, in comparison to 1 year in all other countries, and the variable indicates only if there was any visit, not the number of days (see Table 3). This is a shorter period than one would prefer to estimate average utilisation. Whether it will bias the estimate of the distribution and, if so, in which direction is less clear-cut. With more sparse data, it will be more difficult to identify relationships. On the other hand, Wagstaff, A. (2005) has shown that the bounds on a concentration shrink as the mean of a binary variable rises. The short reference period for Sri Lanka will reduce the mean and increase the potential range of the concentration index.

<sup>8</sup> Authors' calculations from 1996 NHMS.