THE COST OF DISABILITY IN CHINA

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<u>Abstract</u>

We describe the degree to which household income is negatively associated with the prevalence of different types of disability (i.e. medical impairments) in China using data from the 2006 Second National Survey of Disabled Persons. We then calculate the extra costs of disability across different types of households and show how these costs differ by the type and severity of disability in both urban and rural areas. We finally use nationally-representative panel data on persons with disabilities from 2007 to 2009 to examine the degree to which social security is reaching persons with different types and severity of disabilities in both urban and rural areas. We conclude that while social security for households with disabilities is increasing rapidly over time, it is still not enough to offset the income differential between households with and without disabled persons, especially when accounting for the extra costs of disability.

Introduction

A two-way, negative relationship is believed to exist between income and disability (Elwan, 1999). In one direction, poverty can lead to medical impairments. Low-income households may also have difficulty supporting family members with medical impairments to fully participate in the economy and society, thus exacerbating disability from the perspective of the "social" rather than simply the "medical" model of disability (WHO, 2001). In the other direction, households with persons with disabilities tend to face greater economic challenges than households without persons with disabilities (Case and Paxson, 2010). One significant challenge is that the employment rates and wages of disabled persons may be depressed due to unequal access to opportunities to develop knowledge, skills and careers (O'Reilly, 2007; Stern, 1989). The wages of disabled persons or their family members may also be lower because of opportunity costs. Frequently, both the disabled person and their caregiver spend considerable time on tasks related to disability (e.g., seeking or providing medical care) rather than devoting the same time to earning income (Metts, 2004).

Beyond the two-way negative relationship between income and disability, households with disabled persons also face a "conversion handicap" (Sen, 2004). Given a fixed amount of income, households with disabled persons cannot achieve the same standard of living (SOL) as households without disabled persons. A small set of studies in developed countries have estimated these "extra costs of disability"—the excess income that a household with a disabled person would require to have an

equivalent SOL as a household without a disabled person (Berthoud et al., 1993; Zaidi and Burchardt, 2005; Saunders, 2007; Cullinan et al., 2011). Such research has been conducted in England, Australia, and Ireland. The studies conclude that that the extra costs of disability are substantial, at least over the short-term. Research also demonstrates that the extra costs of disability are higher for households with persons with serious disabilities.

Because of the unavailability of data, empirical research examining the relationship between income and disability in developing countries has been relatively scarce (Mont and Cuong, 2011; Braithwaite and Mont, 2009; Hoogeveen, 2005; Metts, 2000). Even fewer studies have measured the extra costs of disability in developing countries (Mont and Cuong, 2011). Furthermore, the degree to which policy interventions, notably social security programs, cover persons with disabilities in low and middle income countries has only been documented in a few studies (e.g. O'Keefe, 2007). The absence of information on the relationship between disability and income, the extra costs of disability, and the distribution of social security is surprising. Such information is essential in formulating policies that address the needs of the disabled population. Accounting for the extra costs of disability, for example, can be used to more accurately assess the number of households with persons with disabilities that are living in poverty as well as the rate of poverty in the population as a whole (Zaidi and Burchardt, 2005; Saunders, 2007; Cullinan et al., 2011).

The overall goal of this study is to contribute to the nascent literature on the economic situation of households with persons with disabilities in low and middle-

income countries by presenting recent evidence from China. To achieve this goal we have three specific objectives. First, we utilize data from China's 2006 National Survey of Disabled Persons, a survey of more than 2.5 million individuals, to illustrate the two-way negative relationship between income and disabilities. We do so by documenting the substantial differences in income between households with persons with different types and severity of disabilities and those without persons without disabilities. We illustrate the differences in urban and rural areas separately. Second, we use a "standard of living" (SOL) approach to estimate the extra costs of disabilities for households with adults with disabilities as well as for households with children with disabilities (Zaidi and Burchardt, 2005; Berthoud et al., 1993). We estimate the extra costs of disability across different types and levels of disability, by the size of the household, and between urban and rural areas. Third, we use another data set (of nationally-representative panel data from China from 2007-2009) to track the extent to which urban and rural households with persons with different types and severity of disabilities are the beneficiaries of social security policies. Overall, we find that while the likelihood of receiving social assistance and different kinds of insurance have increased markedly in both urban and rural areas over the last few years for persons with disabilities, recent social security policies are not enough to offset existing income differentials, much less cover the extra costs of disability.

Data

Under the guidance of the State Council, the Second National Survey of Disabled

Persons was conducted in all provinces of China in 2006 by the Leading Group of the China National Sample Survey on Disability and the National Bureau of Statistics. The purpose of the survey was to estimate the distribution of persons with various types and levels of disability at the national and provincial levels; examine the demographics and socioeconomic situation of households with persons with disabilities; identify the causes, timing, and medical treatment of disability; and document the activities of disabled persons and their participation in social protection programs. Results from the survey have served as the basis for recent national and local policies and guidelines regarding persons with disabilities in China.

The implementation of the 2006 National Survey of Disabled Persons was characterized by a high level of technical expertise. Multi-stage, stratified random cluster sampling, with probability proportional to size, was used in each of 31 provinces of mainland China (see Zheng et al., 2011 for further details). This resulted in the selection of 771,797 households and 2,526,145 individuals. Tens of thousands of trained enumerators interviewed and screened all sampled household members for signs of visual, hearing, speech, physical, intellectual, and/or mental disabilities. Individuals who potentially had disabilities were later examined by one of over 6,000 trained medical professionals. Diagnosed disabilities (i.e. medical impairments) were then ranked by severity. The total number of persons with disabilities in the sample was 161,479 (an estimated 84.6 million individuals or 6.5% of China's total population). The total number of households with at least one person with disabilities was 142,112 (an estimated 17.8% of all households).

It is important to recognize that the 2006 National Survey of Disabled Persons classifies disabilities under the more traditional and narrow bio-medical model of disability (as medical impairments) rather than according to a social model. There are advantages and disadvantages to defining disabilities in bio-medical terms. The more narrow definition allows disabilities to be "objectively" diagnosed by medical professionals as impairments and thus is less subject to biases from self-reported data (Murray and Chen, 1992). Assessing disability according to the bio-medical model, however, is costly and difficult (or impossible) for some countries (especially poorer ones) to carry out. Carrying out a bio-medical-based disability survey depends on a large number of well-trained medical personnel. Therefore countries with lower levels of development are often unable to conduct medical assessments of disability. On the other hand, defining disability according to the bio-medical model (rather than a social-based model), generally results in a lower prevalence of disability (Mont, 2007). The bio-medical model further narrowly sees disability as residing within the individual rather than within the interaction of the individual's condition and the social environment in which they reside (WHO, 2001).

China's policy of measuring disability according to the bio-medical model instead of the social model lags behind the global policy of measuring disability. A wider view of disability would enable us to examine the costs and repercussions of disability for a broader and more heterogeneous population. Nonetheless, policymakers in China have enacted policies according to the medically-based definition of disability utilized in the country's National Surveys of Disabled Persons. Examining the

economic situation of persons with disability in China using the medically-based definition of disability is therefore policy relevant.

We use several key socioeconomic variables from the 2006 survey data in our analyses. The first of these is self-reported total household income (from all sources including social transfers) in the previous year, net of taxes. We additionally use household asset ownership indicators to construct SOL indices for analyses which estimate the extra costs of disability. These are dummy indicators for whether the household owns a color TV, refrigerator, washing machine, telephone, and computer as well as variables which record home ownership (fully owned or not) and the size of the living space in square meters. Finally, we make comparisons across urban and rural areas using information about each individual's residential status (*hukou*).

We track the receipt of social transfers and the coverage of various types of social insurance programs in recent years using 2007-2009 longitudinal data on selected persons with disabilities who originally participated in the 2006 national survey. Henceforth, we call this the "longitudinal survey data." More specifically, in 2006, 23,841 disabled individuals were randomly selected from the national survey sample. The design of the survey called for enumerators to track these individuals in each subsequent year. Attrition, however, reduced the final sample size. Each year, between 2-4% of the individuals in the sample moved out of the survey area. There was a mortality rate of about 4-5% per year. Therefore, at the end of the survey period in 2008, the number of surveyed individuals was reduced to 20,696. The 2009 sample was replenished by sampling again from the pool of 2006 respondents (leading to

38,444 individuals).

The longitudinal survey data contains more detailed information than the original 2006 National Survey of Disabled Persons on whether the randomly sampled individuals received governmental social security such as the minimum living allowance as well as relief assistance (*jiuji*). The data were self-reported by respondents to enumeration staff. The enumeration staff asked if disabled individuals were covered by pension, medical, unemployment, maternity, work accident insurance or the new rural cooperative medical and pension insurance schemes. Each household further reported income from various sources including total income (regular wages plus bonuses, etc.) and total transfer income (aggregated income from multiple sources such as social security, pension, insurance reimbursements, remittances, gifts, etc.).

The data in our study are analyzed using Stata 11. In particular, all of our subsequent descriptive analyses and analyses of the extra costs of disability account for survey design considerations such as stratification, clustering, and weighting by using Stata 11's svy command suite. In constructing our SOL indices (see the next section for details), we use the user-written command in Stata called polychoricpca (Kolenikov and Angeles, 2009).

Analysis and Results

The Relation between Household Income and Disability in China

Findings from the few studies which document the association between the

economic status (especially poverty) of households and disability in developing countries are not uniform or necessarily conclusive (Braithwaite and Mont, 2009). A 2007 study by the World Bank, for example, shows that disability and household socioeconomic status (as measured by a consumption expenditures measure) in India are weakly correlated when an "activities of daily living" measure is used, and are more highly correlated when a community identification measure is used (O'Keefe, 2007). In select East European and Central Asian countries in the late 1990s, analyses have shown little or no relation between income and "any" disability, but have found a negative correlation between income and "significant" disabilities (Scott and Mete, 2008). Hoogeveen (2005), by contrast, shows that in Uganda urban households with a disabled person are more likely to be poor, even after controlling for demographic factors. Mont and Cuong (2011) also find a strong negative correlation between disability and income in Vietnam.

Although China is now the second largest economy in the world, it is a middle-income country with substantial disparities in household income across and within provinces. According to official statistics for 2008, for example, the average per capita annual disposable income in urban versus rural areas were 22,727 and 9,258 yuan (3275 and 1334 US dollars; 1 US dollar = 6.94 Chinese yuan in June 2008) in the richest province (Zhejiang, i.e. this excludes Shanghai, Beijing, and Tianjin) and 11,759 and 2,797 yuan (1694 and 403 US dollars) in the poorest province of Guizhou (NBS, 2009). China further had over 40 million persons (more than 3% of the population) living under the nation's official poverty line in 2008 (NBS, 2009) and

approximately 100 million persons or 7.5% of the population living under the international poverty line. China's official poverty line is set at 1100 yuan (about 160 US dollars) per year, while the international poverty line, based on 2005 purchasing power parity prices is 1.25 US dollars per day (Chen and Ravillion, 2008). In fact, a more recent World Bank study which takes into account higher than previously estimated costs of living for the poor, finds that the total number of persons in poverty in China is actually closer to 200 million, about 15% of the population (Chen and Ravillion, 2008).

Table 1 uses the 2006 National Survey of Disabled Persons data to show the disparities in average income between households with persons of various types and severity ("mild" = rank 3 or 4, or "serious" = rank 1 or 2) of disability and households without persons with disability for urban and rural areas. Unsurprisingly, Table 1 shows that households with persons with disabilities have lower incomes on average than households without persons with disabilities (for all types of households). Similarly, households with persons with serious disabilities tend to have lower incomes than households with persons with mild disabilities. In addition, households in urban (versus rural) areas and those with more (versus less) adult members have higher household incomes, on average, within each disability category (i.e. type and level of severity). Finally, households with persons with intellectual, mental, and speech disabilities have lower incomes on average than households with persons with other types of disability. Deviations from this trend may arise from a lack of enough observations in the specific category (e.g. speech disability) for which average

household income is estimated.

<<INSERT TABLE 1>>

The prevalence rate of impairments is negatively related to household income throughout the income distribution (Figure 1). The relationship between income and disability is most stark at the lowest end of the income distribution, with a substantial drop in the prevalence rate of disability (more than 16% to 8%) from the first to the second decile. The overall downward trend and steeper decline from the first to second decile in fact exist for each of the main types of impairment. These empirical findings thus not only provide strong support for the notion that income and disability are negatively correlated, but also underscore the importance of focusing on the poor disabled population.

<<INSERT FIGURE 1>>

We also examine the degree to which individual disability is associated with other socioeconomic indicators such as education level, employment, and marriage status (which reflects social integration, Mitra, 2005). From Table 2, we see that persons with disabilities in 2006 were much less likely to have attended high school, been employed, or been married compared to persons without disabilities across relevant age groups (ages 15-35 for education, 15-50 for employment, 15+ for marriage). Persons with serious disabilities fare even worse based on each of these indicators. Furthermore, persons with intellectual or multiple disabilities have especially low rates of high school education, employment, and marriage. To the extent that incomes in China are related to these indicators, we can see that there are indirect barriers to

income for the disabled.

<<INSERT TABLE 2>>

Estimating the Extra Costs of Disability

Having documented the disparity in income and other socioeconomic indicators between households with and without disabled persons in China, we turn to estimating the amount of income required on average to put a household with persons with disability (and of different types and severity) on equal footing as a household without persons with disability. We closely follow the SOL approach as exposited by Zaidi and Burchardt (2005) and Berthoud et al. (1993).

The SOL Approach

The SOL approach indirectly measures the extra costs of disability without requiring detailed expenditure data or subjective assessments (Zaidi and Burchardt, 2005). It relies on the assumption that households with disabled persons must reallocate scarce resources away from goods and services that directly increase SOL towards disability-related expenses. It also assumes that the same SOL is shared by all members of the household (Zaidi and Burchardt, 2005). It thus seeks to identify the change in the relationship between SOL and income (the latter of which is assumed to be exogenous) from having a disabled person in the household. As such it does not measure opportunity costs or losses in subjective well-being associated with disability (Zaidi and Burchardt, 2005).

Figure 2 illustrates how the extra costs of disability are estimated using the SOL

approach. Each of the two lines in the figure reflects the positive relationship between an SOL index and household income. For any given amount of income, households with disabled persons have a lower SOL than households without disabled persons (e.g. distance BC in Figure 2). Furthermore, households with disabled persons require a greater amount of income to achieve the same SOL (e.g. distance AB in Figure 2). This extra amount of income can be estimated from information about the slope AC and the vertical distance CB, since AB = BC/AC.

<<INSERT FIGURE 2>>

In practice, it is possible to estimate both the slope AC and the shift in SOL for households with disabled persons BC using standard regression techniques:

$$SOL_i = \beta_0 + \beta_1 I_i + \beta_2 D_i + X_i \delta + \varepsilon_i \quad (1)$$

where SOL_i represents the SOL index, I_i represents household income, D_i represents a dichotomous indicator indicating whether the person is disabled or not, X_i is a vector of observed baseline covariates, and ε_i is an error term representing unobserved covariates.

Under (1), the extra costs of disability are $\frac{\partial SOL_i / \partial D_i}{\partial SOL_i / \partial I_i} = \frac{\partial I_i}{\partial D_i} = \frac{\beta_2}{\beta_1}$. The model in Figure 2 is an oversimplification in requiring the two curves to be linear and parallel (and thus assuming that the extra costs of disability are the same regardless of the level of income). The above regression equation can instead be fitted to reflect nonlinearities in the relationship between SOL, income, and disability.

Our analyses of the extra costs of disability are unable to account for the fact that disability, income and SOL may be endogenously related (see Cullinan et al., 2011

for a detailed discussion). Endogeneity is a problem if household income affects SOL and SOL also simultaneously affects household income. The presence of unobservable time preferences or unobservable previous investments in human capital in equation 1 can also bias causal estimates of the extra costs of disability. Our analytical strategy may thus underestimate the extra costs of disability in general or may overstate the extra costs of disability of households with persons with serious disabilities compared to households with persons with mild disabilities (see Cullinan et al., 2011). Unfortunately, unlike Cullinan et al. (2011), we are unable to estimate causal effects using panel data due to the cross-sectional nature of our dataset.

The SOL index for the above analysis is typically constructed using information on household asset ownership and should possess certain properties (see Berthoud et al., 1993; Zaidi and Burchardt, 2005; Saunders, 2007; Cullinan et al., 2011). First, net of disability-related expenses, the SOL index should be elastic with respect to income (Zaidi and Burchardt, 2005). Second, the preferences of the household for the assets used to construct the index should not be related to disability in a systematic fashion; under the regression approach explained above, non-systematic variation in preferences for assets between households with and without persons with disabled persons will thus average out (Cullinan et al., 2011). A composite SOL measure using information on several household assets may better meet the above two conditions, as it may be (1) more sensitive to changes in income at various parts of the income distribution and (2) systematically unrelated to disability, even if one or more household ownership variables are themselves systematically related to disability

(Zaidi and Burchardt, 2005). Finally, since SOL measures vary depending upon which household assets are used in their construction, it is advisable to examine the robustness of extra costs of disability estimates using alternative SOL measures.

Because most household asset ownership variables in our dataset are dichotomous, we mainly construct SOL indices using principal components analysis (PCA) with polychoric adjustments (see Kolenikov and Angeles, 2009). Recent studies from development economics and elsewhere suggest using household asset indicators and PCA to construct a continuous socioeconomic status measure (as a more reliable measure of household wealth compared to self-reported income—see Kolenikov and Angeles, 2009). To the best of our knowledge, this is the first study which uses polychoric PCA in combination with the SOL approach.

Due to data limitations, we have a limited number of household asset indicators with which to construct the SOL measures. Most of our household asset indicators are similar in nature, however, to those used in other studies (e.g. Zaidi and Burchardt 2006; Mont and Cuong, 2011). We also use basic regression techniques to verify that the household asset variables used to construct the SOL indices are responsive to changes in household income.

In fact, we use different combinations of household asset indicators to construct three different SOL indices. The first SOL index was based on ownership of computer, refrigerator, washing machine, phone, and color TV variables, while the second (and preferred) SOL index added home size, home ownership and an interaction of home size and home ownership to the list of variables. Specifically,

polychoric PCA was run separately on the above two sets of variables (also for rural and urban households separately) and the first principal component (which was approximately normally distributed) was used as an SOL index. We also constructed a third SOL index based on the number (count) of household assets in the home (similar to past studies such as Zaidi and Burchardt, 2005).

We ran several standard robustness checks on the SOL indices constructed using PCA (see McKenzie, 2005). For instance, the first principal component of the SOL indices explains about 50% of the variance in the above variables, while the second principal component falls dramatically in the amount of variance it explains. This indicates that the SOL measure does well at capturing the common relationship (i.e. household SOL) underlying the household asset variables. Another indication of the validity of the SOL measure is that the scoring coefficients on the first principal component for each input variable all run in the anticipated directions. In other words, the possession of most assets (i.e. those that are normal goods) indicates a higher first principal component score (the SOL measure). A histogram and density plot of our main SOL measure further does not reveal evidence of clumping or truncation at any part of the SOL distribution (results not shown).

Besides the SOL indices, the household income variable is another critical variable in estimating the extra costs of disability. We use net disposable household income in the analysis; this variable reflects the resources available to the household to establish a certain SOL (Zaidi and Burchardt, 2005). The household income measure used in our estimations likely contains measurement error, introducing bias

into our estimates of the extra costs of disability. Assuming that disability and SOL are measured without error, classical measurement error in the income measure would attenuate the coefficient on income and yet likely bias the coefficient on disability as well. It could also be however that households have difficulty recalling their exact income, purposely misreport income, and/or do not account for in-kind transfers, informal markets, or household production—all of which results in reported income being less than actual income (Braithwaite and Mont, 2009). Given the limitations of our dataset, however, we do not address the measurement error issue in our calculations.

The functional specification that appropriately describes the relationship between income, SOL and disability is usually determined empirically. Our focus is in observing how the presence of a disabled person in a household potentially shifts a counterfactual SOL-income curve to the right; we thus do not have to specify models that explain the overall variation in SOL, but rather specify how income is related to a component of SOL and how disability reduces SOL by shifting this curve to the right (Zaidi and Burchardt, 2005). We thus closely follow Cullinan et al. (2008) and test various model specifications. We first run ordinary least squares (OLS) regressions when using the continuous SOL indices (that were constructed using polychoric PCA). As is standard in the literature, we also run ordered logit regressions when the SOL index is based on the number (count) of household assets in the home. The results from the ordered logit regressions were similar to those from the OLS regressions and thus are not reported for the sake of brevity. For both types of

regression models, we test for different specifications with linear, squared, square root, and log income terms, along with interactions between the various income terms and the disability indicator(s). We eventually settle on the log income specification (in which log income replaces income on the right hand side of equation (1), as it generally has the best fit (as measured by adjusted R-squared values and the Akaike information criterion). Similar to Zaidi and Burchardt (2005), we also control for household size and composition directly (by including the number and ages of adults and kids in the models), rather than equivalize income for household size and composition. Throughout we adjust our estimates and standard errors according to the particulars of the survey design.

We estimate the extra costs of disability for various subgroups. We first estimate the extra costs of disability for rural and urban households and for households with different numbers of adults separately. We also run separate analyses using either a binary indicator for disability (if an adult in the household has disability or not) or a series of dummy indicators for the type (visual, hearing, speech, physical, intellectual, or mental) and level (mild or serious) of disability. Finally, we first run the analyses removing households with children with disabilities (and thus measure the extra costs of disability for households with adults with disabilities) and then only removing households with adults with disabilities (and thus measure the extra costs of disability for households with children with disabilities).

Results for Extra Cost of Disability

Table 3a presents estimates of the average extra costs of disability for households

with adults with (any) disabilities. The third to last row of Table 3a shows that the extra costs of disability as a percentage of income can be substantial (point estimates of 8 to 43%). These costs appear larger for households with fewer adults, possibly indicating that these households rely more on outside care for the person with disability. This finding is consistent with that of Cullinan et al. (2013) who also use the SOL approach.Table 3a further shows that the extra costs of disability seem to be larger for urban households (columns 1, 3, 5) than rural households (columns 2, 4, 6). Finally, we also estimated the extra costs of disability from having two or more disabled adults in a household and found that these extra costs were higher in absolute terms than households having one person with disability, but less per disabled person (results not shown).

<<INSERT TABLE 3A>>

There are several possible explanations for why the extra costs of disability may be larger for urban households compared to rural households. First, rural households may have less access to services that are designed to help families care for disabled members than do urban households. Moreover, because rural households are generally poorer, they also have less ability to purchase such services. Both of these elements may lead to our observed result. Rural households could also have less information about how to adequately care for disabilities or place less emphasis on caring for persons with disabilities than urban households. Hence, even if they had equivalent incomes and access to equivalent services, the observed extra costs might be lower. On the other hand, the proportionally higher costs for urban households may reflect

the lower prevalence of informal (family or community based) support in urban areas. Families have to purchase services (thus raising observed costs) rather than using unpaid (and often unobserved) services. Our SOL indices could also simply be more sensitive in capturing the extra costs of disability for urban rather than rural households.

Table 3b presents estimates of the average extra costs of disability for households with children with (any) disabilities. The third to last row of Table 3b again shows that the extra costs of disability as a percentage of income can be substantial (point estimates of 16 to 31%). These costs appear larger for households with fewer adults, but not substantially so; this, combined with the related findings in Table 3a, may indicate that households with children with disabilities as a whole rely less on outside care than households with adults with disabilities. The extra costs of disability here also seem to be greater for urban households (columns 1, 3, 5) than rural households (columns 2, 4, 6), although the discrepancies are not as large as in Table 3a. It could be that both types of households make similar economic sacrifices (proportionally-speaking) to ensure their disabled children's welfare.

<<INSERT TABLE 3A>>

Table 4 further presents estimates of the extra costs of disability as a percentage of income for households with adults with different types and levels of disability. For the most part, households with persons with serious disabilities have higher extra costs of disability than households with persons with mild disabilities. Deviations from this trend may again be due to sampling error (e.g. deviations usually occur in

urban households or for households with persons with speech disabilities which have lower prevalence rates of disability). Furthermore, the extra costs of disability for households with persons with intellectual or mental disabilities are generally higher than for households with persons with other types of disabilities. The patterns we saw in Table 3a (in particular that households with fewer adults and urban households have higher extra costs of disability as a percentage of income) also hold when we look at extra costs by specific types and levels of disability. We do not present estimates of the extra costs of different types and levels of disability for households with children with disability, however, due to the small number of children with disabilities in our sample.

<<INSERT TABLE 4>>

Using the estimates in Tables 3a and 3b, we approximate how adjusting household incomes by the extra costs of disability shifts the income distribution in general; we also examine how this changes the number of households with persons with disability living beneath the poverty line. To do this, we first subtract, based on the number of adults in the household, the extra costs of having an adult or child with any type of disability from household income. We then apply the modified OECD equivalence scale (where weights of 1, .05, and .03 are assigned to the first household member, each additional adult over 15 of age, and each child respectively) to adjust this new household income variable for household size and composition. We find that after accounting for the extra costs of disability the proportion of individuals under the poverty line, as defined by having less than an equivalized household income of 1

dollar or per day or 2300 yuan per year, increases from 12.5% to 15.3%. The proportion of individuals living with less than 2 dollars per day or 4600 yuan per year increases somewhat less from 35.8% to 37.8%.

Altogether, our estimates of the extra costs of disability are similar to those from previous studies in a number of ways. First, our range of estimates for "any disability" (8-43% across urban and rural areas and for different size households) is similar to the range of estimates found in the United Kingdom (14-50% for disabilities of medium severity, see Zaidi and Burchardt, 2005), Ireland (around 20-37%, see Cullinan et al., 2011), and Australia (around 29-37%, see Sanders, 2007). Second, although our estimates are higher on average than the estimates from Vietnam (around 9-12%, see Mont and Cuong, 2011), the estimates for rural households in China and Vietnam are, in fact, not that far apart. As previously discussed, the lower estimates for rural households (and perhaps for developing countries more generally) may indicate that rural households lack access to the same markets or resources used to care for persons with disabilities as do urban households. It could also be that rural households have access to stronger family or community based supports (which do not show up as extra costs). Third, similar to Mont and Cuong (2011) and Zaidi and Burchardt (2005), our cross-sectional estimates (which also do not fully account for endogeneity) are larger for households with persons with serious disabilities. Finally, similar to previous studies, we find that the poverty rate increases substantially when accounting for the extra costs of disability. Similar to the findings in Zaidi and Burchardt (2005), we demonstrate that accounting for the extra costs of disability

increases the poverty rate by about three percentage points for the whole population.

Trends in Social Security Coverage for Households with Disabled Persons

The extent of the economic gap between households with and without persons with disability in 2006 leads us to ask how well social security benefits have been reaching households with persons with disabilities since that time. In the last few years, China's central government has been rapidly reforming and expanding the coverage of its social security programs. The country now offers a gamut of social insurance programs (medical, unemployment, work injury, pension and maternity) and several social assistance (transfer) programs. For instance, various types of government-inspired medical insurance programs have expanded coverage from about 15% of the population (or approximately 189 million persons) in 2003 to 85.3% of the population (or approximately 1.13 billion persons) in 2008 (Zhu, 2009). These medical insurance programs cover urban employees (through the Basic Medical Insurance System for Urban Employees), non-salaried urban residents (through the Basic Medical Insurance System for Urban Residents), as well as all rural residents (through the New Rural Cooperative Medical Scheme).

China has also developed its social assistance programs. By 2009, the Minimum Life Allowance Scheme reportedly provided average benefits of approximately 170 and 65 yuan/month (25 and 9.5 US dollars/month) to 23.5 million urban and 47.6 million rural residents respectively (MCA, 2010). Also by 2009, the Five Guarantees (food, clothing, medical care, housing, and funeral expenses) program provided more than 3.86 million and 1.67 million rural, elderly persons with benefits averaging 1300

and 2300 yuan (190 and 337 US dollars) respectively (MCA, 2010). Also by 2009, a national Medical Assistance Program provided more than 353 and 586 million yuan (51.7 million and 85.8 million US dollars) in social assistance to urban and rural residents with health problems (MCA, 2010). Other programs, such as the Traditional or Temporary Relief Programs, furthermore provided assistance to rural, economically-disadvantaged individuals in 2009—at a frequency of over 5 million person-times (MCA, 2010).

Despite these rapid reforms in social security policies, however, few policies in China are specially targeted at the disabled population. In fact, the only national-level policy targeted to people with disabilities is the State Council's 2007 Regulation on the Employment of People with Disabilities, which requires enterprises to employ disabled persons at a minimum of 1.5% of the work force.

Although there is no national social assistance or insurance program especially targeting persons with disabilities, persons with disabilities are more likely to be poor or from rural areas than persons without disabilities and are thus more likely to receive benefits from various types of social insurance and transfer policies (mandated at either the national or local levels). Agencies also directly consider disability as a qualifying factor for social security, but information about the degree to which disability plays a role in qualifying for these benefits is only reported in national statistics for some types of social security (e.g. the Minimum Living Allowance Scheme and the Five Guarantees).

We attempt to identify the degree to which persons with disabilities benefit from

certain social security policies, at either the national or local levels, using data from the 2007-2009 longitudinal survey of disabled persons. We note that even the longitudinal data does not explicitly ask households about the total amount of social insurance transfers they received (from all public sources). Instead, we can only examine the likelihood of receiving the main types of social assistance and social insurance. We additionally have some information about the amount of minimum life allowance received as well as the extent to which medical insurance covers medical expenses.

The first set of rows in Table 5 compares the percentage of persons with disabilities (calculated using the 2007-2009 longitudinal data, columns 1-3) and the percentage of persons in the population (calculated from publically available national statistics, columns 4-6) that received the minimum life allowance benefit from 2007-2009. Direct comparisons between the disabled and general population are rough especially in the case of unemployment insurance (which is conditional on both age, which is greater for the disabled population, and the likelihood of employment, which is less for the disabled population) or pension insurance (which is conditional on age, which is on average greater for the disabled population). Table 5 therefore mainly allows us to see the trend over time for disabled population, and be aware of the national statistics as a rough benchmark in certain situations. These rows indicate that persons with disabilities are much more likely to obtain the minimum life allowance than persons without disabilities in both urban and rural areas. However, beneficiaries with and without disabilities obtain approximately the same amount of the minimum

life allowance on average (last three rows of Table 5).

<<INSERT TABLE 5>>

The other rows of Table 5 indicate that the proportion of persons with disability receiving the three main types of social insurance (medical, employment, and pension) increased rather steeply from 2007 to 2009, especially compared to the national trend. As a result, the likelihood of receiving urban medical insurance was substantially higher than the national average by 2009; the likelihood of receiving rural cooperative medical insurance was over 90% for both the population of disabled persons and the population as a whole. The likelihood of receiving unemployment insurance was also lower for persons with disabilities compared to persons without disabilities. This is due both to the differences in the age distributions between the disabled and non-disabled population as well as the fact that persons with disabilities are employed less than persons without disabilities. Finally, by 2009, persons with disabilities were much more likely to receive pension insurance in urban areas. Much of this difference is an artifact of the older age distribution of persons with disabilities.

The longitudinal survey data also show that persons with disabilities in rural areas were about as likely (about 25-30%) to receive cash or in-kind Relief (Traditional or Temporary) in 2007 as in 2009. What is notable in terms of comparison is that much less than 1% of the total rural population received relief assistance in 2009 (MCA, 2010). Unfortunately, we have little information about the average amount of these relief benefits in our sample of persons with disabilities. The survey also did not

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directly ask whether individuals had benefited from the Five Guarantees Scheme, although government statistics in the last quarter of 2009 state that roughly 920,000 or 1.1% of disabled persons benefited from this scheme.

There are some important issues in interpreting the above statistics. For example, our survey results show that households with persons with disabilities reported that only about 18% of their medical expenses were covered by medical insurance (average 244.6 yuan out of average 1252 yuan) in 2009. Furthermore, the 2009 survey revealed that a high proportion of persons with disability claim they need social assistance in various areas such as life assistance (almost three-fifths of the sample), medical assistance (almost two-thirds of the sample), and rehabilitation (about one-third of the sample). Only about one-sixth of the sample stated they did not require any kind of assistance when asked.

Altogether, the above findings clearly indicate that social security has been increasingly targeted towards the population of disabled persons. At the same time, using both the government statistics and survey data above, we roughly estimate that the total average amount of social assistance received by urban and rural persons with disabilities per year are 570 and 650 yuan (84 and 95 US dollars) respectively. In regards to the latter estimate, we added the following amounts separately for persons in rural areas: 191 yuan (28 US dollars) *or* the amount of minimum life allowance received by a disabled person each year on average (69 yuan/month times 12 months times 23.1% or the proportion of rural disabled persons receiving minimum life allowance), 396 yuan (60 US dollars) or the average amount of Traditional Relief

assistance received by a disabled person each year on average (the average amount of

Traditional Relief for rural recipients in 2009 was 1320 yuan and we assume that the

30% of rural disabled persons who received Relief also received 1320 yuan each),

14.4 yuan (2.1 US dollars) or the average amount of "dispersed" Five Guarantee

assistance among recipients in the entire rural population times the proportion of rural

disabled persons receiving this type of assistance, and 9.9 yuan (1.4 US dollars) *or* the

average amount of "concentrated" Five Guarantee assistance among recipients in the

entire rural population times the proportion of rural disabled persons receiving this

type of assistance). We also added 40 yuan (5.9 US dollars) per rural disabled person

for Medical assistance payments (likely an overestimate since the average in the rural

population is close to 8 yuan / person). We made similar calculations for urban

disabled persons.

Our calculations indicate that by 2009, about 6.5% and 3% (respectively) of the

total 2006 income of an urban or rural household with one person with disability,

comes from social assistance. These figures, in addition to the amount of medical

expenses covered by medical insurance each year (about 245 yuan or 35.8 US dollars,

see above), are not enough to cover the extra costs of disability that we calculated for

households in 2006 (before many of the current social security policies became

widespread).

Discussion and Conclusion

The strong negative relationship between household income and disability, in

addition to the non-trivial extra costs of disability, indicate that there is ample room to address the economic disadvantages of disabled persons in China. This is especially true, as we saw above, for households with persons with serious disabilities as well as for households with persons with intellectual, mental, and multiple disabilities, in both urban and rural areas. Given the conservative nature of our data (which only has information on bio-medical disabilities) and the estimation methods (e.g., the extra costs of disability do not account for opportunity costs and may be biased downwards because of issues of endogeneity), the disparity between households with persons with disability and those without may in reality be much bigger.

Our results further indicate that more attention can be given to households at the lower end of the income distribution. The prevalence of disability is strongly related to income at the lower end of the income distribution. Moreover, adjusting household income for the extra costs of disability significantly increases the number of disabled persons living in poverty. The log specification that we used to estimate the extra costs of disability further indicates that income makes a bigger difference to a poor household than to a less poor one in terms of achieving a given SOL (Zaidi and Burchardt, 2005).

As we have shown, although social security benefits for the population, in general, and towards households with persons with disabilities, in particular, have increased in recent years, the level of benefits appears to be inadequate to meet the needs of persons with disabilities. While disability status may be used as an indicator in the allocation of social security benefits, policies specifically directed at persons

with disabilities are needed. The relatively low levels of education and employment discussed previously—even for persons with mild disabilities but especially for persons with serious disabilities—further imply that China's long-standing policy to integrate students with disabilities into general education, or its more recent policy to employ disabled persons, fall short of providing opportunities for social advancement.

Given China's growing economic prominence and deep currency reserves, policymakers may be well-situated to consider more support for the disabled. The government has plans to more than double social security expenditures in real terms from 2010 to 2020. Officials are also interested in promoting social stability through the expansion of social programs. Hence, there may be grounds to push for some allocations to be targeted to the disabled. There are three general types of disability-related policies that could be considered: prevention, rehabilitation, and income transfers.

Policymakers in China can continue to promote efforts to raise health and safety and prevent disabilities from occurring wherever possible. Prevention has been and continues to be a primary concern for policymakers. In the last two decades, policymakers had made great strides in reducing the prevalence of visual, hearing, speech, and intellectual disabilities, partially through public health campaigns (e.g. polio vaccination, see Zheng et al., 2010). Despite these policy successes, however, the prevalence of physical and mental disabilities has increased in recent years (Zheng et al., 2010). Policymakers arguably face a long-term, uphill battle to stem the growth of physical and mental disabilities, in addition to chronic diseases, as the country

continues to face challenges associated with rapid modernization, urbanization, and industrialization. Given the rapid changes in its economy, politics, and society, China does not have the luxury to rely on prevention as a means of overcoming the socioeconomic inequalities created by disabilities.

Much can be done to improve the accessibility and quality of rehabilitation services in China. Like policies geared towards prevention, however, policies that seek to improve rehabilitation services are arguably a long-term prospect. Policymakers will need to focus on building the human and institutional capacity to provide such services. The high costs of disability, especially among the socioeconomically disadvantaged, also imply that there may be demand-side constraints to accessing these services as they gradually become more available.

The much higher rates of disability among the most socioeconomically disadvantaged and the high extra costs of disability indicate that targeted income transfers are needed, at least in the short-term. Care, of course, must be taken to balance increases in welfare for households with persons with disabilities with the reductions in incentives to work or in the provision of private transfers (Mitra, 2005; Haverman and Wolfe, 2000). In thinking about how to target social transfers, our study shows that it is important for policymakers to take social context (e.g. urban versus rural; the size of households) and the types and levels of disability into account.

References

Berthoud, R., Lakey, J., & McKay, S. (1993). *The economic problems of disabled people*. Policy Studies Institute: London.

Braithwaite, J. & Mont, D. (2009). Braithwaite, J., & Mont, D. (2009). Disability and poverty: a survey of World Bank poverty assessments and implications. *ALTER-European Journal of Disability Research*, 3(3), 219-232.

Case, A. & Paxson, C. (2010). Causes and consequences of early-life health. *Demography*, 47(1), S65-S85.

Chen, S.H. & Ravillion, M. (2008). China is poorer than we thought, but no less successful in the fight against poverty. World Bank Policy Research Working Paper Series, WPS 4621, World Bank.

Cullinan, J., Gannon, B., & Lyons, S. (2008). Estimating the economic cost of disability in Ireland. No. 230. Working Paper, The Economic and Social Research Institute (ESRI), Dublin.

Cullinan, J., Gannon, B., & Lyons, S. (2011). Estimating the extra cost of living for people with disabilities. *Health Economics,* 20(5), 582-599.

Cullinan J., Gannon B., & O'Shea E. (2013). The welfare implications of disability for older people in Ireland. *European Journal Of Health Economics*, 14(2), 171-183.

Elwan, A. (1999). *Poverty and disability: A survey of the literature*. Social Protection Advisory Service, World Bank.

Haveman, R. & Wolfe, B. (2000). The economics of disability and disability policy.

In A.J. Culyer & J.P. Newhouse (Eds.), *Handbook of Health Economics* 1, 995-1051.

Hoogeveen, J.G. (2005). Measuring welfare for small but vulnerable groups: Poverty and disability in Uganda. *Journal of African Economies*, 14(4), 603–631.

Kolenikov, S. & Angeles, G. (2009). Socioeconomic status measurement with discrete proxy variables: Is principal component analysis a reliable answer? *Review of Income and Wealth,* 55(1), 128-165.

Metts, R. (2000). Disability issues, trends and recommendations for the World Bank (full text and annexes), Washington, World Bank.

McKenzie, D.J. (2005). Measuring inequality with asset indicators. *Journal of Population Economics*, 18(2), 229–260.

Metts, R. (2004). Disability and development. Background paper prepared for the Disability and Development Research Agenda Meeting, November 16, 2004, World Bank Headquarters. *Washington, DC: World Bank.*

Ministry of Civil Affairs, China (2007-2009). China Civil Affairs Development Statistical Bulletins.

Mitra, S. (2005). Disability and social security nets in developing countries. *World Bank Social Protection Discussion Paper,* No. 0509.

Mont (2007). Measuring disability prevalence. *World Bank Social Protection Discussion Paper*, No. 0706.

Mont, D., & Cuong, N. V. (2011). Disability and poverty in Vietnam. *The World Bank Economic Review*, 25(2), 323–359.

Murray, C., & Chen, L. (1992). Understanding morbidity change. *The Population and Development Review*, 18(3), 481-503.

National Bureau of Statistics (2009). *China Statistical Yearbook*.

O'Keefe, P. (2007). People with disabilities from India: from commitments to outcomes. Human Development Unit, South East Asia Region, World Bank, 157.

O'Reilly, A. (2007). The right to decent work of persons with disabilities (Geneva, ILO).

Saunders, P. (2007). The costs of disability and the incidence of poverty. *Australian Journal of Social Issues*, 42(4), 461-480.

Sen A. (2004). Disability and justice. In *Disability and Inclusive Development Conference, keynote speech*, World Bank, Washington D.C.

Stern S. (1989). Measuring the effect of disability on labor force participation. *Journal of Human Resources*, 24, 361-395.

World Health Organization (WHO). (2001). International classification of functioning, disability and health. Geneva, Switzerland.

Zaidi, A., & Burchardt, T. (2005). Comparing incomes when needs differ: Equivalization for the extra costs of disability. *Review of Income and Wealth*, 51, 89-114.

Zheng, X., Chen, G., Song, X., Liu, J., Yan, L., Du, W., Pang, L., Zhang, L., Wu, J., Zhang, B. & Zhang, J. (2011). Twenty-year trends in the prevalence of disability in China. *Bulletin of the World Health Organization*, 89(11), 788-

797.

Zhu, Y.K. (2009). A case study on social security extension in China. International

Social Security Association Working Paper No. 7, Geneva.

Table 1: Average Income (in yuan) of Households with and without Persons with Disabilities

(by type and level of disability as well as across rural/urban households and households with different numbers of adults)[a]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All HHs		1 Adult HHs		2 Adult HHs		3+ Adult HHs	
Disability in the household	**rural**	**urban**	**rural**	**urban**	**Rural**	**urban**	**rural**	**urban**
no person w/ disability	12,160	22,937	6,884	13,097	10,591	20,822	14,434	27,428
1 person w/ disability (any)	10,010	19,582	3,153	6,638	6,507	14,083	11,954	22,871
2+ people w/ disability (any)	8,733	18,239	--	--	4,502	12,618	9,948	20,200
visual mild	10,195	18,978	2,859	6,273	6,249	13,635	12,218	22,268
hearing mild[b]	11,078	22,885	2,986	7,814	6,254	16,537	13,477	27,113
speech mild[b]	10,003	18,477	5,081[c]	3,936[c]	7,259	14,590[c]	11,809	21,583
physical mild[b]	9,981	17,870	3,217	6,584	6,663	12,791	11,891	21,761
intellect mild[b]	9,171	16,424	2,242	4,016[c]	5,656	9,533	10,919	19,191
mental mild[b]	9,906	17,472	3,405	5,646	7,070	12,100	11,997	21,691
multiple mild[b]	9,758	19,494	2,065	5,971	5,118	12,859	11,649	23,106
visual serious[b]	9,449	16,570	2,528	5,623	5,275	11,409	11,182	20,199
hearing serious[b]	9,906	19,431	2,578	5,793	5,689	14,015	11,911	23,114
speech serious[b]	8,308	19,733	2,093[c]	2,909[c]	5,784	14,202[c]	9,346	23,668
physical serious[b]	9,116	17,614	2,319	5,233	5,371	12,567	10,648	20,568
intellect serious[b]	8,315	14,582	1,590	2,559	4,868	8,519	9,391	16,994
mental serious[b]	8,488	15,830	2,202	4,289	5,188	9,662	10,283	19,215
multiple serious[b]	9,233	17,996	2,010	4,775	4,903	11,803	10,832	21,013

[a] Unadjusted household income. Amounts are rounded to the nearest yuan (in 2006 yuan).

[b] There is 1 adult with disability in the household.

[c] There are less than 100 observations by which to estimate the statistic.

Source: 2006 National Survey on Disabled Persons

Table 2: Education Levels, Employment Status, and Marriage Status of Persons with and without Disabilities in China (by type and level of disability)

Type of impairment/disability	(1) % Went to High School (age 15-35)	(2) % Employed (age 15-50)	(3) % Married (age 15+)
no impairment	28.2%	79.8%	75.2%
any impairment mild	9.5%	59.7%	63.2%
any impairment serious	4.5%	33.3%	51.8%
visual mild	13.6%	76.5%	63.4%
visual serious	7.3%	41.3%	52.3%
hearing mild	10.0%	86.4%	64.7%
hearing serious	7.5%	82.1%	60.9%
speech mild	9.3%	77.6%	69.1%
speech serious	2.3%	64.0%	61.2%
physical mild	13.6%	63.2%	70.7%
physical serious	9.1%	22.7%	63.0%
intellectual mild	1.1%	48.4%	47.3%
intellectual serious	0.2%	21.7%	34.7%
mental mild	14.8%	51.5%	66.9%
mental serious	12.9%	22.8%	52.8%
multiple mild	2.2%	35.7%	46.9%
multiple serious	1.6%	35.7%	44.7%
N	769,466	1,397,075	2,046,560

Source: 2006 National Survey on Disabled Persons

Table 3a: The Extra Costs of "Any" Disability (for Adults with Disability) as a % of Income[a]

(OLS regressions of a continuous SOL index on household income, disability and by household type)

	(1)	(2)	(3)	(4)	(5)	(6)
	1 adult HH		2 adult HH		3+ adult HH	
	urban	rural	urban	rural	urban	rural
log_hh_income	.61***	.45***	.72***	.64***	.67***	.79***
	(.02)	(.02)	(.01)	(.01)	(.02)	(.02)
Impairment	-.26***	-.13***	-.21***	-.13***	-.13***	-.06***
	(.03)	(.01)	(.01)	(.01)	(.01)	(.01)
Age	.11***	-.03***	-.07***	-.05***	-.03***	-.01**
	(.02)	(.01)	(.01)	(.00)	(.00)	(.00)
num_child06	.31***	.11***	-.01	.01	.11***	.11***
	(.05)	(.02)	(.01)	(.01)	(.01)	(.01)
num_child712	.29***	.09***	.02	-.02	.05***	-.02***
	(.04)	(.02)	(.01)	(.01)	(.01)	(.01)
num_child1318	.33***	.12***	.09***	.04***	.03**	-.08***
	(.03)	(.02)	(.01)	(.01)	(.01)	(.01)
Constant	-6.74***	-4.53***	-7.16***	-5.78***	-6.58***	-6.53***
	(.18)	(.20)	(.14)	(.19)	(.17)	(.18)
Extra costs[b]	**43.2%**	**28.2%**	**28.8%**	**19.6%**	**18.8%**	**8.0%**
95% CI	(33-53%)	(22-34%)	(25-32%)	(17-22%)	(16-22%)	(7-10%)
Observations	34,835	88,344	330,754	754,792	315,355	886,371
R-squared	.22	.28	.27	.25	.25	.32

Standard errors are in parentheses.

*** p<0.01. ** p<0.05

[a] Province fixed effects included.

[b] Extra costs of disability as a percentage of income.

Source: 2006 National Survey on Disabled Persons

Table 3b: The Extra Costs of "Any" Disability (for Children with Disability) as a % of Income[a] (OLS regressions of a continuous SOL index on household income, disability and by household type)

	(1)	(2)	(3)	(4)	(5)	(6)
	1 adult HH		2 adult HH		3+ adult HH	
	Urban	rural	urban	rural	urban	rural
log_hh_income	.59***	.47***	.71***	.64***	.65***	.78***
	(.02)	(.02)	(.01)	(.01)	(.02)	(.02)
Impairment	-.19	-.13***	-.20***	-.17***	-.18***	-.14***
	(.15)	(.05)	(.05)	(.02)	(.07)	(.02)
Age	.09***	-.03***	-.07***	-.05***	-.03***	-.01***
	(.02)	(.01)	(.01)	(.00)	(.01)	(.00)
num_child06	.31***	.11***	-.02	-.00	.10***	.11***
	(.05)	(.02)	(.01)	(.01)	(.01)	(.01)
num_child712	.29***	.09***	.02	-.02	.05***	-.02
	(.04)	(.02)	(.01)	(.01)	(.02)	(.01)
num_child1318	.32***	.11***	.09***	.04***	.03	-.09***
	(.03)	(.02)	(.01)	(.01)	(.02)	(.01)
Constant	-6.56***	-4.76***	-7.03***	-5.79***	-6.37***	-6.43***
	(.19)	(.20)	(.14)	(.20)	(.18)	(.18)
Extra costs[b]	**31.1%**	**26.4%**	**27.8%**	**26.3%**	**28.2%**	**17.5%**
95% CI	(-18-80%)	(11-45%)	(15-40%)	(21-32%)	(7-50%)	(11-24)%
Observations	31,359	76,667	306,763	690,207	257,723	680,208
R-squared	.19	.30	.26	.23	.24	.31

Standard errors are in parentheses.

*** p<0.01. ** p<0.05

[a] Province fixed effects included.

[b] Extra costs of disability as a percentage of income.

Source: 2006 National Survey on Disabled Persons

Table 4: Extra Costs of Disability (Adults with Disability) as a Percentage of Income by Type and Level of Disability (OLS regressions of a continuous SOL index on household income, disability type/level and by household type)

	(1)	(2)	(3)	(4)	(5)	(6)
	1 adult HHs		2 adult HHs		3+ adult HHs	
	urban	rural	urban	rural	urban	rural
visual mild	31%	11%	28%	9%	19%	5%
	(7-55%)	(0-23%)	(18-37%)	(3-15%)	(11-27%)	(1-10%)
visual serious	98%	44%	52%	34%	18%	19%
	(63-132%)	(30-58%)	(34-70%)	(26-42%)	(4-32%)	(14-25%)
hearing mild	20%	12%	15%	11%	9%	-3%
	(4-36%)	(2-21%)	(9-21%)	(6-16%)	(3-14%)	(-7-1%)
hearing serious	87%	44%	31%	25%	27%	10%
	(56-118%)	(29-59%)	(16-45%)	(17-34%)	(12-41%)	(5-16%)
speech mild	78%	24%	60%	24%	10%	5%
	(41-197%)	(21-69%)	(28-91%)	(5-42%)	(-25-45%)	(-11-22%)
speech serious	31%	106%	53%	39%	37%	32%
	(-78-138%)	(68-144%)	(8-98%)	(14-64%)	(8-65%)	(14-51%)
physical mild	12%	20%	24%	8%	16%	5%
	(-5-29%)	(10-30%)	(19-29%)	(5-12%)	(11-22%)	(2-8%)
physical serious	49%	38%	32%	22%	14%	4%
	(14-84%)	(19-57%)	(20-43%)	(13-30%)	(3-25%)	(-2-10%)
intellectual mild	116%	73%	80%	50%	28%	26%
	(69-164%)	(53-92%)	(55-104%)	(40-61%)	(13-44%)	(19-33%)
intellectual serious	158%	77%	90%	86%	50%	31%
	(73-242%)	(38-116%)	(47-133%)	(72-100%)	(25-74%)	(21-40%)
mental mild	71%	34%	43%	27%	37%	23%
	(45-97%)	(18-51%)	(30-55%)	(19-36%)	(26-49%)	(16-29%)
mental serious	114%	40%	65%	49%	51%	32%
	(77-150%)	(22-59%)	(45-85%)	(39-60%)	(34-67%)	(24-39%)
multiple mild	29%	10%	27%	19%	13%	-2%
	(4-53%)	(-1-21%)	(16-39%)	(12-26%)	(3-22%)	(-7-2%)
multiple serious	85%	50%	26%	26%	15%	-14%
	(56-114%)	(38-61%)	(13-40%)	(20-33%)	(5-26%)	(9-18%)

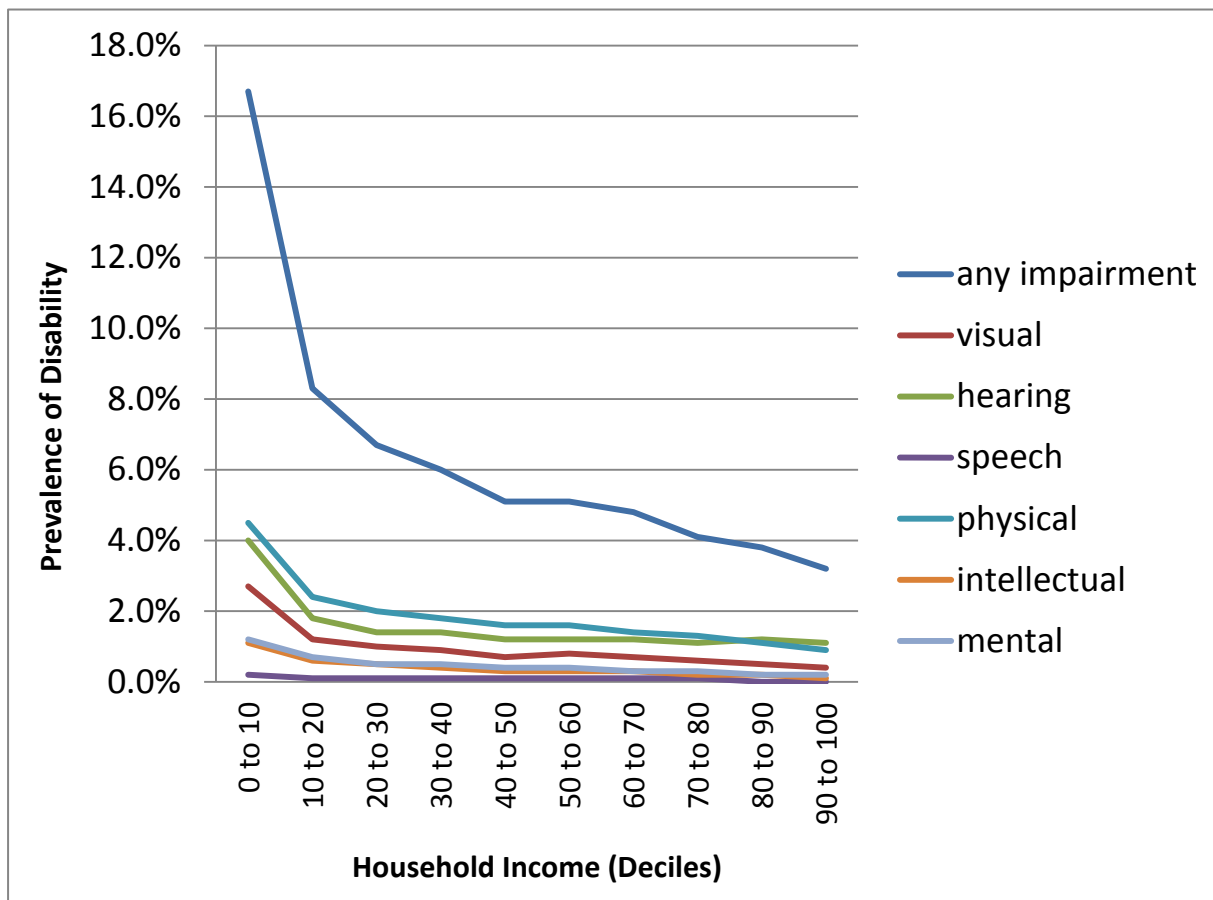*Source:* 2006 National Survey on Disabled Persons

Table 5: Differences in the Receipt of Various Types of Social Security between Persons with

Disabilities and the Total population (by urban/rural, 2007-2009)

% receiving	YEAR	(1) all	(2) urban	(3) rural	(4) all	(5) urban	(6) rural
		Persons with disabilities			**National Population**		
		all	**urban**	**rural**	**all**	**urban**	**rural**
minimum life allowance	2007	13.6%	20.6%	11.6%	4.4%	3.8%	4.8%
	2008	19.5%	22.0%	18.8%	5.0%	3.8%	6.0%
	2009	22.9%	22.3%	23.1%	5.3%	3.8%	6.7%
new rural cooperative med insurance	2007	n/a	n/a	82.0%	n/a	n/a	86%
	2008	n/a	n/a	94.7%	n/a	n/a	91.5%
	2009	n/a	n/a	92.5%	n/a	n/a	94.2%
urban worker medical insurance	2007	n/a	35.5%	n/a	n/a	30.3%	n/a
	2008	n/a	68.9%	n/a	n/a	33.0%	n/a
	2009	n/a	89.9%	n/a	n/a	35.3%	n/a
urban resident medical insurance	2007	n/a	n/a	n/a	n/a	n/a	n/a
	2008	n/a	n/a	n/a	n/a	n/a	n/a
	2009	n/a	59.4%	n/a	n/a	29.3%	n/a
unemployment insurance (urban worker)	2007	n/a	3.3%	n/a	n/a	24.6%	n/a
	2008	n/a	8.0%	n/a	n/a	28.4%	n/a
	2009	n/a	8.6%	n/a	n/a	28.9%	n/a
urban worker pension insurance	2007	n/a	35.9%	n/a	n/a	25.6%	n/a
	2008	n/a	65.5%	n/a	n/a	27.3%	n/a
	2009	n/a	84.8%	n/a	n/a	28.5%	n/a
urban resident pension insurance	2007	n/a	n/a	n/a	n/a	n/a	n/a
	2008	n/a	n/a	n/a	n/a	n/a	n/a
	2009	n/a	13.3%	n/a	n/a	37.9%	n/a
amount per beneficiary (yuan, 6.94 yuan = 1 US dollar in June 2008)							
minimum life allowance (monthly)	2007	83	146	51	64	103	39
	2008	83	170	56	78	140	44
	2009	96	203	69	99	171	64

Notes: In estimating the national population statistics in the right half of the table, we divided the respective number of urban and rural social security beneficiaries in each category by the number of persons living in urban and rural areas of the population. By comparison, the urban-rural statistics in the left half of the table are estimated according to whether the individual had an urban or rural residential permit.
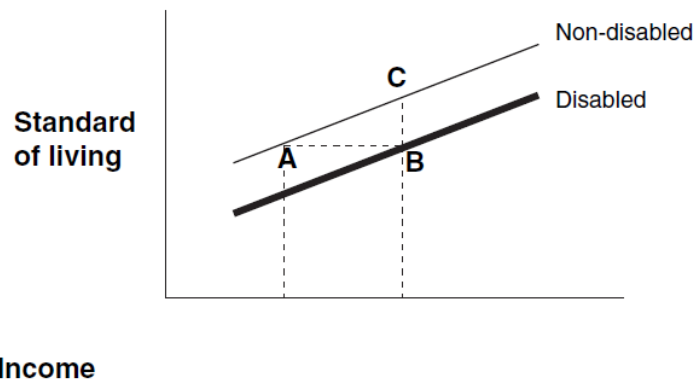
Sources: Statistics in the left half of the table (first three columns) were estimated using data from the 2007-2009 Longitudinal Data on Persons with Disabilities. Statistics in the right half of the table (second three columns) were estimated using information from the China Statistical Yearbook, China Civil Affairs Development Statistical Bulletins, China Labor Statistical Yearbooks, and the China Health Statistics Yearbooks (various years).

Figure 1: The relation between HH income (in deciles) and prevalence of disability in China (for any disability/impairment as well as different categories of disability; not accounting for the extra costs of disability)

Source: 2006 National Survey on Disabled Persons

Figure 2: Standard of Living, Income and Disability

From: Zaidi and Burchardt (2005)