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Who pays for health care in Asia?

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Abstract

We describe the structure and the distribution of health care financing in 13 territories that account for 55% of the Asian population. Survey data on household payments are combined with Health Accounts data on aggregate expenditures by source to estimate distributions of total health financing. In all territories, high-income households contribute more than low-income households to the financing of health care. In general, the better off contribute more as a proportion of ability to pay in low and lower-middle income territories. The disproportionality is in the opposite direction in three high/middle income territories operating universal social insurance. Direct taxation is the most progressive source of finance and is most progressive in poorer economies with a narrow tax base. The distribution of out-of-pocket (OOP) payments also depends on the level of development. In high-income economies with widespread insurance coverage, OOP payments absorb a larger fraction of the resources of low-income households. In poor economies, it is the better off that spend relatively more OOP. This contradicts much of the literature and suggests the poor simply cannot afford to pay for health care in low-income economies. Among the high-income territories, Hong Kong is the one example of progressive financing arising from reliance on taxation, as opposed to social insurance, and an ability to shield those on low-incomes from OOP payments. Thailand has a similar financing structure and achieves a similar distributional outcome. The equity implications of a given distribution of financing depend on the extent to which the financing structure ties health care use to payments.

Keywords: health care financing, progressivity, equity, Asia

JEL classification: D31, D63, H22, H23, I10

1. Introduction

Health care financing in Asia faces a variety of challenges. In low-income countries, the chief concern is for the sufficiency of spending on health care and the identification of financing mechanisms that can mobilise resources within severe economic and political constraints. In middle-income countries, attention is focussed on shifting the balance of health care financing from direct to pre-payment. South Korea and Taiwan have established universal social health insurance, while the process is on-going in the Philippines and Thailand. In contrast, many pre-payment schemes have collapsed in China, resulting in heavy reliance on out-of-pocket payments. Understanding and responding to these challenges requires good evidence on how health care financing operates. Not least, from perspectives of justice, economics and politics, it is important to know who pays for health care. The distribution of the financing burden is a major consideration in appraising the fairness of the status quo and in assessing the equity consequences of reforms. The impact of the health care system on the economy is determined not only by its size but also the way in which it is financed. A heavy burden on workers weakens incentives to work. A heavy burden on the poor, besides directly worsening poverty, may squeeze out investment in other forms of human capital, with long-term consequences for growth. A steeply increasing burden with income may weaken economic incentives and slow growth. The balance of political support for existing health care financing arrangements, and hence the political feasibility of reforms, is dependent upon how the burden of financing falls across the population.

To a large extent, the distribution of the economic burden of health care is determined by the structure of financing: the split between direct payment and pre-payment and the relative contributions of taxation, social insurance and private insurance to the latter. The balance between direct payment and pre-payment determines the extent to which actual or potential users pay for health care. Direct payments are charged in relation to actual costs, while private insurance premiums are related to (pooled) expected costs. Taxation and social insurance break the link between use of health care, realised or expected, and financial liability. Instead, liability can be made a function of ability to pay. Taxation addresses the bill for health care to the taxpayer and, indirectly, it is mostly workers and consumers that pick up this bill. Social insurance places the main burden on workers. Private insurance accumulates funds from those that choose to insure against the cost of future illness.

Moving beyond the description of health care financing by source to a household level analysis allows many more interesting questions to be addressed. Is it the rich, the middle income or the poor workers and consumers that bear most of the burden of taxation and social insurance? Do these payments rise in proportion or more than proportionately with income? Are public contributions more closely related to ability to pay than private payments? Or, do positive income effects in the demand for health care and insurance mean that, by default rather than by design, private payments are very closely related to ability to

pay? Do direct payments place a disproportionate burden on the poor as a result of their greater propensity to sickness? Or, are the poor simply too poor to pay for health care? Or, do fee waivers and informal arrangements shield the poor from out-of-pocket payments?

This paper presents the first comprehensive and consistent analysis of the structure and the distribution of health care financing in thirteen territories that account for 55% of the total population of Asia (33% of world population). The territories span the whole range of development, from Japan to Nepal (see Table 1). This diversity makes it possible to explore links between economic development, the structure of health financing and the distribution of payments. Not only does the structure of health financing vary with development, so too does the distributional burden of any given source. Examination of a heterogeneous group of territories gives some insight into how health financing systems and their distributional consequences might be expected to evolve. This evolution is readily apparent in Asia, parts of which have experienced rapid economic development with immediate consequences for health financing.

We describe payments for health care both in the aggregate - by source - and at the household level, in relation to ability to pay. To do this, we use both macro and micro data. The macro data are mostly from National Health Accounts (NHA) estimates. Micro data are from household expenditure or socio-economic surveys. To describe the distribution of total health payments in relation to ability to pay, we combine the micro and macro data. The micro data give the distribution of each of the main sources of finance. The macro data give the weight attached to each distribution when aggregating to obtain the distribution of total payments.

The paper is structured as follows. The next section summarises the structure of health care financing in each territory. Micro data and methods are discussed in section 3. Results for each of the main sources of financing and in the aggregate are presented in section 4. In section 5, we summarise the results and consider the interpretations that can be placed on them.

Table 1: Development indicators, 2000

2. Health care financing mix in Asia

In Table 2, we give the percentage of total expenditure on health (TEH) from each of the main sources of finance. With the exceptions of Nepal and Indonesia, these figures are derived from formal and official health accounts estimates. For Nepal, we use an independent study of health financing (Hotchkiss, Rous et al. 1998), and in the case of Indonesia, we rely on preliminary health accounts estimates produced by its Ministry of Health together with figures from the Public Health Expenditure Review. National health

accounts are not currently available for all of India, and our analysis is restricted to one of the states – Punjab – where some estimates are available.

Private insurance plays a relatively minor role in most of the health systems considered. It contributes a non-negligible share of TEH only in Hong Kong, Indonesia, the Philippines, Taiwan and Thailand. Even in these cases the percentage is 10% or less. Consequently, the main distinguishing factor in these health financing systems is the balance between public pre-payment and private out-of-pocket (OOP) payment. The latter accounts for at least 30% of TEH in all territories except Japan. As is clear from Figure 1, these Asian territories conform to the stylised fact that reliance on OOP payments declines with the level of development (Musgrove and Zeramdini 2001). The poorest country, Nepal, obtains three-quarters of its funding for health care from OOP payments, while the richest country, Japan obtains only 12% from this source. But the wealth of a country is not the only determinant of the extent to which health care is financed from direct payments. At similar levels of income, the OOP share in China is greater than that in Sri Lanka. The relative contribution from OOP is similar in Thailand and Taiwan, even though Thailand is much less wealthy. South Korea relies on direct payments to the same extent as Sri Lanka but has an income closer to that of Taiwan.

Table 2: Health care financing mix in Asia

Nepal, Bangladesh, Kyrgyz, Punjab and Sri Lanka are all very close to the 45^0 line in the health financing triangle (Figure 2), indicating that health care is financed almost exclusively from OOP and general government revenues (GGR). Nepal and Bangladesh rely more heavily on OOP, while the burden is close to being evenly split in Kyrgyz, Punjab and Sri Lanka. Territories that lie below the 45^0 line make some use of insurance, social and/or private. The distance from any point to the 45^0 line gives the share contributed by insurance. The relative contributions from insurance are modest in Indonesia, the Philippines, Hong Kong and Thailand but more substantial in China, Korea, Taiwan and Japan. Hong Kong and Thailand are similar in relying most heavily on GGR followed by OOP, with the remainder made up from private insurance in Hong Kong and both private and social insurance in Thailand. The high/middle-income territories – Japan, Taiwan and South Korea - lying furthest below the 45^0 line have significant social insurance systems. Hong Kong, the only other high-income territory, also relies predominantly on publicly-financed pre-payment, but does this through taxation rather than social insurance. Japan and Taiwan collect more than half of health system funding from social insurance, while high co-payments in Korea mean that it still collects half of all financing from direct payments. The remainder of financing in China come from social insurance (16.5%) and community financing arrangements (8.2%).

FIGURES 1 & 2

3. Data and methods

3.1 Sample surveys

To estimate the distribution of each type of health payment in relation to ability to pay (ATP), we use data from the latest available household income and expenditure survey or a general socioeconomic survey (see Appendix Table A1). For Japan, the 1998 Comprehensive Survey of Living Conditions (CSLC) is used to estimate all distributions except that of OOP payments, which is obtained from a specially commissioned survey of health care. Unfortunately the latter is not nationally representative, covering only a few prefectures and was conducted in a different year (2002) from the CSLC. Most of the distributions for the Philippines are estimated from the 1999 Poverty Indicator Survey. Since this contains no data on private or social insurance premiums, the respective distributions are estimated from the 1994 Family Income and Expenditure Survey.

3.2 Ability to pay

Many of the economies included in our study are characterised by a lack of formal labour markets, substantial household-based production and high variability in the stream of household income. We adopt the value of household consumption as the preferred measure of ability to pay (ATP) for low- and middle-income countries, where household production makes a substantial contribution to living standards (Deaton and Grosh 2000). The data are sufficiently rich to compute this measure, with the exception that a use value of durable goods and a rental value of housing cannot be estimated in all cases (see Table A2). For the richer territories, ATP is measured by household expenditure on market traded goods and services (Table A2). The one exception is Japan, where the only available measure is income.

The unit of analysis is the household. Adjustment is made for the size and age structure of the household through application of an equivalence scale to both ATP and each component of health payments. The scale used is $e_i = \left(A_i + 0.5K_i\right)^{0.75}$, where A_i is the number of adults in the household and K_i the number of children (0-14 years).[1]

There are, of course, other proxies for ability to pay. Some have used non-food expenditure on the basis that resources available after meeting basic food needs provide the best proxy of capacity to pay for health care (World Health Organisation 2000). With respect to equity considerations, whether one examines the ratio of health payments to total expenditure or to a sub-total depends upon the nature of one's distributional concern. Is it with inequality in all consumption or with inequality in non-food consumption? We prefer to use total consumption for the following reasons. First, while expenditure on food might be less discretionary than on many other items, it is nonetheless discretionary. Its income elasticity is less than one but above zero. One could attempt to estimate the *food needs* of each household and subtract this from total expenditure. Besides the difficulty of this exercise, there is the problem of what to do about

households apparently consuming less than their estimated needs. The analysis becomes less transparent and results less easily interpretable. In any case, we are adjusting for variation in food, and other, needs through application of the equivalence scale. Second, due to indirect taxation, expenditures on food imply payments toward health care. In placing a normative interpretation on variation in the ratio of health payments to ATP, it seems inconsistent to include an item in the numerator but not the denominator. Third, one reason -- possibly the reason -- for examining proportionality in the relationship between health payments and ATP is to infer the redistributive effect of such payments. To make such inferences, health payments must be compared with a benchmark distribution of ATP that indicates the distribution of welfare prior to the effect of the payments. Due to indirect taxation, food expenditures are responsive to the system of finance. Subtracting food from total expenditure does not give a benchmark ATP distribution. Admittedly, the same argument applies, with less force, to the use of total expenditure as a proxy for ATP. The system of health financing, for example the extent of insurance, may affect saving, and even labour supply, decisions. Finally, our purpose is not only to assess "fairness" in the distribution of health financing but also to provide a description of the distribution, in relation to living standards, that is useful in a wide range of economic and political analyses of the health sector.

3.3 Health payments

We are interested in the distribution of the economic burden of providing health care and not simply with who hands over what money to whom. Consequently, we must make assumptions about the incidence of non-voluntary payments. We assume the incidence of direct personal taxes is on the legal taxpayer, that of consumption taxes is on the consumer and that both employer and employee social and private insurance contributions are, in effect, paid for by the employee.

For some sources of finance, actual payments are *reported* in the survey data. This is typically the case for OOP payments and it is sometimes true for income taxes, social insurance contributions and private insurance premiums. Other payments are not directly reported and must be *estimated* from some related variable reported in the survey. For example, payments of sales and excise taxes must be estimated by applying product specific tax rates to the respective expenditures reported in the survey. Likewise, tax schedules are applied to data on the respective reported incomes. Social insurance contribution rates and rules are applied to reported earnings. Methods of measuring each source of health payments from the survey data are described in the Appendix, Table A3.

Survey data on OOP payments are potentially subject to both recall bias and small sample bias due to the infrequency with which some health care payments are made. Survey estimates of aggregate payments tend to show discrepancies from production-side estimates, where the latter are available. Whether estimates of the *distribution,* as opposed to the level, of OOP payments are biased depends upon whether reporting of OOP payments is related systematically to ATP. Under the assumption, possibly

strong, of no systematic misreporting, survey data can be used to retrieve the distribution of payments and mis-measurement of the aggregate level can be dealt with through application of a macro-weight that gives the best indication of the relative contribution of OOP to total revenues.

Where payments are made on an individual basis, we aggregate across all household members to get the household contribution and the equivalence scale is applied to this amount. In the case of OOP payments, we aggregate across payments for different health services and estimate the distribution of the aggregate. Payments for different services are often reported for different recall periods. We adopt the recall period that applies for those payments accounting for the greatest share of the aggregate and scale the others accordingly.

3.4 Summary indices of distribution

We describe the distribution of health care financing in relation to ATP. Two questions are examined: who pays most absolutely and who pays most as a proportion of ATP? Since we examine distributions for a number of payment sources across many territories, it is convenient to rely on summary indices of distributions. The concentration index (C) is an index of the distribution of payments (Wagstaff and Van Doorslaer 1992). It is restricted to the range (-1, 1). A negative (positive) value indicates that the poor (rich) contribute a larger share than the rich (poor). A value of zero indicates that everyone pays the same, irrespective of ATP. The Kakwani index (K), the difference between the concentration index and the Gini coefficient of inequality, is used a summary measure of proportionality (Kakwani 1977). The value of K ranges from -2 to 1. A negative number indicates that payments fall as a proportion of ATP as the latter increases. A positive number indicates that the share of payments made by the rich is greater than their share of total ATP. In the case of proportionality, the index is zero.

The indices are computed from convenient regressions of a transformation of the payments variable on the fractional rank in the ATP distribution (Jenkins 1988). Sample weights are applied where they exist (Lerman and Yitzhaki 1989). Standard errors for the indices, with a Newey-West correction for serial correlation induced by the rank nature of the independent variable and heteroskedasticity, are obtained directly from the convenient regressions (World Bank 2003).

3.5 Measuring the distribution of total health care financing

The additive separability of concentration and Kakwani indices means that an index of the distribution of total health payments can be computed as a weighted average of the source-specific indices. Weights are equal to the proportion of total payments accounted for by each source. For example,

$$K = \sum_{j=1}^{J} \omega_j K_j$$

where K_j is the Kakwani index for finance source *j* and the weight ω_j is the proportion of total expenditure on health care contributed by that source. In addition to being of computational convenience, this allows decomposition of the distribution of total financing into the distribution of the different sources of finance, on the one hand, and the financing mix, on the other. A further advantage is that, through the choice of weights, correction can be made for the incomplete coverage of all sources of health financing in the survey data and for biases in the survey estimates of aggregate payments. We use survey data to estimate the indices and compute weights from NHA estimates of the financing mix.

Assumptions must be made about distributions of financing sources that cannot be estimated from the survey data. It is assumed missing direct taxes are distributed as a weighted average of the direct taxes for which distributions can be estimated. Likewise for indirect taxes. Where there is no data on private insurance premiums, it is assumed these are distributed as OOP payments on the basis that the latter is a proxy for the demand for private insurance. Non-tax government revenues are assumed to be distributed as a weighted average of all other payments. That is, they are *ventilated* (Wagstaff, van Doorslaer et al. 1999). We consider the distribution of financing across the domestic population only and so exclude foreign aid completely from the analysis. As a result of these adjustments, the weights do not correspond exactly to the financing mix.

4. Results

4.1 General Government Revenues

Governments tend to make substantial contributions to the financing of health care. In the Asian territories examined here, the percentage of health expenditure financed from general government revenues (GGR) ranges from over 50% in Thailand and Hong Kong to just less than 10% in Taiwan (Table 2). Government revenues come from tax and non-tax sources. Taxes are *direct* – levied on earnings, income or wealth – and *indirect* – levied on consumption. Non-tax revenues are from borrowing, foreign aid, fees/profit of public enterprises and the exploitation of natural resources. The composition of GGR varies systematically with national income. The poorest territories (Nepal, Kyrgyz, Bangladesh and Punjab), with narrow tax bases, make little use of direct taxes, while this is the predominant source of revenue in the richest territories (Hong Kong, Taiwan and South Korea) (Table 3). Direct taxes are mostly personal income tax and corporation tax (Table 3).

The share of GGR contributed by indirect taxes is substantial and more consistent across the territories (Table 3). China, Sri Lanka and Bangladesh rely particularly heavily on this source. General sales / VAT taxes, together with excises, account for the greatest share of indirect tax revenue in all cases

except Hong Kong, where there is extensive use of commodity specific taxes and Stamp Duty (Table 3). Import duties make a significant contribution, particularly in Bangladesh, Sri Lanka and Nepal.

Reliance on non-tax revenue is inversely related to the level of development. For the poorest countries, non-tax revenue is mainly revenue from foreign aid and government borrowing. The Indian state of Punjab raises 44.5% of general government revenues from borrowing and foreign aid (Table 3). For Nepal and Bangladesh the respective percentages are 37% and 25%. Indonesia receives substantial revenue from oil and wood resources, Punjab draws on the profits of public enterprises and Hong Kong collects a significant share of revenue from fees for (non-health) public services (Table 3).

Who pays for these government revenues? Is it the rich or the poor? To address this, we use survey data to examine the relationship between contributions made by households to government revenues and their ability to pay. Not all sources of government revenue can be traced to households. Most obviously, domestic households do not pay for foreign aid and the current generation pays for borrowing only to the extent that taxes and other revenues are set to pay the interest and repay part of the capital. The distributions of some taxes, for example corporation and capital gains, are difficult to estimate from the data available. The same is true for the profits of public enterprises and revenue from the exploitation of natural resources. In this sub-section, we describe the distributions of those sources of government revenue that can be estimated from the survey data. These distributions are weighted to reflect the incidence of revenues for which distributions cannot be estimated when we later estimate the distribution of total health payments.

As is illustrated in Figures 3a and 3b, the burden of direct taxes is heavily concentrated on the better-off, both in absolute terms and relative to ability to pay. In Bangladesh, Sri Lanka and Thailand, the poorest 20% of households make virtually no contribution to direct taxes and the richest fifth contribute more than 90% of revenues. The distribution is only slightly less uneven in the Philippines and in Hong Kong. With broader tax bases in the high/middle income territories of Japan, Korea and Taiwan, the burden is spread more evenly across middle-income groups and less heavily concentrated on the richest quintile. In some low-income countries - China, Indonesia, Kyrgyz and Nepal - the poorest 20% contribute a greater share to direct tax revenues than in Hong Kong, South Korea and Taiwan. In China, the share of direct taxes paid by the poorest fifth of households is double that quintile's share of total expenditure. This is due to an agricultural tax that is heavily concentrated on the poor and which outweighs the effect of a personal income tax paid mainly by the rich.

FIGURES 3a and 3b

Summary indices of the distribution of the direct tax burden are presented in Table 4. Taxes for which distributions have been estimated from the survey data are identified in the first column. In all cases, the distribution of personal income tax has been estimated. In many cases, the estimated distribution also reflects payment of other direct taxes. This is possible, for example, when the total amount paid in all direct taxes is reported in the survey, or when reported capital income can be used to estimate payments of

corporation and/or capital gains taxes.[2] For every territory, the distribution is estimated from taxes that account for at least 40% of all direct taxes. In many cases, the percentage is much higher. The second column describes the incidence assumptions used for the distributions of direct taxes that cannot be estimated. The distribution of personal income tax is assumed to provide the best proxy for the distribution of corporation taxes. This is confirmed in the territories where it is possible to estimate both distributions. The distribution of other taxes, including property tax, is assumed to be a weighted average of those that can be estimated.

The concentration indices are all positive and at least 0.42 in magnitude, confirming that the better-off pay the largest share of direct taxes. The index is above 0.8 in Bangladesh, the Philippines, Sri Lanka and Thailand, reflecting the fact that direct taxes are paid almost exclusively by the better-off in these countries. Note that the index for China is 0.6, which might seem inconsistent with the relatively high share of direct taxes paid for by the poorest quintile (Figure 3a). The explanation is that Figure 3a gives the share of income and agricultural taxes only. The former is heavily concentrated on the better off, while the latter is concentrated on the poor. The concentration index is computed as a weighted average of the indices for these two taxes, with weights reflecting relative shares of revenue and the weight on income tax inflated to reflect the assumption that corporation tax is distributed as income tax.

The Kakwani indices are all positive, indicating that direct taxes are consistently progressive; the proportion of household resources absorbed by direct taxes rises with household income. Progressivity is strongest in Sri Lanka, Bangladesh and Thailand. Direct taxes are near proportional only in Japan. In low- and middle-income countries only the richest households qualify to pay personal income tax and taxes on capital. There is also a great deal of tax evasion and non-taxed production arising from the scale of the informal economy. To the extent that informal sector activity is skewed toward the lower part of the income distribution, this will also increase the progressivity of direct taxes. In the high income territories, where a greater proportion of the population qualify to pay taxes on income and the informal sector is smaller, the burden of direct taxes is more evenly spread. Hong Kong is an exception - a rich territory that relies heavily on a very progressive system of direct taxation. Thailand and the Philippines, two middle-income countries relative to those considered, manage to combine marked progressivity in the burden of direct taxes with significant reliance on this source of finance. As a result, direct taxation makes a substantial contribution to the overall progressivity of these systems. In part, this is a product of the development process. As a country develops, the tax base expands and the efficacy of the tax administration system improves. The Philippines and Thailand are able to rely more on direct taxes than the poorer countries of South Asia.

Progressivity of tax implies redistribution. The rich pay more as a proportion of income than the poor and so the distribution of post-tax income is more even than that of pre-tax income. The redistributive effect, measured by the Gini coefficient of pre-tax income minus the Gini of post-tax income, is positive. The magnitude of the redistributive effect is increasing both with the degree of progressivity, as represented by the Kakwani index, and with the average rate of tax as a share of income (g). Under the assumption that

all households of the same income pay the same tax, i.e., horizontal equity, the redistributive effect is given by $K\left(\frac{g}{1-g}\right)$ (Aronson, Johnson et al. 1994; Van Doorslaer, Wagstaff et al. 1999). This index is presented in the final column of table 4. The g used in the computation is direct tax revenues spent on health care as a share of GDP (see column 4).[3] Hence, we do not compute the redistributive effect of all direct taxation but only the portion that goes to fund health care.

Direct tax expenditures on health care are greater than 1% of GDP only in Hong Kong and Japan. As a result, the redistributive effects are generally very modest, despite the highly progressive structure of taxes, as reflected in the magnitude of the Kakwani indices. The scale of the redistributive effects can only be appreciated by comparison with the Gini coefficients (see Table 1). The redistributive effect i.e., the change in the Gini under the assumption of horizontal equity, is more than 1% of the original degree of inequality only in Hong Kong. The next largest redistributive effects are in Thailand, the Philippines and Sri Lanka, each of which raises a substantial share of health financing through direct taxes. Japan, where direct taxes account for the largest share of GDP, has the fifth largest redistributive effect despite having the second smallest Kakwani index. The importance of the average tax rate is evident in other comparisons. The redistributive effect is ten times greater in Hong Kong than in Bangladesh despite the Kakwani for Hong Kong being only two-thirds of that for Bangladesh. The Kakwani indices are similar for Bangladesh and Sri Lanka but the redistributive effect is four times as large in Sri Lanka.

TABLE 4 HERE

The burden of indirect taxes is also concentrated on the better off but to a much lesser extent than for direct taxes (Figures 3a & 3b). With the exception of Japan, the poorest fifth of households contribute less than 10% of indirect tax revenues, whereas the richest fifth contribute 38% or more. Japan is the only case in which the share contributed by the least well off is greater than their respective share of total ATP. Disparities between shares of indirect taxes and ATP are much less than for direct taxes. Greater proportionality is to be expected since indirect taxes are levied on expenditure and the ATP measure is expenditure. This may explain the exceptional result for Japan, where ATP is measured by income. Sales taxes will be less proportional to income than they are to total expenditures.

The concentration and Kakwani indices confirm these conclusions (Table 5). Indirect taxes are most concentrated on the better off in Thailand, then Hong Kong SAR and China. Japan has a markedly lower concentration index than all the others. The Kakwani indices are all positive but for Japan. In China, Indonesia, South Korea, Kyrgyz, the Philippines, Punjab, Sri Lanka and Taiwan, the Kakwani is very close to 0, indicating proportionality. Indirect taxes appear progressive in Thailand, Hong Kong, Nepal and Bangladesh. Such progressivity is explained by the exemption of food from taxation in Thailand and Bangladesh and the propensity of poor rural households in Bangladesh and Nepal to consume local products that are not subject to taxation. In Sri Lanka, by contrast, only some food items are tax-exempt and indirect taxes are broadly proportional.

The near proportionality of indirect taxes means that the vertical redistribution effects are, in general, very small. We again approximate the redistributive effect by $K\left(\frac{g}{1-g}\right)$ but acknowledge that the assumption of horizontal equity is less plausible for indirect taxes. Despite the fact that indirect taxes generally contribute more than direct taxes to health financing, their impact on inequality is less as a result of weaker progressivity. In no case does the Gini coefficient change by more than 1% (assuming horizontal equity). The largest redistributive effect is in Japan, where indirect taxes are inequality increasing. The largest negative effect on inequality is in Thailand, where indirect taxes contribute 27% of health financing and account for 1% of GDP.

TABLE 5 HERE

4.2 Social Insurance

Social insurance is at varying stages of development across Asia. In Japan, South Korea and Taiwan there is universal coverage funded through employee and employer contributions with state subsidies for low-income groups (Table 6). In principle, there is universal coverage in the Philippines but effective coverage remains at less than 50%. Indonesia and Thailand offer coverage of formal sector employees. In Thailand a policy of extending coverage to the low-income population, with a goal of universalism, has been in operation since 2001. In China and Punjab, coverage is restricted to state sector and low-earnings workers respectively. With the exception of Japan, social insurance operates with a single fund but with separate programs differing in financing rules and contribution rates for different population groups. The financing split between employee, employer and state varies, with the universal systems in the richer territories relying more on employee and employer contributions with the state subsidising cover of the poor only. Only China, Indonesia and Japan operate without an upper earnings limit beyond which contributions are not paid on additional earnings. In most cases, contributions are some percentage of earnings, although the rates vary markedly. Taiwan operates under a structure of fixed premiums specific to earnings intervals.

TABLE 6 HERE

The distribution of social insurance contributions depends on the extent of population coverage. In low and middle income countries where typically only formal sector workers are covered (China, Indonesia, the Philippines, Thailand), the poor make little contribution to social insurance revenues simply because they do not belong to the systems (see Figure 4a). Contributions are concentrated on the better off, both absolutely and relative to ATP (Figure 4b). Concentration indices are large and Kakwani indices significantly positive for these partial coverage systems (Table 7), indicating that contributions are paid mainly by the better off and the average contribution is rising as a fraction of household expenditure. One must be careful not to place a redistribution interpretation on these results. In partial social insurance systems, the better-off do not only pay more, they get more. The poor do not contribute but they are also denied the benefits of coverage. If the health care benefits of social insurance are taken into account in the

measurement of living standards, which seems reasonable, then to assess the redistributive effect it is necessary to examine the distribution of the benefits as well as the costs.

FIGURES 4a & 4b

In the three universal social insurance systems (Japan, South Korea and Taiwan), concentration indices are smaller than in the partial systems but still positive and significant (Table 7). The better off contribute more. But Kakwani indices are negative but close to zero in Japan and, to a lesser extent, in Taiwan. Such proportionality is built into social insurance systems through the, near constant, contributions rates across the earnings distribution. Given this, the slight tendency toward regressivity arises because labour market earnings fall as a proportion of total household resource as the latter rises. In Taiwan, there is some deviation from proportionality since the premium is a fixed proportion of the upper bound of each of 29 earnings' intervals. Within each interval, the fixed premium is a greater proportion of earnings for all those below the upper bound. This source of regressivity has been partially addressed through an increase in the number of earnings' bands to 38 in 2002. Upper earnings limits beyond which the marginal contribution rate is zero, which operate in all universal systems but for Japan (Table 6), also push the distribution toward regressivity. The limit has been abolished in South Korea and so the current system is less regressive than is indicated by the year 2000 data analyzed. The reasons for the greater regressivity of the Korean system, relative to Japan and Taiwan, are the constant contribution rate (in Japan it varies with earnings), the upper earnings limit (not present in Japan) and, unlike Taiwan, the lack of government subsidies for any groups other than the poor.

4.3 Direct payments

Direct payments are the single most important component of health care financing in all the territories examined except for Hong Kong, Japan, Taiwan and Thailand (Table 2). They account for at least a third of total health financing in every case but for Japan (12%) and Taiwan (30%). In South Korea, where health financing is based on the social insurance model, out-of-pocket payments (OOP) still contribute one half of total revenue. Given such heavy reliance on direct payments in Asia, they are an important determinant of the distribution of the overall financing burden.

OOP payments include payments for private care and medicines, co-payments for care covered by social insurance and user charges for public care. In all countries, with the exception of Sri Lanka, charges are levied for the vast majority of health services and medicines provided under the public or social insurance system (see Van Doorslaer, O'Donnell et al. 2005, Table 2). Vaccinations, immunisations and family planning services are usually provided free by publicly-funded services. Primary medical care is sometimes free (Punjab, Kyrgyz and the Philippines) or highly subsidised (Nepal). Exemptions or reduced charges for the poor in Bangladesh, Hong Kong, Indonesia, Nepal, the Philippines, Taiwan and Thailand may shift the burden onto the better-off. But well-known problems with the implementation of fee waiver

may weaken this effect (Ahrin-Tenkorang 2000; Tien and Chee 2002). In Punjab, subsidisation of the poor works indirectly, through price discrimination. The poor can opt for lower quality but cheaper inpatient care on separate wards. This arrangement also operates in Indonesia. Exemptions or reduced charges for civil servants in Bangladesh, Hong Kong and Punjab are likely to shift the burden of payment away from the better-off.

In general, OOP payments are heavily concentrated on the better-off and more so in the poorer countries. The poorest 20% of households contribute more than 8% of OOP payments only in Japan, Kyrgyz, Punjab and Taiwan (Figure 4a). The same four territories are the only ones in which the richest fifth contribute less than two fifths of OOP payments (Figure 4b). The richest quintile contributes more than half of OOP payments in Bangladesh, Indonesia, the Philippines, Sri Lanka and Thailand. The poor do not only pay less in absolute terms, but less as a proportion of total household resources. Only in Japan, Kyrgyz and Taiwan does the share of OOP paid by the poorest quintile exceed its share of ability to pay.

The concentration indices confirm that, in general, the better-off pay more out-of-pocket for health care (Table 7). The only exception is Japan.[4] In general, there is a tendency for the concentration of OOP payments on the better-off to fall with national income (Figure 5). The distribution is most heavily skewed toward payments by the better-off in Bangladesh and the Philippines. Kyrgyz and Punjab are the only low-income territories with relatively low concentration indices. In Hong Kong, payments are more concentrated on the rich than would be expected, given its income level. A likely explanation is that OOP payments are mainly for private care in Hong Kong and mainly the rich consume this. Although there are charges in the public sector, these are very modest and the poor are exempted. In the social insurance systems operating in the other high-income territories, OOP payments are co-payments and these are incurred more evenly across the population.

FIGURE 5

Two factors are likely to be most responsible for the relationship between national income and the distribution of OOP payments. First, the lack of insurance cover in low-income countries means that the better-off must pay out-of-pocket to secure quality health care, typically from the private sector. Second, there is the constrained ability of poor households to pay for health care. The poorest of the poor simply cannot afford to pay. In high-income countries, almost everyone has health insurance cover and even the poorer sections of society have the resources to incur the relatively modest costs of consuming a good as basic as health care. It is perhaps helpful to recognize that a positive concentration index for OOP implies positive income elasticity. Income elasticities for health care are greater in poorer countries since the income constraint is tighter for more households and because health insurance does not exist to weaken the dependence of consumption on income. It is more difficult to discern any effect of public sector fee waivers on the distribution of OOPs. This is understandable since the majority of OOP payments are for care outside the public sector (Van Doorslaer, O'Donnell et al. 2005, Table 1). Effective health card systems in

Indonesia and Thailand may be responsible for the greater concentration of payments on the better-off in these countries relative to China and Punjab, for example.

In China, Hong Kong, South Korea, Kyrgyz and Punjab, the Kakwani indices are not significantly different from zero, indicating proportionality of direct payments to ability to pay. In the remaining territories, except for Japan and Taiwan, positive Kakwani indices indicate that the better-off pay proportionately and not only absolutely more. In Japan and Taiwan, the rich spend proportionality less of their income on direct health care payments than the poor.

The positive Kakwani indices for the majority of low-income territories contradict the common assertion that direct payments are regressive (Whitehead, Dahgren et al. 2001). In part, this belief may derive from observation of the distribution of OOP payments in developed countries, where, as we find here for Japan and Taiwan, the respective Kakwani index is usually significantly negative (Wagstaff, van Doorslaer et al. 1999). In high-income countries, where insurance cover is extensive and there are few people so poor that they cannot afford modest charges for health care, OOP payments are regressive due to the pro-rich distribution of health and the heavy use of health care by the poor. The evidence usually cited for the regressivity of direct payments in low-income countries is typically not from nationally representative expenditure surveys but from health surveys conducted in one, usually rural, region (Ensor and Pham 1996; Pannarunothai and Mills 1997; Fabricant, Kamara et al. 1999; Segall, Tipping et al. 2002).[5] Omission of payments made by the better-off urban population is a significant limitation if one wishes to draw conclusions about the distribution of payments across the whole population. Further, health surveys cannot measure total household resources as accurately as expenditure surveys, often relying on income, which, particularly for poor households, is less indicative of living standards than is consumption. Support for our finding that the OOP health payments budget share rises with total household consumption is provided by a study of India that is based on nationally representative expenditure survey data (Peters, Yazbeck et al. 2001). While it is true that a given charge *represents* a higher share of resources to a poor household, this does not imply that the actual distribution of OOP payments is regressive. It is important, however, not to place a redistributive interpretation on a Kakwani index for OOP payments. If there are no fee waivers, then a positive Kakwani index implies that the rich spend proportionality more of their income on health care but the benefits they get are also proportionately more. When you pay for what you get, there is no redistribution from payments. If a positive Kakwani index is, at least in part, due to fee waivers for the poor, then it might reflect redistribution but the interpretation would not be immediate.

TABLE 7

4.4 Distribution of total health care financing

Having examined the distributions of each of the main sources of health care financing, we average these to get a picture of how the total financing burden is distributed across the population. In Table 7, we present the concentration and Kakwani indices for total payments toward health care and show how these are derived from weighted averages of the indices for each of the five main sources of health financing that can be allocated to the household level. In addition to the distributions that have already been examined, we present the distribution of private insurance premiums. These make a significant contribution to health finance in only five territories (Table 2). In all cases, the concentration index is strongly positive reflecting the fact that only the more wealthy households take out such cover.

Without exception, the concentration indices for total health care financing are positive (see Figure 6). The better-off pay most for health care in Asia. The concentration indices are smallest in the four social insurance based systems (Japan, Taiwan, Kyrgyz and Korea) and in Punjab and largest in the Philippines, Thailand, Hong Kong and Bangladesh. Kakwani indices are negative only in the three high-income territories operating social insurance. The index is close to zero in the other universal social insurance system – Kyrgyz. So, the structure of finance and national income appear to be the most important determinants of the distribution of health care financing. Universal social insurance financed roughly in proportion to earnings results in a proportional to regressive financing burden. This contrasts with the predominantly tax financed system of Hong Kong that is substantially more progressive. Japan and Taiwan, but not Korea, rely much less heavily than the other territories on direct payments and the distribution of direct payments is more even than it is in poorer countries. This reflects income differences. The poor in high-income countries are not so poor that they must forgo needed health care. Again, Hong Kong provides an interesting contrast, with direct payments more heavily skewed toward the rich than is true in the social insurance systems. OOP payments are made by the rich in Hong Kong choosing to opt out of the public sector that can be used by the poor at little or no cost.

Aside from Hong Kong, health care financing is most concentrated on the better off in the Philippines and Thailand, two lower-middle income countries. Both rely most heavily on direct payments but do spread financing across a range of instruments. The distributions of the individual instruments are broadly similar across the countries and are always concentrated more on the rich than the poor. Despite these apparent similarities, the distributional implications of the two systems are likely to differ substantially. Thailand collects one half of health care funding through taxation, while in the Philippines the proportion is just over one third. The Philippines relies more on financing instruments – partial social insurance, private insurance and direct payments – that tie access to payment. The better off not only pay more in the Philippines, they most probably get more. This is likely to be less true in Thailand. The same point applies, with even greater force, to Bangladesh, where payments are heavily concentrated on the better off but this is achieved through extensive reliance on direct payments. Bangladesh actually has the largest positive Kakwani index for total health payments but, given its financing structure, it would be

misleading to refer to this as the most progressive system. Hong Kong and Indonesia have the same Kakwani index for total payments but in Hong Kong this arises from a system that collects more than half of revenue through the public sector, whereas in Indonesia only just over a quarter of payments are public. The same Kakwani index is therefore consistent with quite different redistributive and equity implications in the two systems. The message is that, if one wishes to draw inferences for equity, it is not sufficient to examine the distribution of overall financing. The structure of financing and the distribution of services must be considered and, in particular, the balance between financing instruments that tie payments to use and those that do not.

5. Discussion

Who pays for health care in Asia? The short answer is that the better-off pay more. This is true not only in absolute terms but, in most cases, also relative to income. Exceptions are the three high-income territories operating a social insurance model (Japan, South Korea and Taiwan), where the rich pay more in absolute terms but less as a proportion of incomes. These systems, particularly the Japanese one, are regressive. The relationship between payments and ability to pay is close to proportional in China, Kyrgyz and Punjab. Hong Kong is the one high-income territory where health care financing is not regressive. This is largely attributable to the adoption of a tax, rather than a social insurance, model of financing. The tendency for the burden of health care financing to be less concentrated on the better-off in more developed economies arises, in part, from differences in the structure of financing. As an economy grows, reliance on out-of-pocket payments for health care falls and social insurance is typically established. The latter tend to be broadly proportional because contributions are levied as a fixed percentage of earnings. In addition, development broadens the tax base, allowing greater reliance on tax financing and the opportunity to shift the balance of taxation from indirect to direct. But it is not only the financing mix that responds to development. The distributions of specific sources of finance also change. This is true of direct taxation, which becomes less progressive, but not necessarily less redistributive, as the tax base is broadened. Similarly, social insurance contributions are spread more evenly across the population as a system matures from partial to universal coverage. Conventional wisdom says that out-of-pocket payments are a regressive means of financing. We confirm this for high- and middle-income economies, with the marginal exception of Hong Kong, which seems to engage in substantial positive discrimination in favour of the worse-off. But the belief does not stand up to the evidence from low- and lower-middle income countries, where OOP payments absorb a larger share of the resources of the better-off households. While fee waivers may play some role here, the most plausible explanation is that the absence of health insurance means that the better-off must pay out-of-pocket for health care and the poor simply cannot afford to pay. In higher income societies, absolute poverty is lower and OOP payments are less of a barrier to health care consumption. Then, income-related health inequality can make OOP payments regressive.

The objective of this analysis is fairly modest. It is to describe distributions of payments for health care. It is envisaged that these descriptions will be of interest from a wide variety of perspectives: economic, political, public finance and distributive justice. The latter has traditionally aroused much of the interest in health care financing. It is perhaps advisable to finish with some words of caution about the interpretation of the results in relation to equity. Fairness in financing is an elusive and contentious concept. One principle is that payments should not be a barrier to the use of health care. This amounts to the claim that the allocation of health care should not be by the market mechanism. The distribution of health care payments does not help confirm whether the principle is respected. Reliance on private sources of finance violates the principle. A weaker form of this principle is that the poor should not be discouraged from using health care because they cannot afford to pay. The extent to which this principle is respected cannot be established from the distribution of payments alone. It requires examination of the relationship between health care use and charges. The same is true of the, ideologically opposite, *benefit principle* that one should pay for what one gets. One concept of fairness that does not concern the relationship between payments and use is the *ability to pay* principle. Indeed, the principle, in its strictest form, requires that liability for the financing of health care be divorced from use, expected or realised, and related only to ability to pay in a proportional or progressive fashion. Note that the principle does not simply require that there is a positive empirical relationship between payments and ability to pay. Provided health care is a normal good, a positive relationship will arise even in a free market system founded on the benefit principle. If health care is a luxury good, then, by definition, payments will be an increasing proportion of ability to pay under a market system. With this in mind, the extent to which the distribution of health payments can be used to verify consistency of financing with the ability to pay principle depends upon the nature of the payments. Tax liabilities are independent of health care utilisation and the tax distribution is directly relevant to the ability to pay principle. The same argument holds for social insurance contributions within a universal system. When social insurance coverage is partial, restricted to formal sector employees for example, payment is not independent of entitlement to use. It is then more difficult to interpret the distribution of contributions in relation to the extent to which the ability to pay principle is respected. Private sources of finance are determined by use, expected or realised, and only indirectly by ability to pay. Finding that direct payments or private insurance premiums rise with income does not tell us that financing is consistent with the ability to pay principle. Nonetheless, the relationship between private payments and income is of interest for reasons of economics and politics. Under conditions, the relationship can also inform on matters of distributional justice. Given an established negative relationship between illness or medical need and income, a positive relationship between direct health payments and income strongly suggests financial impediments to the consumption of health care by the less well off. Fee waivers and services exempt from charges obscure the distribution of use that can be discerned from the payments distribution. It is preferable to examine the distribution of utilisation directly. Elsewhere we confirm that utilisation, particularly of hospital and private care, is increasing with household income in low-income but not in high- and middle-income countries of Asia (Somanathan, O'Donnell et al. 2005).

Interest in the distribution of health financing arises, in part, from its potential redistributive effect. This is obvious for compulsory health payments. Progressive taxation takes proportionately more from the rich than the poor and equalises the post-payment distribution of income. Proportional social insurance contributions have no effect on the income distribution. It is more difficult to place a redistributive interpretation on payments that are voluntary. In the absence of fee waivers, those that pay more for health care through direct payments also get more. From this viewpoint, private payments for health care are no more redistributive than payments for fast cars or diamond rings. The argument rests upon whether expenditures on health care are ever voluntary. Most of us would feel compelled to purchase life saving surgery for a loved one. The compulsion to pay taxes is a legal one but the moral compulsion to purchase critical health care for a relative is arguably no less severe. In this sense, one might treat direct payments for health care as compulsory and examine the extent to which their differential incidence increases or reduces inequality in the distribution of resources households have available to spend on welfare enhancing goods after meeting health care needs. In reality some health care expenditures can be considered unavoidable, while others are clearly more discretionary.

In this paper, we have examined the distribution of health care financing. The magnitude of payments is also important. With restricted health insurance cover, large, unforeseen expenditures on health care can have catastrophic consequences for living standards and, in the extreme, may push households into, or further into, poverty (Wagstaff and Van Doorslaer 2003; Xu, Evans et al. 2003). We examine this aspect of health financing in Asia in a companion paper (Van Doorslaer, O'Donnell et al. 2005).

Figure 1: Out-of-pocket (OOP) share of total expenditure on health (TEH) against national income (GNI per capita)

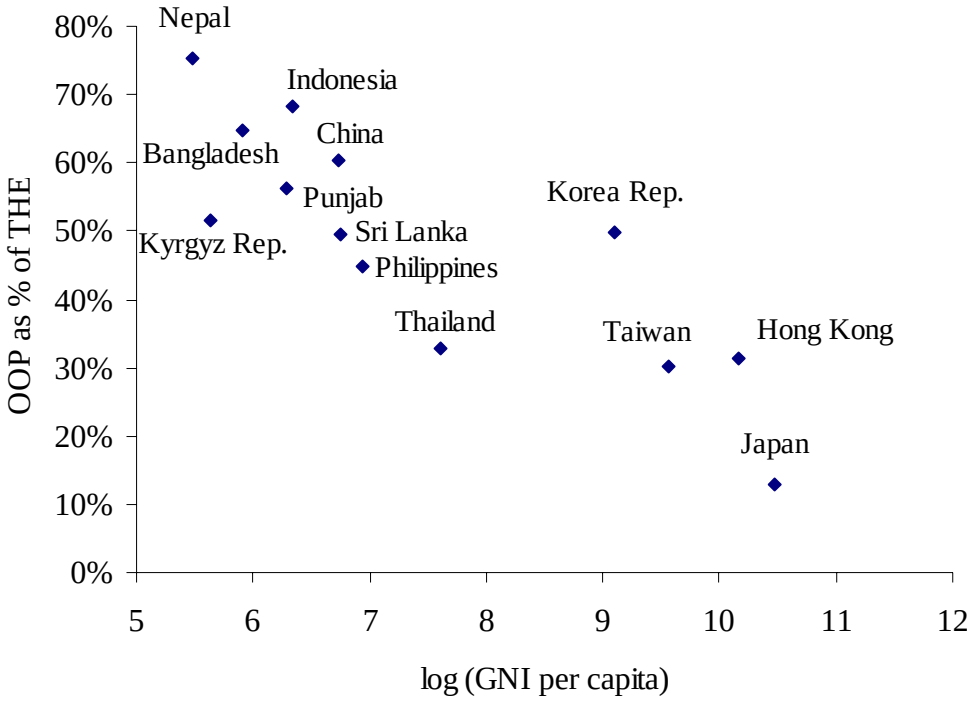

Figure 2: Out-of-pocket (OOP) and general government revenues (GGR) as share of total expenditure on health

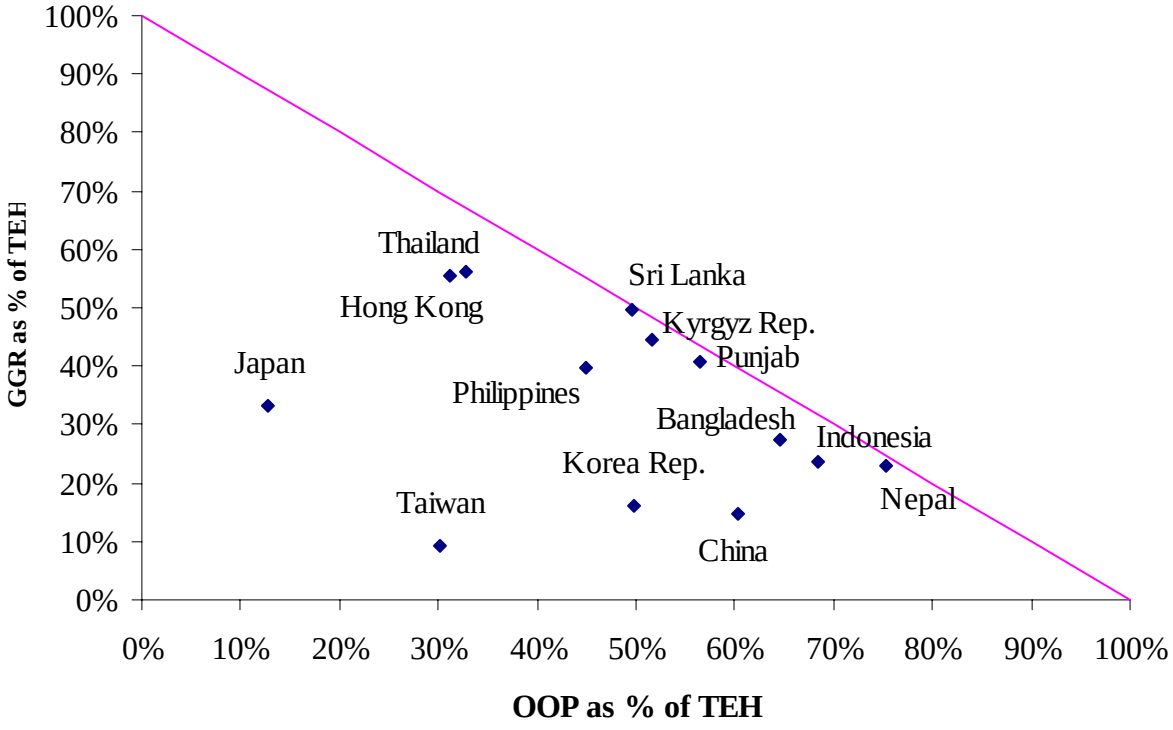

Figure 3a: Poorest quintiles' shares of taxes and ability to pay (ATP)

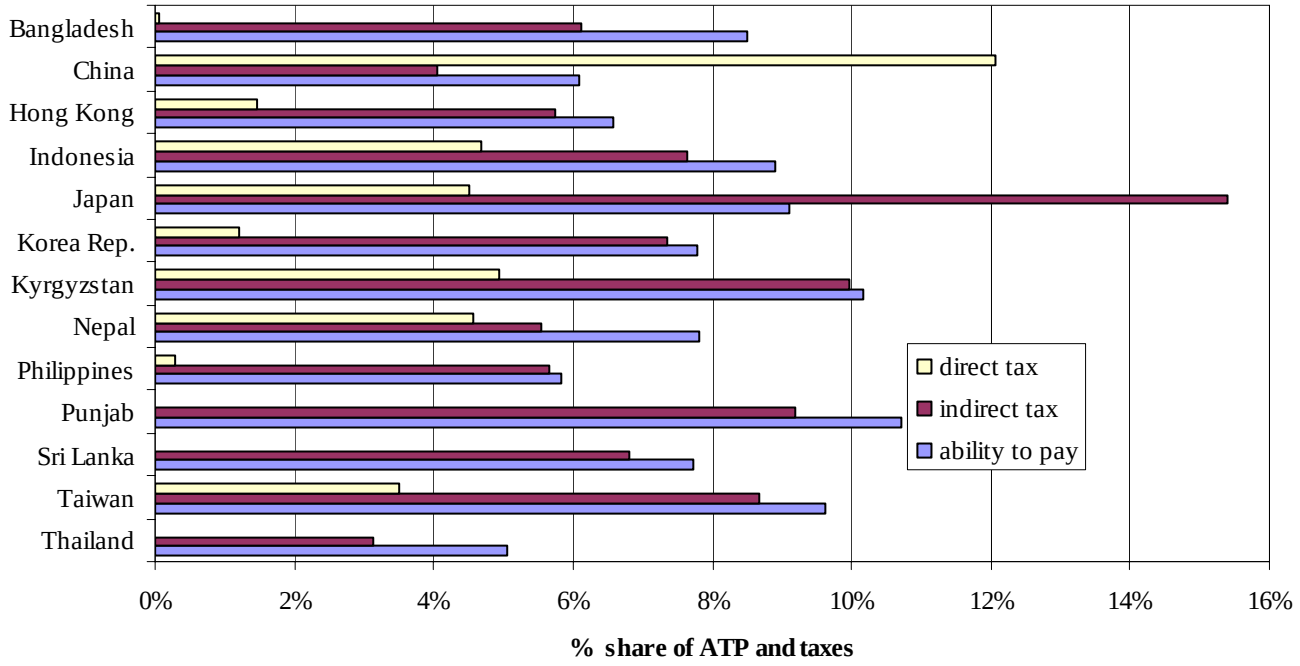

Figure 3b: Richest quintiles' shares of taxes and ability to pay (ATP)

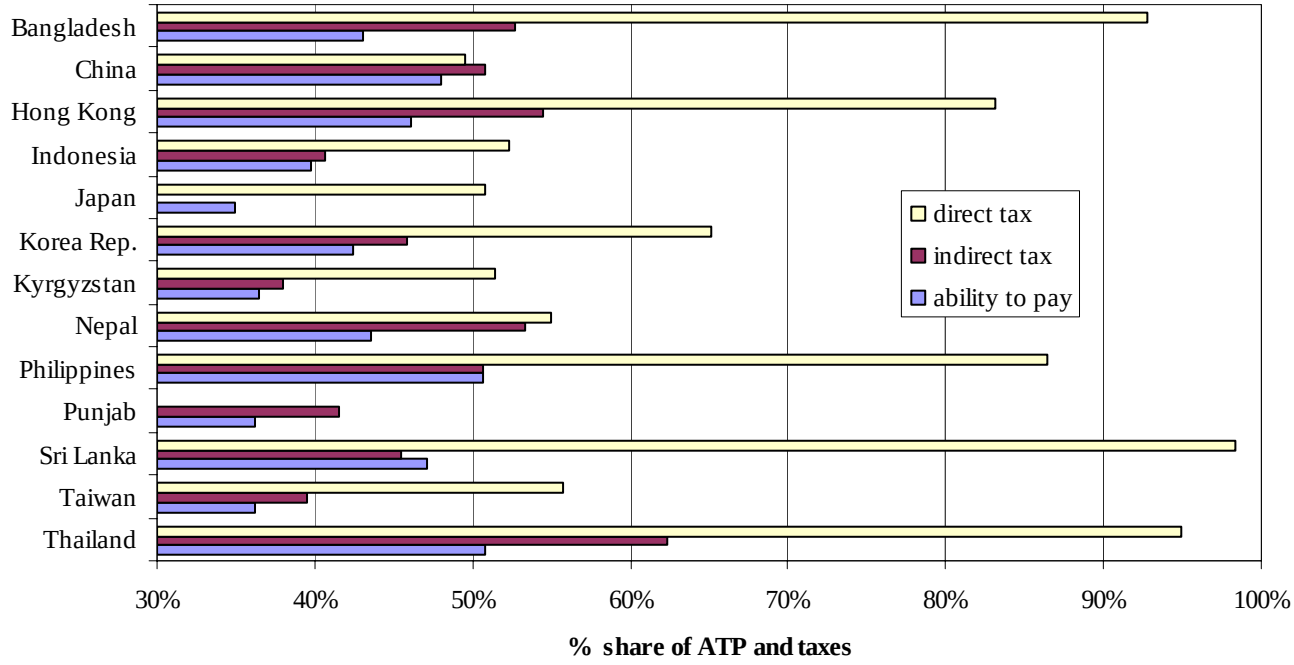

Figure 4a: Poorest quintiles' shares of SI contributions, direct payments and ATP

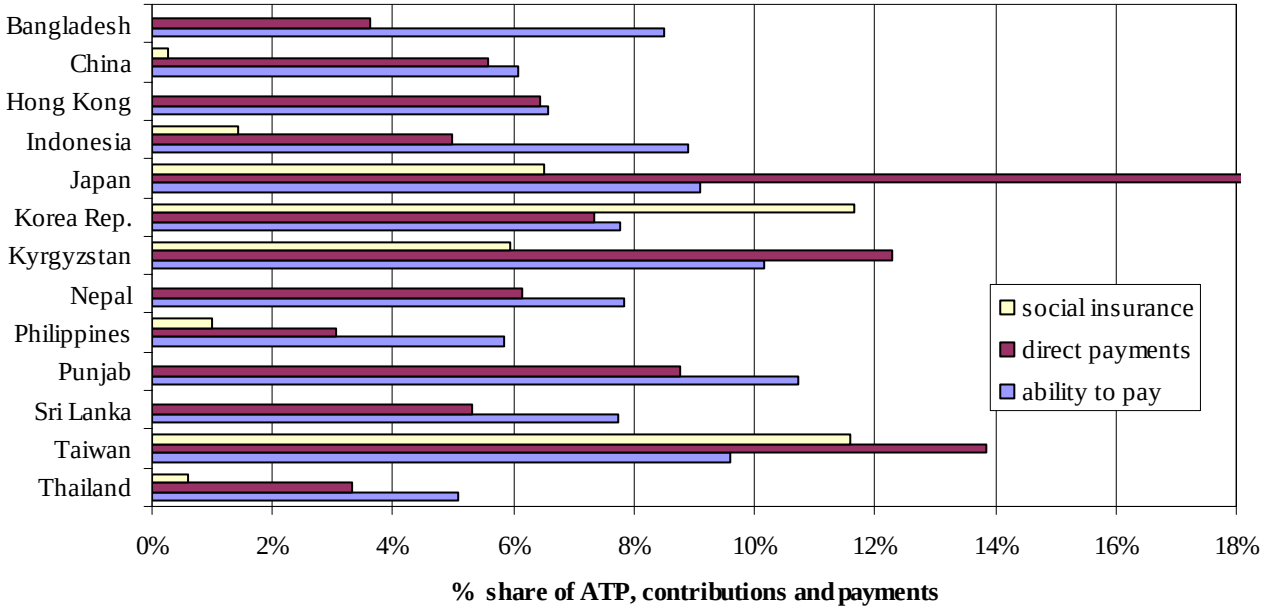

Figure 4b: Richest quintiles' shares of SI contributions, direct payments and ATP

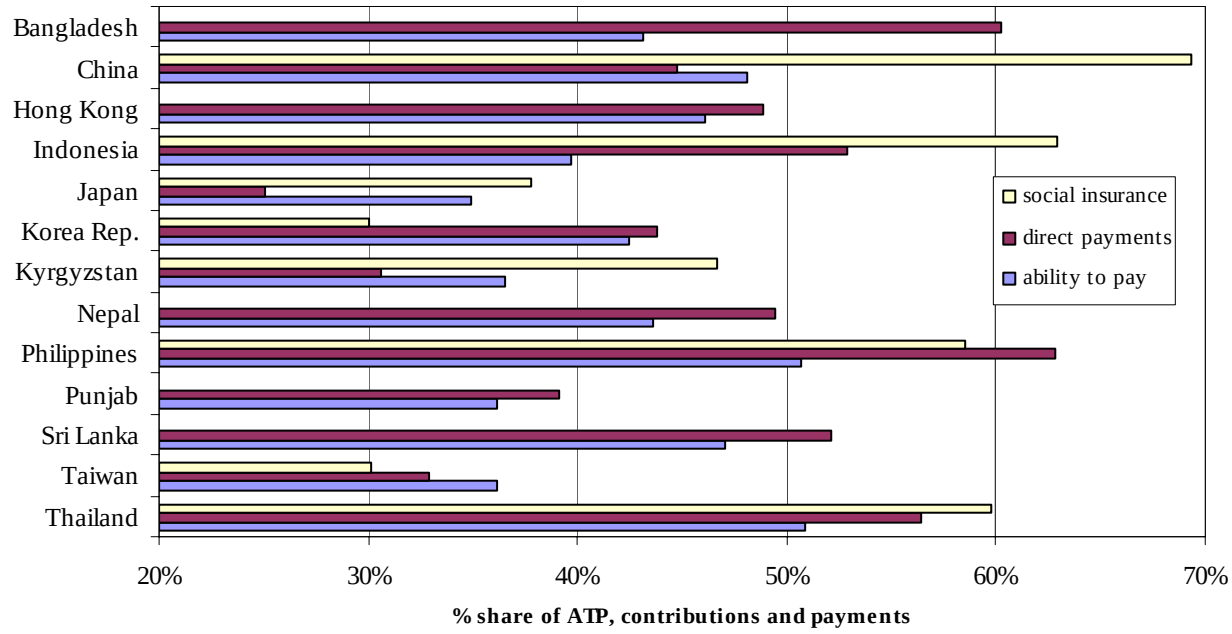

Figure 5: Concentration index of direct payments against national income

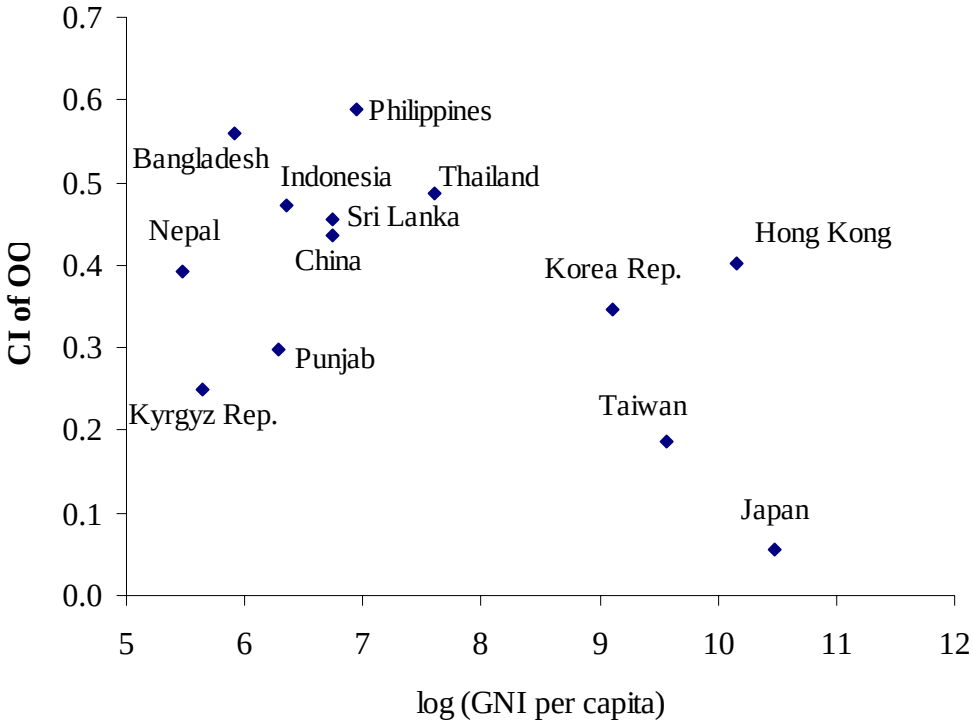

Figure 6: Concentration and Kakwani indices for total health financing

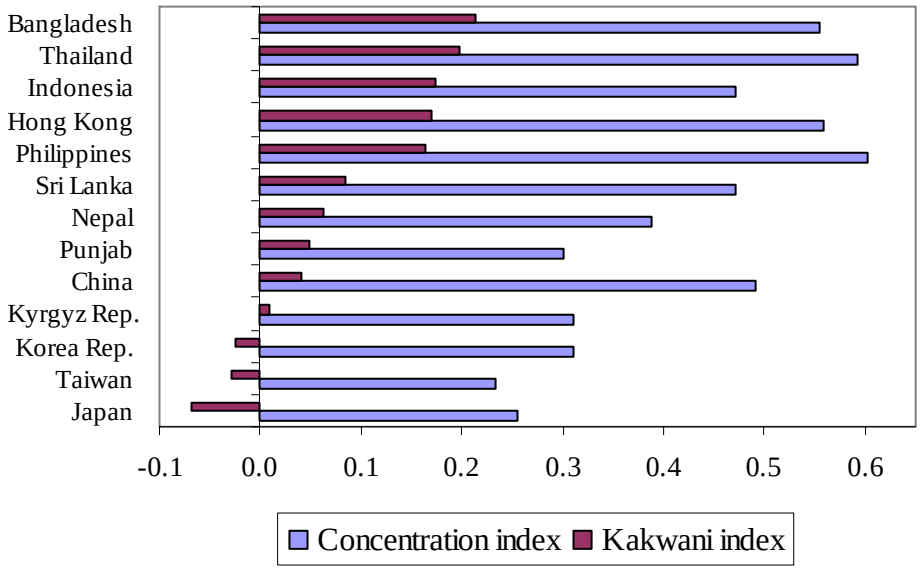

Table 1: Development indicators, year 2000

Territory	World Bank Income Group	GNI per capita[a]	Population	% urban[b]	Life expectancy[c]	Infant Mortality Rate[d]	Gini index[e]
Japan	high	35620	126,870,000	78.75	80.72	3.8	0.3241
Hong Kong, SAR	high	25920	6,797,000	100	79.82	2.9	0.3901
Taiwan	high	14188	22,276,672	63.25	74.9	5.86	0.2633
Korea Republic	upper-middle	8960	47,275,000	81.88	73.15	8.16	0.3347
Thailand	lower-middle	2010	60,728,000	19.83	68.82	27.92	0.3957
Philippines	lower-middle	1040	75,580,000	58.55	69.27	30.72	0.4488
Sri Lanka	lower-middle	850	19,359,000	22.8	73.14	14.95	0.3944
China	lower-middle	840	1,262,460,000	35.79	70.26	32	0.4517
Indonesia	low	570	210,421,000	40.99	66.03	40.88	0.2972
Punjab (India)	low	537	24,324,749	27.66	64.1	57.1	0.2601
Bangladesh	low	370	131,050,000	25	61.19	60	0.3401
Kyrgyz Republic	low	280	4,915,000	34.38	67.3	61	0.3015
Nepal	low	240	23,043,000	11.85	58.86	73.6	0.3392

Source: World Bank, WDI Tables (http://devdata.worldbank.org/data-query/)
Notes:

a. GNI - gross national income, Atlas method (current US$).
b. % of population which is urban.
c. Life expectancy at birth (years).
d. Infant mortality rate per 1000 live births
e. Gini index of consumption/expenditure inequality. Authors' calculations from survey data

Table 2: Health care financing mix (percentage of total health expenditure from main sources)

Territory (year)	Public Finance			Private Finance		Other
	General govt. revenue[a]	*Social Insurance*	*All public finance*	*Private Insurance*	*Direct payments*	
Bangladesh (1999)	27.23%	0.00%	27.23%	0.0%	64.64%	8.13%[b]
China (2000)	14.89%	16.52%	31.4%	0.0%	60.35%	8.24%[c]
Hong Kong, SAR (1999-2000)	55.63%	0.00%	55.63%	12.29%	31.22%	0.86%
Indonesia (2001)[d]	32.97%	2.86%	35.83%	6.43%	57.74%	0.00%
Japan (2001)	33.20%	54.00%	87.20%	0.00%	12.80%	0.00%
Korea Rep. (2000)	16.22%	33.90%	50.12%	0.00%	49.88%	0.00%
Kyrgyz Rep. (2000)	44.52%	3.80%	48.32%	0.00%	51.68%	0.00%
Nepal (1994-5 & 1995-6)[e]	23.50%	0.00%	23.50%	0.00%	75.00%	1.50%[f]
Philippines (1999)	39.71%	5.09%	44.80%	10.29%	44.91%	0.00%
Punjab (1995-96)	40.73%	1.30%	42.03%	0.20%	56.41%	1.28%[g]
Sri Lanka (1996-97)	49.50%	0.00%	49.50%	0.91%	49.59%	0.00%
Taiwan (2000)	9.17%	51.78%	60.95%	8.90%	30.15%	0.00%
Thailand (2000)	56.28%	5.11%	61.39%	5.87%	32.74%	0.00%

Source: National / Domestic / Regional Health Accounts unless stated otherwise. Row totals sum to 100%.

a. Includes revenues from donors / foreign aid.
b. Private enterprise, NGOs and community health insurance.
c. Payments by collective organisations, towns and villages through grass roots governments and rural cooperatives.
d. Ministry of Health preliminary NHA estimates revised from Public Health Expenditure Review.
e. Public finance data for 1994-5 (HMG/Nepal 2000), private expenditure data from 1995-6 Nepal Living Standards Survey (Hotchkiss, Rous et al. 1998).
f. Private companies.
g. Revenue from private firms and NGOs for finance of own facilities.

Table 3: Percentage of General Government Revenue from different sources

	Bangladesh	China	Hong Kong	Indonesia	Japan	Korea Rep.	Kyrgyz Rep.	Nepal	Philippines	Punjab	Sri Lanka	Taiwan	Thailand
Direct Taxes:	**14.76%**	**14.78%**	**48.01%**	**36.02%**	**58.80%**	**51.20%**	**13.95%**	**11.02%**	**42.63%**	**4.88%**	**21.20%**	**60.85%**	**29.15%**
Personal income	8.08%	3.83%	17.88%	30.12%	33.75%	24.28%	7.62%	3.53%	14.05%	2.05%	9.17%	15.82%	11.75%
Corporation	5.73%	7.45%	24.03%	3.90%	21.70%	24.77%	5.79%	1.79%	16.34%	0.09%	9.27%	17.55%	17.39%
CG/Property/other	0.95%	3.49%	6.10%	2.00%	3.29%	2.16%	0.54%	5.70%	12.24%	2.83%	2.76%	27.49%	0.00%
Indirect Taxes:	**60.01%**	**79.18%**	**22.20%**	**25.84%**	**38.10%**	**48.80%**	**63.67%**	**39.45%**	**37.22%**	**34.42%**	**65.08%**	**35.22%**	**49.23%**
Sales / VAT	23.44%	33.98%	1.67%	16.96%	22.40%	42.45%	32.44%	22.26%	13.77%	16.93%	23.38%	15.72%	16.31%
Excise taxes	2.06%	6.38%	0.00%	5.58%			15.36%	2.51%	9.30%	17.49%	23.92%	11.01%	22.99%
Import duties	19.09%	5.57%	4.70%	3.30%	15.69%	0.00%	0.00%	14.68%	7.44%	0.02%	16.66%	7.82%	9.93%
Other	15.41%	33.18%	15.83%	0.00%		6.35%	15.87%	with excise	6.70%	0.00%	1.12%	0.68%	0.00%
Non-tax revenue	**25.23%**	**6.04%**	**29.73%**	**38.14%**	**3.10%**	**0.00%**	**22.38%**	**49.53%**	**20.15%**	**60.70%**	**13.73%**	**3.93%**	**21.62%**
Borrowing	n.a.	n.a.	0.00%	9.32%	0.00%	0.00%	0.00%.	25.02%	9.32%	38.36%	6.25%	0.00%	0.00%
Foreign Aid	25.23%	n.a.	0.00%	0.00%	0.00%	0.00%	6.15%	12.34%	6.77%	6.11%	≅0.00%	0.00%	0.00%
Profits & resources	n.a.	n.a.	20.87%	28.03%	0.00%	0.00%	2.15%	12.17%	10.83%	15.91%	1.76%	3.93%	13.62%
Fees & other	n.a.	n.a.	8.86%	0.79%	3.10%	0.00%	14.08%		0.0%	0.32%	5.72%	0.00%	8.00%

Note: Sources and years as for Table 2. “Profits and resources” includes profits from public enterprises and revenue from natural resources (including land transactions). “Fees & other” are (non-health) fees from public services.

Table 4: Direct taxes – Concentration and Kakwani indices

	Tax distributions estimated from data (these taxes as % total direct taxes)	Allocation of other taxes	Direct tax expenditure on health as		Concentration index	Kakwani index	Redistributive effect
			% TEH	% GDP[a]			
Bangladesh	PIT, CT, PT, LT, LocT (100%)	No others	4.02%	0.13%	0.8925	0.5523	0.0007
China	PIT & agricultural tax (49.5%)	CT allocated as PIT	2.20%	0.11%	0.6038	0.1521	0.0002
Hong Kong	PIT, PT (48.3%)	CT allocated as PIT	26.71%	1.49%	0.7840	0.3940	0.0060
Indonesia	PIT (83.6%)	CT & PT allocated as PIT	11.88%	0.32%	0.4935	0.1962	0.0006
Japan	PIT (57.4%)	CT & PT allocated as PIT	19.52%	1.54%	0.4192	0.0950	0.0015
Korea Rep.	PIT (47.4%)	CT and Others as PIT	8.31%	0.49%	0.6031	0.2683	0.0013
Kyrgyz Rep.	PIT, CT (96.1%)	weighted ave. of PIT & CT	6.21%	0.26%	0.5410	0.2395	0.0006
Nepal	PIT, CT, PT (100%)	No others	2.59%	0.14%	0.4828	0.1436	0.0002
Philippines	PIT + PT + other tax levied on individual (40.2%)	CT, CGT, others as direct tax reported paid by indv.	16.93%	0.59%	0.8297	0.3809	0.0023
Sri Lanka	PIT, 50% CT & CGT (65.1%)	50% CT & CGT and PT as average of estimated taxes	10.49%	0.34%	0.9567	0.5693	0.0019
Taiwan	PIT+CGT+PT+other (71.1%)	CT as reported direct tax paid by indv.	5.58%	0.30%	0.5071	0.2438	0.0007
Thailand	PIT (40.3%)	CT allocated as PIT	16.40%	0.61%	0.9057	0.5101	0.0031

PIT- personal income tax; CT – corporation tax; PT – property tax; LT- land tax; LocT – local tax; CGT – capital gains tax; TEH – total expenditure on health.
a. Not total direct tax revenue as % of GDP but only direct tax revenue spent on health as % GDP.

Table 5: Indirect taxes – Concentration and Kakwani indices

	Taxes for which distribution estimated from data. (% of all indirect taxes)		Allocation of other indirect taxes	Indirect tax expenditure on health as		Concentration index	Kakwani index	Redistributive effect
				% TEH	% GDP			
Bangladesh	ST/VAT, ET, ID, supp. tax	(100%)	No others	16.34%	0.52%	0.4511	0.1110	0.00058
China	VAT, ET	(51.0%)	ID and others as weighted average of estimated taxes	11.79%	0.60%	0.4915	0.0398	0.00024
Hong Kong	ST/VAT, ID	(28.7%)	Stamp Duty as PT, others as weight. ave. estimtd. taxes	12.35%	0.69%	0.5003	0.1102	0.00077
Indonesia	ST/VAT, ET	(87.2%)	ID as weight. ave. estimtd. taxes	8.52%	0.23%	0.3713	0.0741	0.00017
Japan	ST/VAT	(58.8%)	ET, ID & other as ST/VAT	12.65%	1.00%	0.1007	-0.2232	-0.00225
Korea Rep.	ST/VAT, ET	(87.0%)	Others as estimated taxes	7.92%	0.47%	0.3726	0.0379	0.00018
Kyrgyz Rep.	ST/VAT, ET, Other	(100%)	No others	28.35%	1.17%	0.3522	0.0508	0.00060
Nepal	ST, ET, ID	(100%)	No others	9.27%	0.49%	0.4538	0.1143	0.00056
Philippines	ST, ET, ID, Other	(100%).	No others	14.78%	0.51%	0.4511	0.0024	0.00001
Punjab	ST, ET	(89.9%)	ID & others as estimated taxes	14.02%	0.49%	0.3103	0.0579	0.00028
Sri Lanka	ST/VAT, ET, 50% transport taxes (73.5%)		ID as ST, 50% transport taxes and others as weight. ave. estimtd. taxes	32.21%	1.03%	0.3774	-0.0100	-0.00010
Taiwan	ST/VAT	(44.6%)	ET, ID & other as ST	3.23%	0.17%	0.3037	0.0404	0.00007
Thailand	ST/VAT, ET	(79.8%)	ID as weight. ave. estimtd. taxes.	27.71%	1.03%	0.5776	0.1819	0.001884

ST/VAT – Sales tax / value added tax; ET – excise taxes; ID – import duties; PT- property tax;

Table 6: Characteristics of social health insurance systems

	Groups covered	Unification / fragmentation of funds	Contribution shares:			Earnings limits on contributions	Rate structure of contributions
			employee	employer	State		
China	Employees of State & collective owned units	Single fund	25%	75%		None	8% of basic salary
Indonesia	Formal sector employees	Separate funds for public & private sectors	22%		78%	None	2% (public) & 3-6% (private) of basic salary
Japan	Whole population	Separate funds by regions and company	50%	50%	0%	None	3-9% earnings depending on earnings and family status
Korea Rep.	Non-poor population	Single fund	50%	50%	0%	Upper limit abolished 2002	3.7% of earnings
Kyrgyz Rep.	Employees, self-employed, pensioners, unemployed, children (<16 yrs.) & welfare recipients.	Single fund	0%	78%	22%	Upper limit at 120 * minimum wage.	2% of salary (self-employment income). 5% of basic land tax on farmers
Philippines	Target coverage is universal but effective coverage is 48.75% of population (June 2002)[b]	Single fund with separate programs for public employees, private employees, individually paying, retired and indigent.	Employees -50%[c]	50%	0%	Upper limit	2.5% of basic earnings
			Individually paying - 100%	0%	0%		
			Indigent – 0%	0%	100%		
Punjab	Low income employees & dependents in formal factory sector	Single fund	23.5%	76.5%	12.5%	None (no cover above earnings limit)	1.75% (employee) & 4.75% (employer) of earnings
Taiwan	Whole population	Single fund	Varies with occupation and income[d]			Lower & upper limits	4.25% of upper bound of 29 earnings intervals[e]
Thailand	Formal sector employees	Single fund	33.3% /	33.3%	33.3%	Lower & upper limits	3% earnings

a. Households below poverty line (4.6%) are covered by tax financed Medicaid scheme.
b. Of those covered: 23.9% govt. employees; 55.4% private sector employees; 11.2% individually paying; 7.8% indigent; 1.9% retirees.
c. Retired are covered, at zero premium, on condition of at least 10 years of contributions.
d. E.g. Manual workers - 30% employees, 60% employer & 10% State. Govt. employees - 35% / 0% / 65%. Low income - 100% State.
e.In 2002, rate increased to 4.55% and number of intervals raised to 38.

Table 7: Distributional incidence of health care financing by component and in aggregate

	Index	Direct taxes	Indirect taxes	Social insurance	Private insurance	Direct payments	Total financing
Bangladesh	Concentration	0.8925	0.4511	N/A	N/A	0.5593	**0.5543**
(1999-2000)	Kakwani	0.5523	0.1110			0.2192	**0.2142**
	Weights	0.0473	0.1922			0.7605	
China	Concentration	0.6038	0.4915	0.6865	N/A	0.4349	**0.4921**
(2000)	Kakwani	0.1521	0.0398	0.2348		-0.0168*	**0.0404**
	Weights	0.0242	0.1298	0.1818		0.6642	
Hong Kong	Concentration	0.7840	0.5003	N/A	0.4304	0.4014	**0.5590**
(1999-2000)	Kakwani	0.3940	0.1102		0.0403*	0.0113*	**0.1689**
	Weights	0.3755	0.0975		0.1489	0.3781	
Indonesia	Concentration	0.4935	0.3713	0.6029	Allocated	0.4734	**0.4704**
(2001)	Kakwani	0.1962	0.0741	0.3057	as direct	0.1761	**0.1732**
	Weights	0.1358	0.0974	0.0327		0.7340	
Japan	Concentration	0.4192	0.1007	0.2827	No data	0.0550*	**0.2553**
(1998)	Kakwani	0.0950	-0.2232	-0.0415		-0.2691	**-0.0688**
	Weights	0.1952	0.1368	0.5400		0.1280	
Korea Rep.	Concentration	0.6031	0.3726	0.1714	N/A	0.3472	**0.3108**
(2000)	Kakwani	0.2683	0.0379	-0.1634		0.0124*	**-0.0239**
	Weights	0.0831	0.0792	0.3390		0.4987	
Kyrgyz Rep.	Concentration	0.5410	0.3522	0.4437	N/A	0.2495	**0.3101**
(2000)	Kakwani	0.2395	0.0508	0.1422		-0.0520*	**0.0087**
	Weights	0.0690	0.3149	0.0422		0.5740	**1**
Nepal	Concentration	0.4828	0.4538	N/A	N/A	0.3925	**0.3873**
(1995-96)	Kakwani	0.1436	0.1143			0.0533	**0.0625**
	Weights	0.0298	0.1067			0.8635	
Philippines	Concentration	0.8297	0.4511	0.5948	0.5100	0.5878	**0.6020**
(1999)	Kakwani	0.3809	0.0024	0.2048	0.1199*	0.1391	**0.1631**
	Weights	0.1840	0.1607	0.0553	0.1118	0.4882	
Punjab	Concentration	No data	0.3103	No data	Allocated	0.2985	**0.3009**
(1999-2000)	Kakwani	No data	0.0579		as direct	0.0461*	**0.0485**
	Weights		0.1984		payments	0.8016	
Sri Lanka	Concentration	0.9567	0.3774	N/A	Included	0.4561	**0.4724**
(1996-7)	Kakwani	0.5693	-0.0100		with direct	0.0687	**0.0850**
	Weights	0.0818	0.3131		payments	0.6050	
Taiwan	Concentration	0.5071	0.3037	0.1884	0.4686	0.1853	**0.2341**
(2000)	Kakwani	0.2438	0.0404	-0.0749	0.2053	-0.0780	**-0.0292**
	Weights	0.0560	0.0324	0.5197	0.0893	0.3026	
Thailand	CI	0.9057	0.5776	0.5760	0.3995	0.4864	**0.5929**
(2002)	Kakwani	0.5101	0.1819	0.1803	0.0039*	0.0907	**0.1972**
	Weights	0.1868	0.3155	0.0582	0.0668	0.3728	

N/A – not applicable (source does not exist). No data – data not available to estimate distribution. * indicates NOT significantly different from zero at 5%. Inference not undertaken for taxes and total financing indices since these are computed as weighted averages.

Appendix

Table A1: Description of surveys

Territory	Year	Survey	Survey institution	National coverage	Survey design	Sampling unit	Response rate	Sample size
Bangladesh	1999-2000	Household Income Expenditure Survey	Bangladesh Bureau of Statistics	Nationally representative	Stratified, cluster sampling. Weights applied.	Household	100%	7,440
China	2000	Sub-sample of Urban/ Rural Household Survey	National Bureau of Statistics	Original survey is nationally representative. Analytical sample randomly selected from all survey hholds in 10 provinces.	Stratified, Weights applied.	Household	100%	9700 (from total survey of 85,000)
Hong Kong SAR	1999-2000	Household Expenditure Survey (HES)	Census & Statistics Department, Government of HK SAR	All land domestic households, except those receiving welfare.	Stratified. Weights applied.	Household	79.50%	6116
		HES on CSSA[a] (welfare) households	as above	All CSSA (welfare) cases, with some exceptions[b]	Stratified. Weights applied	Household	95.50%	1510
Indonesia	2001	Socioeconomic Survey (SUSENAS)	National Board of Statistics	Nationally representative	Stratified, cluster sampling. Self-weighted	Household	98%	218,568
Japan	1998	Comprehensive survey of living conditions (CSLC)	Government	Nationally representative	Stratified	Household	100%	70,000
	2002	Health care survey[c]	Osaka University	Only a few prefectures	Stratified	Household		1400
Korea Rep.	2000	Urban Household Survey	National Statistical Office	Urban only (78.5% of population)	Stratified, cluster sampling.	District, then household	82%	62,632

Territory	Year	Survey	Survey institution	National coverage	Survey design	Sampling unit	Response rate	Sample size
Kyrgyz Rep.	2000-01	Household Budget Survey	National Statistical Committee	Nationally representative	Stratified, sample weights applied.	Household	>90%	3000
Nepal	1995-96	Living Standards Survey	Central Bureau of Statistics	Nationally representative	Stratified, cluster sample. Weights applied	Household	99.6%	3,388
Philippines	1999	Poverty Indicator Survey	National Statistics Office	Nationally representative	Stratified	Household	100%	37,454
	1994	Family Income & Expenditure Survey[d]	National Statistics Office	Nationally representative	Stratified	Household	100%	24,797
Punjab	1999-2000	Consumer expenditure survey	National Sample Survey Organisation	Analysis only for Punjab (relatively developed state).	Stratified, sample weights applied.	Household	100%	4035
Sri Lanka	1996-1997	Consumer Finance Survey	Central Bank of Sri Lanka	Excluded Northern Province due to civil war.	Stratified. Weights applied	Household	98%	8,880
Taiwan	2000	Survey of Family Income and Expenditure	DG of Budget, Accounting and Statistics, Office of Statistics (DGBAS)	Nationally representative	Stratified, cluster sampling. Weights applied.	City/county then household	100%	13801
Thailand	2002	Socio-economic Survey	National Statistical Office	Nationally representative	Stratified, weights applied	Household	93%	17,489

Notes:

a. Comprehensive Social Security Assistance. For CSSA household members not on CSSA, expenditure estimate at 25 percentile of HES sample of same household size and housing type.
b. Covers 99% of CSSA familes and 65% of CSSA single persons.
c. Used to estimated distribution of OOP payments.
d. Used to estimate distributions of private and social insurance premiums.

Table A2: Measures of ability to pay

Territory	Concept[a]	Treatment of durables and housing	Period for which computed[b]
Bangladesh	Consumption	Actual expenditures on durables and housing included	1 year
China	Consumption	Actual expenditures on durables and housing included	1 year
Hong Kong SAR	Expenditure		1 month
Indonesia	Consumption	Use value of durables and rental values of housing imputed	1 month
Japan	Income		1 year
Korea Rep.	Expenditure		1 month
Kyryz Rep.	Expenditure		1 year (from monthly data)
Nepal	Consumption	Use value of durables and rental values of housing imputed	1 year
Philippines	Consumption	Expenditure on durables excluded. Rental value of housing imputed	1 year
Punjab	Consumption	Actual expenditures on durables and housing included	1 month
Sri Lanka	Consumption	Actual expenditures on durables. Rental value of housing imputed.	1 year
Taiwan	Expenditure		1 year
Thailand	Consumption	Actual expenditures on durables and housing included	1 month

Notes: Unit of observation is the household in all cases but for Sri Lanka, where it is the spending unit.

a. *Consumption* includes the value of goods and services consumed from home production. *Expenditure* includes market purchases only.

b. Recall periods vary with item of expenditure. Column gives the standardized period for which the ATP measure has been computed from the data.

Table A3: Methods used to measure health care payments

Territory	Personal income tax	Sales / Excise taxes	Social Insurance	Private insurance	OOP payments
Bangladesh	Estimated	Estimated (detailed)	No social insurance	No data. Very small share (Table 2)	Consultation fees, hospital/clinic charges, medicines, test/investigation, transport, tips and other health service charges.
China	Reported	Estimated (detailed)	Estimated	No private insurance	Inpatient, outpatient, medicines, etc
Hong Kong SAR	Estimated	Estimated (detailed)	No social insurance	Reported	Outpatient, inpatient, medicines, traditional medicine, dental, medical supplies/equipment, health supplement, other health care.
Indonesia	Estimated	Estimated (detailed)	Estimated	No data	Outpatient, inpatient & self-treatment medicines
Japan	Reported	Estimated	Reported	No data	Outpatient, inpatient, medicines and any co-payments.
Korea Rep.	Reported	Estimated (detailed)	Reported (employee contrbn.*2 to reflect employer contrbn.)	No private insurance	Inpatient, outpatient, medicines, dental, medical supplies, tests.
Kyrgyz Rep	Reported	Estimated (detailed)	Reported / estimated	No private insurance	Inpatient, outpatient, medicines, dental, acute care.
Nepal	Reported	Estimated (detailed)	No social insurance	Almost none	Consultation fees (modern & traditional), medicines (modern & traditional), hospital expenses, tests.
Punjab	No data. Small share (Tables 2 &3).	Estimated (detailed)	No data. Small share (Table 2).	No data Very small share (Table 2).	Outpatient, inpatient and medicines.
Philippines	Reported	Estimated (detailed)	Reported	Reported	Fees, hospital charges and medicines (modern & traditional).
Sri Lanka	PAYE taxes estimated. Non-PAYE income taxes reported.[a]	Estimated (detailed)[b]. Diesel and tax on luxuries reported.	No social insurance	No data. Small share (Table 2).	Fees, hospital charges, medicines, tests, spectacles, dental, homeopathy and acupuncture, charms and others
Taiwan	Reported	Estimated (average indirect tax rate applied to all taxable expenditures).	Reported	Reported	Inpatient, outpatient, medicines, medical equipment, dental, nursing home, tests, traditional medicines, medical supplies.
Thailand	Reported	Estimated (detailed)	Reported	Estimated from life insurance premiums	Inpatient, outpatient, medicines, self-medication, traditional medicine

Notes:

1.*Estimated* income tax means the tax schedule is applied to reported incomes. *Estimated (detailed)* sales/excise tax means that product specific tax rates are applied to reported product specific expenditures or quantities.

2. *Reported* means the actual payment is reported in the survey.

a. Corporate & capital gains taxes estimated from reported capital/corporate income.

b. Reduced tax payments on vegetables by 25% in rural areas for non-payment and reduced all sales tax by 20% for non-payment in Northern Province.

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Notes

[1] 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.

[2] In Sri Lanka, the available capital income data were used to estimate the distribution of only 50% of corporation/capital gains tax revenues to allow for non-sample error in the measurement of capital income and sampling error that is likely to be large due to the small number of households reporting such income.

[3]Health accounts data are used to compute this share as the product of the direct tax share of total health expenditure and TEH/GDP.

[4] We should perhaps be a little cautionary about this particular result since the Japanese survey used to estimate the OOP distribution is rather small and not nationally representative. On the other hand, the results is perfectly consistent with findings for most other OECD countries Wagstaff, A., E. van Doorslaer, et al. (1999).

[5] See also unpublished reports cited by Fabricant, S. J., C. W. Kamara, et al. (1999)., that are also usually specific to one rural region.