LIS
Working Paper Series

No. 705

Informal Transfers in Comparisons of Monetary Welfare and Its Distribution

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June 2017

Luxembourg Income Study (LIS), asbl

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Abstract:

The Luxembourg Income Study (LIS) data is expanding to cover "middle income" countries that supplement the large, existing sample of countries which are "high income" in the LIS Database. Developing countries tend to have social protection systems that are less formalized, and financial transfers often flow between households. Inter-household financial transfers may play a significant role on a household's economic resources. These differences in transfers mean that comparisons of countries' poverty profiles and inequality levels can be heavily influenced by how such payments are taken into account. This research looks at the level of payments of transfers in both formal and informal ways and how the transfers affect the international and sub-national comparison of inequality in China, Peru, Dominican Republic, Germany, United Kingdom and United States. Based on the data from the LIS Database, this paper addresses how important inter-household transfers are to the household's overall income, the differences discounting such transfers makes to the comparison of monetary welfare across countries and to the national distributions and how the comparisons of the welfare of specific sub-groups are affected by discounting such transfers.

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I. Introduction:

Our understanding of the prevalence of monetary poverty and levels of inequality and of the relative positions of these in international and sub-national comparison relies on having a clear understanding of household incomes, wealth or consumption levels. One major contributor to the literature on the analysis of international profiles of poverty and inequality has been data from the Luxembourg Income Study (LIS) Database. LIS has pioneered producing harmonized and consistent internationally comparable data to focus on differences in household monetary income levels and distributions; adjusted to capture 'net monetary welfare[3]' and adjusted for household size and composition. In recent years, LIS has broadened its set of contributing countries from the mostly high income 'industrialized' economies of the EU and OECD to additionally consider 'middle income countries'. This expansion brought in China, India and a range of so-called 'developing' countries that had household income as a welfare measure. The inclusion of developing countries leads to the need to consider 'informal welfare' systems rather than the formal tax and benefit systems of EU and OECD countries. Recognizing and allowing for the differences that arise from informal welfare could be crucial to when comparing poverty, inequality and the distributions of monetary welfare over the wider range of countries.

This paper approaches one area of such analysis: the recognition of and assessment of the role of 'informal inter-household transfers' in affecting poverty, inequality and comparisons of them. In many developing economies, the lack of access to financial markets, the low efficiency of the labor market, and the poorly developed social protection systems have repercussions for social and economic inequality. Private inter-household support networks, often between extended family members, can play a similar role in responding to needs and to risks that arise from age or other factors. But also economic development and jobs can lead to sharing income between households, for instance, migration that results in remittances flowing between destination and origin family members – both internationally and within countries.

A growing stock of studies indicate that inter-household income transfers have become an important part of income redistribution for disadvantaged households (Bamberger, Kaufmann, & Velez, 2000; Cox, 2002). The size of private transfers is even greater than public transfers in Vietnam, and the increasingly substantial informal transfers between households in less-developed economies are often regarded as a similar function to the public transfers in developed

[3] In this paper, we propose to subtract inter-household transfers paid, income tax, and social security contribution from household total income to generate a net measure of household monetary welfare.

nations (Cox, 2002). However, most of the research and literature pays insufficient attention to the informal arrangements between households. Informal transactions are the middle zone in which certain services and benefits could flow (Fafchamps, 2008). Inter-household private transfers evidently play a crucial role in assisting the fight of households against poverty (Altonji, Hayashi, & Kotlikoff, 1995; Cox, 2002; McKenzie & Rapoport, 2007; Yang & Martinez, 2005) and also act as a fundamental means for intergenerational transmission of wealth (Cox & Raines, 1985; Kotlikoff & Summers, 1980). Yet, it is suggested that certain kinds of inter-household financial linkage often occur in the households at the higher end of income distribution and hence exacerbate inequality (Adams, Cuecuecha, & Page, 2008; Barham & Boucher, 1998). Paerregaard (2015) documented that remittances in Peru have resulted a rising inequality between disadvantaged households and affluent households. Evans et al show that state transfers in Vietnam are small in the overall household income sector compared to inter-household transfers that have an overall role in increasing inequality (Evans et al., 2007). But it is wise to remember that the role for informal family support is far from being crowded out by the generous welfare states, as found in five developed countries (Künemund & Rein, 1999).

The role of inter-household transfers is not limited to their overall 'welfare effect' but is also linked to a more fundamental issue of the measurement of welfare per se. Most analysis of inequality and poverty using household income uses a measure of 'net disposable income[4]'. The consensus is that measures of income as a welfare measure should include all current transfers, including those from other households.

The treatment of 'payments' of informal transfers by donor households, and their subtraction from income or consumption to obtain a net measure of household monetary welfare is also well-established in the main reference texts on monetary welfare measurement. The Canberra Group defines a component of household income as *"Current transfers from other households in the form of family support payments (such as alimony, child and parental support….. They include transfers from non-resident households (remittances) which can be of significant importance to the economic well-being of some households and of particular policy interest for a number of developing countries"* (UNECE 2011 page 13), and define disposable income as *"total income* ***less current transfers paid****. Transfers are treated as quasi-compulsory if the donor households consider that it reduces their ability to consume/save and that the*

[4] In LIS Database, disposable income refers to income after taxes and social security contributions. We further deduct inter-household transfers paid to generate net disposable income.

household is under some non-formal obligation or moral commitment to make it, e.g. family support payments." (ibid, page 14, our emphasis). This is consistent with definitions of household sector income and consumption in National Accounts (UNDESA, 2008). Deaton and Zaidi in their detailed discussion of welfare measured though a household consumption aggregate similarly state, "*Another group of expenditures are gifts, charitable contributions, and remittances to other households. A case can be made for including gifts to others based on the fact that they must yield as much welfare to the transmitting household as do other consumption expenditures that could have been made with the funds. However, their inclusion in the consumption aggregate would involve double-counting if, as one would expect, the transfers show up in the consumption of other households. Average living standards could be increased without limit if each household were simply encouraged to donate its income to another household, and so on; nothing would have changed except our measure of welfare.* ***We therefore recommend excluding gifts and transfers, counting them as they are spent by their recipients****."* (Deaton & Zaidi 2002 page 34, our emphasis).

The OECD have also revised their definition of household income to deduct payments of transfers to other households (OECD 2015) when calculating net disposable income. But at the national level, definitions of income do not reflect these standards. For instance, in the USA, personal transfer payments are identified as personal outlays (Bureau of Economic Analysis, 2016) and defined as one component of cash contributions paid to persons outside the household or organization (Chao & Hall, 2008). Most studies use disposable income measures that do not subtract inter-household transfers out; so do the Census's money income measure and the Bureau of Economic Analysis's personal income measure, as well as a series of alternative measures proposed (Current Population Report, 2005; Ruser, Pilot, & Nelson, 2004).

But when measuring welfare, put simply, if transfers paid out are not discounted from donor households but are included in the income of the recipient household, those sums are 'double counted' in the whole income distribution and affect the empirically robust ranking of donor and recipient households in the overall distribution. (For instance, if household A and household B each have an income of $100, but household B received $20 of their household income from household A, then the correct ranking is that B is richer ($100) than A ($80)). The effects on measuring poverty and inequality are thus potentially considerable, and the comparison of groups with higher likelihood of being donors or recipients of such transfers could be especially affected – for instance, in comparing urban and rural or migrant and non-migrant

households and comparing households that contain children and elderly people (who are more likely to be economically 'dependent' and to receive transfers from extended family members).

Our paper is organized as follows. The second section will show briefly the research data, methods, and the measurements of key variables in this paper. The third and fourth sections will present, respectively, a summary picture of how much household income compositions differ across the nations examined and differences in national distributions. The fifth part will discuss the comparison of four national subgroups. The paper will close with a discussion and further implications for effective interventions to improve equality in a global context.

II. Data and Measures:

We base our analysis on the Luxembourg Income Survey (LIS) datasets. These data come from 48 countries and are harmonized to a consistent comparable set of income metrics and demographic information. We concentrate on a smaller sub-set of countries focusing on those countries that have the relevant variables for analysis and comparison. The harmonized variables created for LIS data record gross current income and its components as well as a set of variables listing 'non-consumption expenditures' that include 'income taxes and social security contributions' and 'inter-household transfers paid'. This allows us to compare the results generated using differing versions of a net disposable income welfare measure and to compare the results when 'Net Disposable Income' is defined in two ways:

- Gross Income minus the total of all taxes and social security contributions. We call this measure NDI1 in short form
- Gross Income minus the total of all taxes, social security contributions (ssc) and inter-household transfers paid. We call this measure NDI2 in short form

The subtraction of inter-household transfer payments in addition to direct taxes and social security contributions allows us to clearly identify the differences of inclusion or exclusion of these sums in profiles and comparisons of income monetary welfare. The LIS Database and its documentation allow us to clearly identify the components of income and non-consumption expenditures consistently across countries and thus provides a unique opportunity to disaggregate gross[5] income resources and examine the impacts of inter-household transfers both

[5] Gross income refers to income values before taxes and mandatory social security contributions are deducted.

in and out on the whole population as well as specific sub-groups. While LIS has a consistent set of harmonized variables for every country, not all national datasets fill the complete set of potential variables. Our first task was thus to find a set of countries where variables that recorded 'payment of inter-household transfers'. From these we chose countries that additionally had variables that allowed a consistent definition of net and gross income (as some countries in LIS only report 'net income' after tax). This led to the choice of six countries. We chose China 2002, Dominican Republic 2007, Peru 2013 from the developing 'middle income' countries, and we chose United Kingdom 2010, United States 2010, and Germany 2010 from the high income countries as they have large 'foreign born' populations who are more likely to pay transfers as 'remittances' back to their countries of origin. Table 1 describes the sample sizes and weighted up national household figures for the six countries.

Table 1. Sample size by country

Country (Year)	*Household-level (N)*	*Personal-level (N)*		
		Age:0-17	*Age:18-59*	*Age: 60 and over*
Middle-Income Nations				
China (02)	17,124	14,185	42,009	5,548
Dominican Republic (07)	8,363	12,618	15,631	2,688
Peru (13)	30,453	39,982	61,855	15,894
High-Income Nations				
United Kingdom (10)	25,350	13,505	29,906	14,517
United States (10)	75,188	58,198	114,842	31,943
Germany (10)	12,146	4,692	14,753	7,275

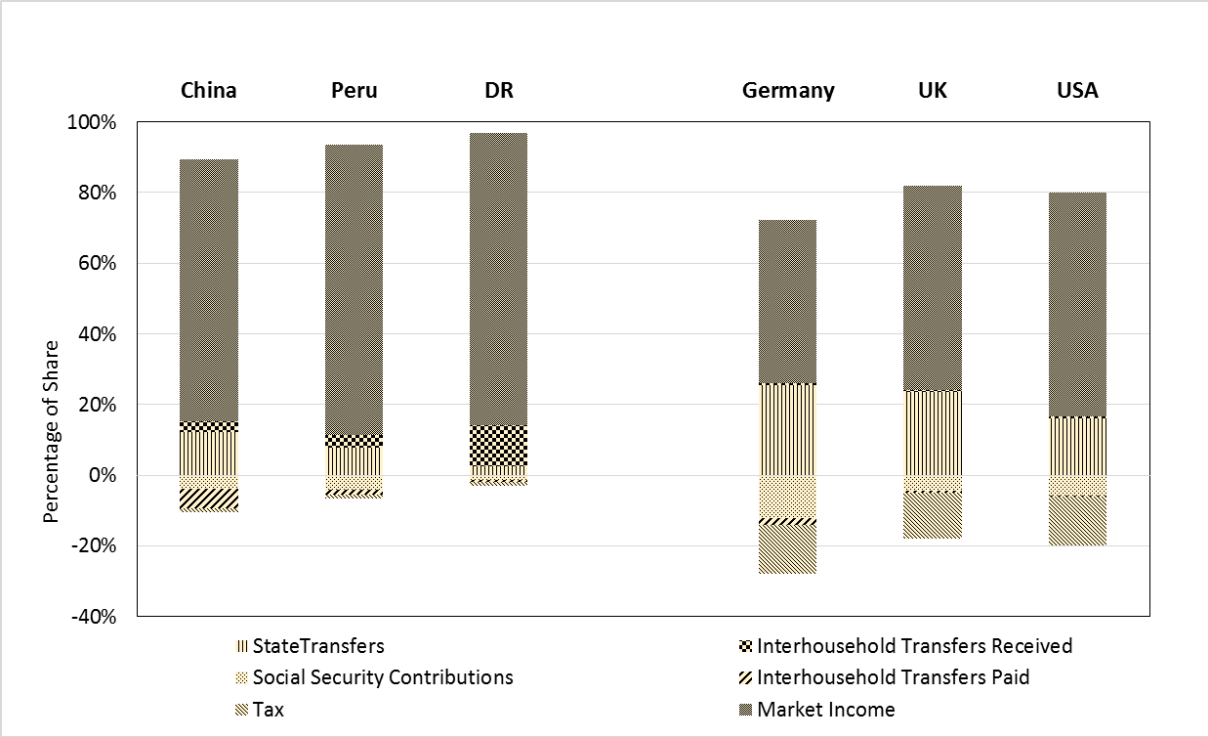
Source: Authors' Calculations from LIS

III. Informal Transfers and Household Incomes:

How important are informal transfers to overall household incomes in these six countries? Figure 1 summarizes the average gross incomes of all households across the six countries by source of gross income and by type of payments that will be used to compute our variants of 'net disposable income'. The data is expressed purely as percentages of gross average household income, and makes no allowance of the huge differences in monetary living standards that occur across these countries. Figure 1 does however tell us much about the overall balance between market incomes[6] and mechanisms of redistribution – both formal through direct taxation and state transfers, and informal through inter-household payments and receipts.

[6] Market incomes include employment income, retirement pensions, investment income, and other money income.

Figure 1. Income components and household gross income by country



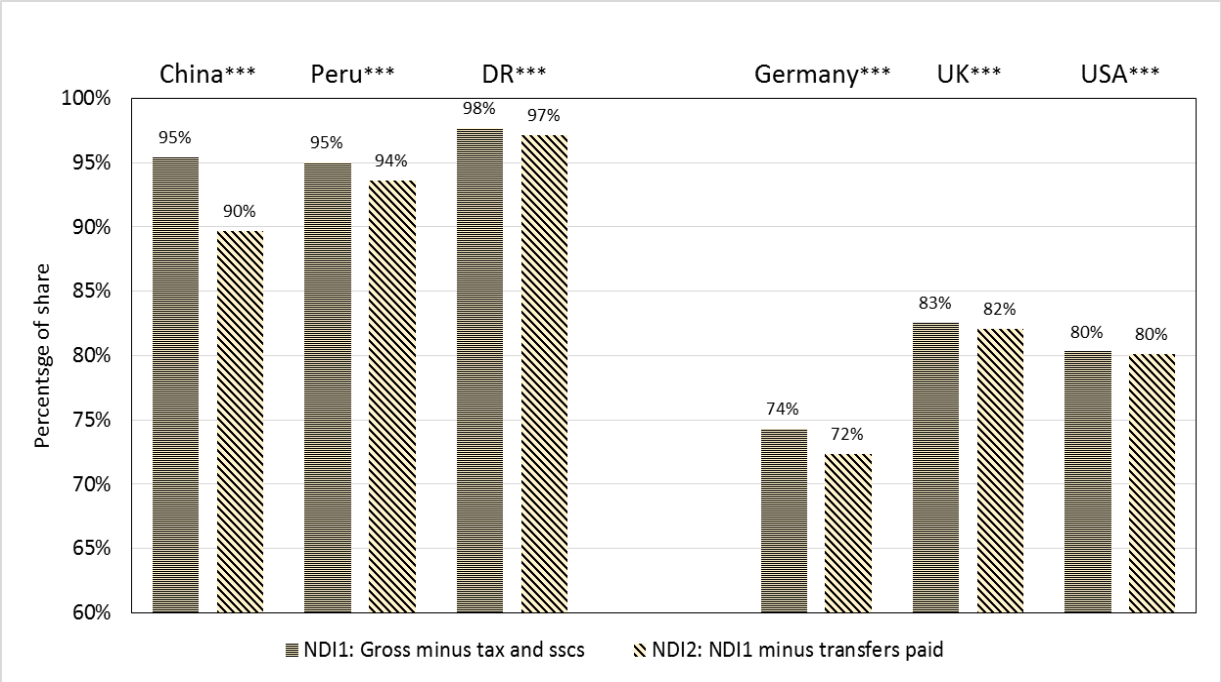
Source: Authors' Calculations from LIS

Not surprisingly, in the three industrialized countries, state taxes and transfers comprise larger shares of gross household incomes. State transfers as income range from 25.7 percent in Germany, 23.6 percent in the UK to 16.2 percent in the USA, compared to 12.3 percent in China, 7.8 percent in Peru and 2.7 percent in Dominican Republic (DR). Conversely private inter-household transfers are much higher in these developing countries from 11.5 percent in DR, 3.8 percent in Peru and 3 percent in China, compared to between 0.5 and 0.6 percent in the three high income countries. Looking at payments, the formal direct tax burden in the three developing countries lies between 1.1 and 1.2 percent compared to 13 to 14 percent in high income countries. Social security contributions are less polarized across development status – China, Peru, the UK and the USA all have contributions at around 4 percent of gross income on average, while Germany has much higher levels 12 percent, and DR much lower at just 1 percent. Finally, to the issue at the heart of remaining discussion and analysis in this paper – the level of informal payments of transfers, which is highest in China at 6 percent of average gross income, and then between 1 and 2 percent across Peru, DR, UK and Germany. The USA reports lower levels, which is surprising given the levels of potential international remittances from a

substantial immigrant population and the high priority given to payments of child support from non-resident fathers in US family policy alongside high levels of divorce and single parenthood.

What difference does subtracting payments of informal transfers from net disposable income make to the reported welfare measure and when comparing countries? Figure 2 shows the differences in net disposable income measures that result from the additional subtraction of payments of inter-household transfers (NDI2) alongside direct tax and social security contributions (NDI1).

Figure 2. Differences in average net disposable incomes by country

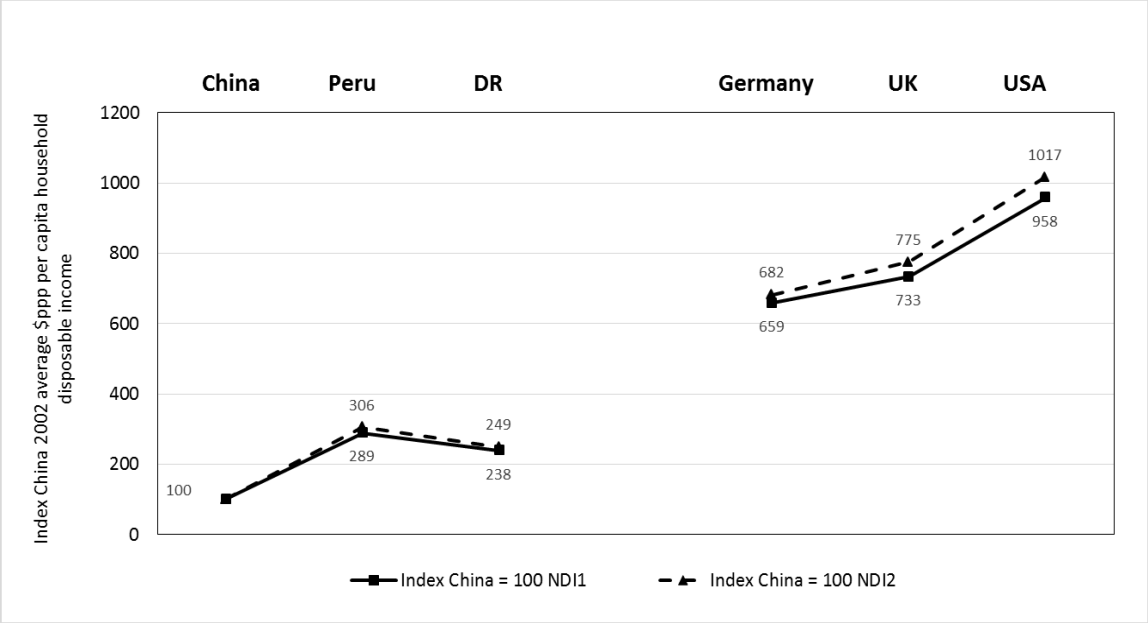


Source: Authors' Calculations from LIS; *** p<0.01

Figure 2 shows that China is most affected by introducing the revised approach to calculating net disposable household income – with incomes falling by 5 percentage points from 95 to 90 percent of overall gross income, Germany's average net income falls by 2 percentage points and Peru, DR and UK all by a single percentage point, while no difference is shown in the USA. Figure 3 shows such differences for country level comparisons using a consistent purchasing power parity measure of average disposable household income, in index form with China as the base comparison at 100. The difference in comparing countries using disposable household income that additionally discounts inter-household transfers (NDI2), is that China (2002 data) is considerably poorer relative to other comparison countries in terms of household welfare-based living standards. Comparison with other developing countries make average living

standards higher still, for instance in Peru (in 2010) – from 2.9 times to 3.1 time Chinese levels. Comparing China to high income countries makes the largest difference when comparing China to the USA where average living standards rises from approximately 9.6 to 10.2 times higher in the USA. Of course, the comparisons, while in constant real ppp values, are comparing China at an earlier period in its rapid economic growth and contemporary comparisons would be more useful for actual comparison of the situation in recent years. However, the underlying problem of measurement is clear, if household incomes are not discounted to subtract payments of inter-household transfers, comparisons are likely to overstate living standards in countries where such payments are common and represent a substantial proportion of gross household income. The large caveat surrounding these results is an empirical one – Why does data in the USA not show larger amounts of private inter-household transfers? We look in more detail at that question when we consider specific comparisons of the welfare of different sub-groups of the population below.

Figure 3. China's average household living standard compared in purchasing power parities (different years – 2005 ppps)



Source: Authors' Calculations from LIS

IV. Differences in National Level Distributions:

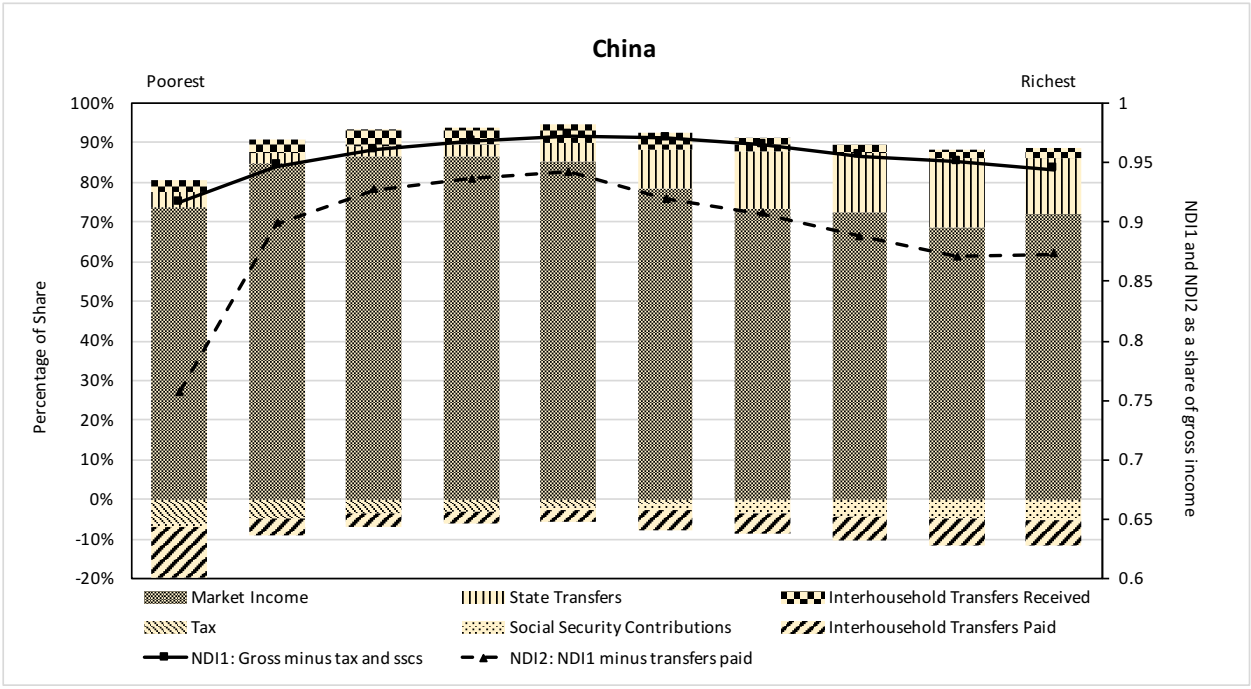
Cross national comparison of living standards also considers issues that link to the distribution of household welfare rather than just its average level. Poverty comparisons will consider the population who have welfare below a certain commonly set threshold, that can be a common point in the overall distribution (commonly a percentage of equivalised mean or median income) or a common absolute threshold set in purchasing power parity, such as the World Bank's 'extreme poverty line of $1.90 per person per day (Ferreira et al., 2016). Comparisons of inequality consider the whole dispersion of welfare across the national welfare distributions – using indices such as Gini coefficient or Theil Indices, or using comparisons of shares of total welfare at certain percentile points (Cowell, 2000)[7]. But such measures of poverty and inequality are also essential to understand intra-national differences, between groups of the population and their relative poverty risk and their contribution to overall inequality.

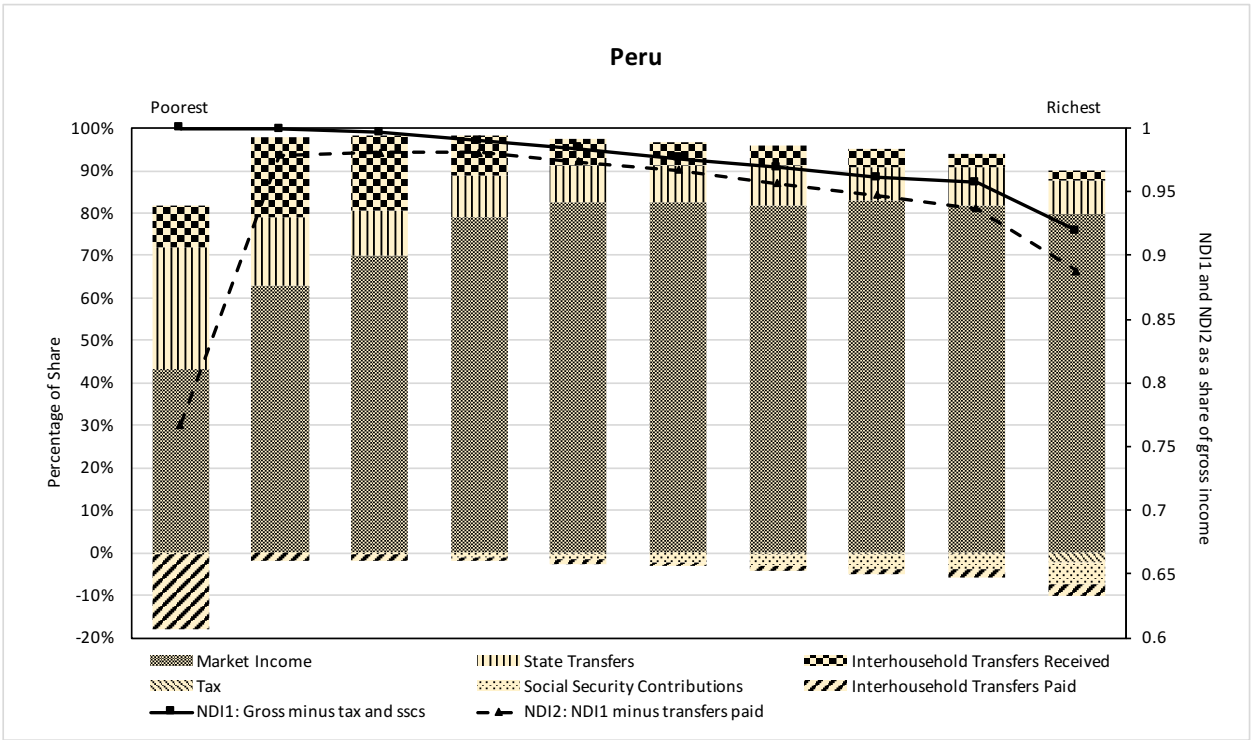
The effects on poverty and inequality comparisons will depend on where the remitting and receiving households are placed in the overall distributions – the remitters may be low income in the destination country but receiving households may be in the middle to higher parts of the country of origin (economic migrants tend to be less poor in their original country). But similar problems may occur with familial inter-household transfers within countries, which may be pro-poor or not, and which may increase or decrease the overall dispersion of net incomes and thus inequality measures.

Figure 4. Per capita income across decile groups

a). China, Peru and Dominican Republic

[7] See Cowell, F. A. (2000). Measurement of inequality. *Handbook of income distribution*, 1, 87-166. for discussion


China
Poorest
Richest
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
-10%
-20%
Percentage of Share
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
NDI1 and NDI2 as a share of gross income
Market Income
State Transfers
Interhousehold Transfers Received
Tax
Social Security Contributions
Interhousehold Transfers Paid
NDI1: Gross minus tax and sscs
NDI2: NDI1 minus transfers paid


Peru
Poorest
Richest
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
-10%
-20%
Percentage of Share
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0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
NDI1 and NDI2 as a share of gross income
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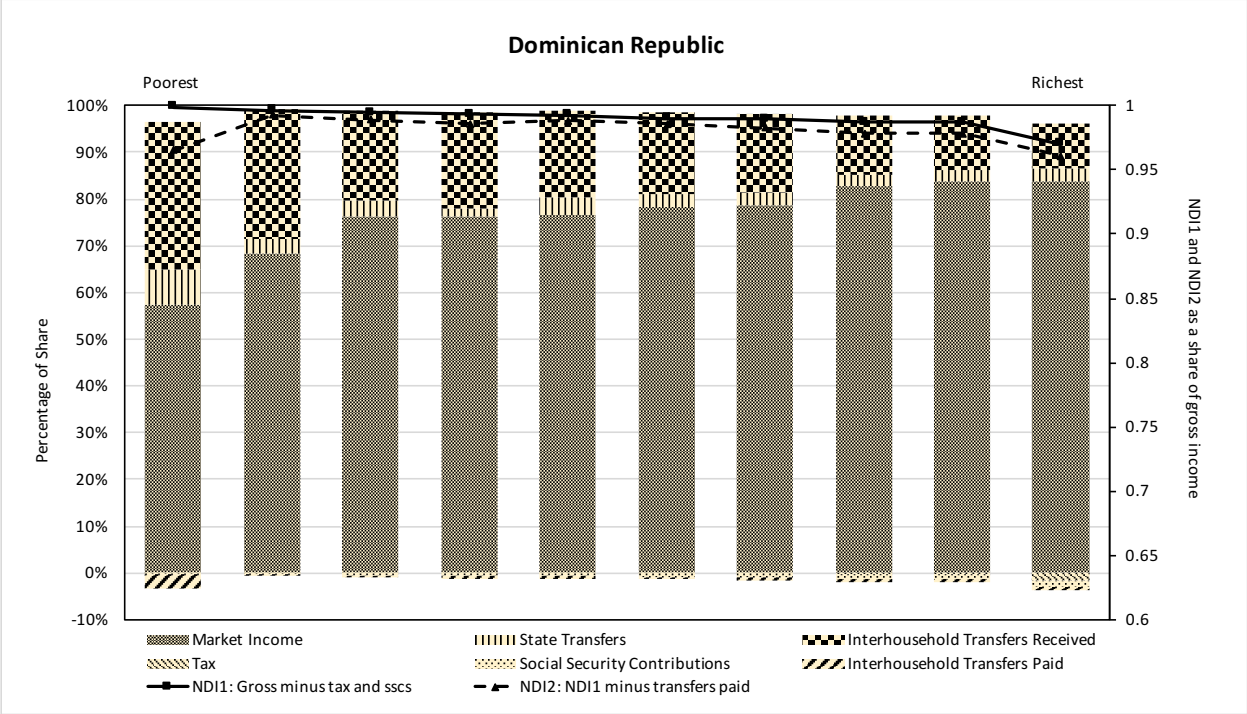
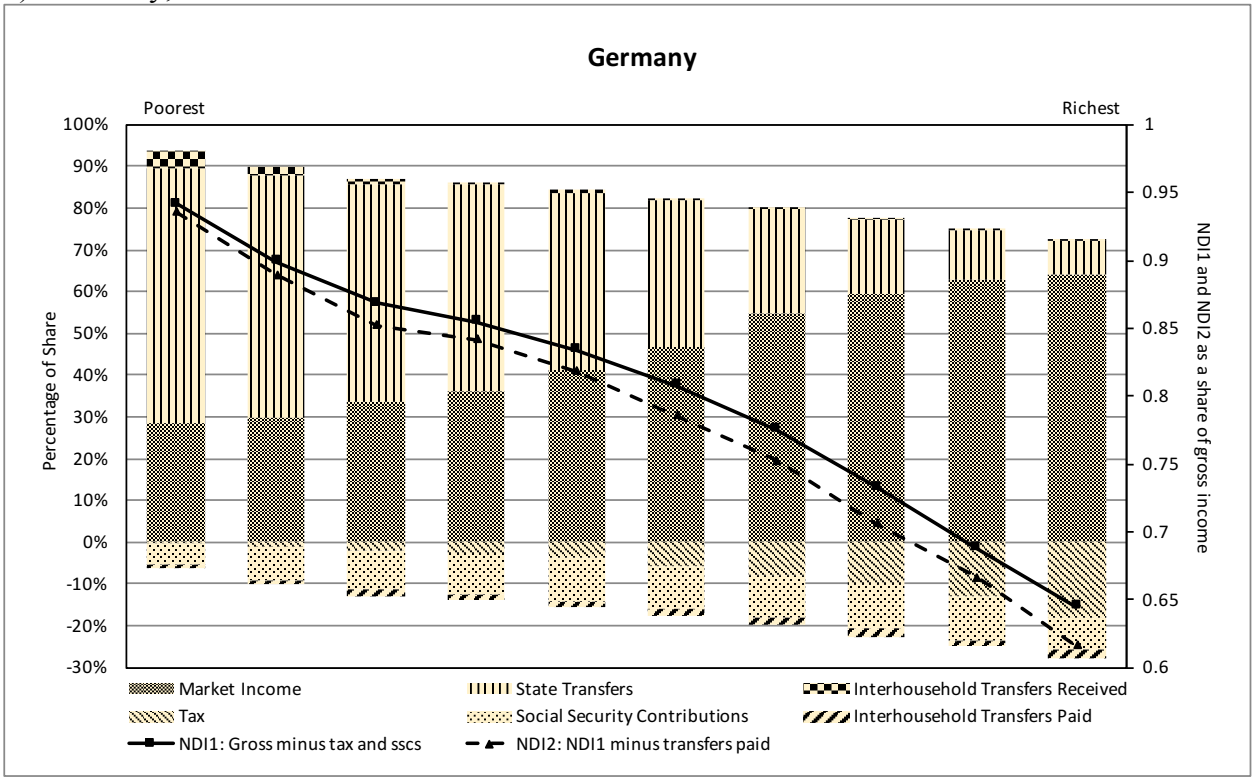
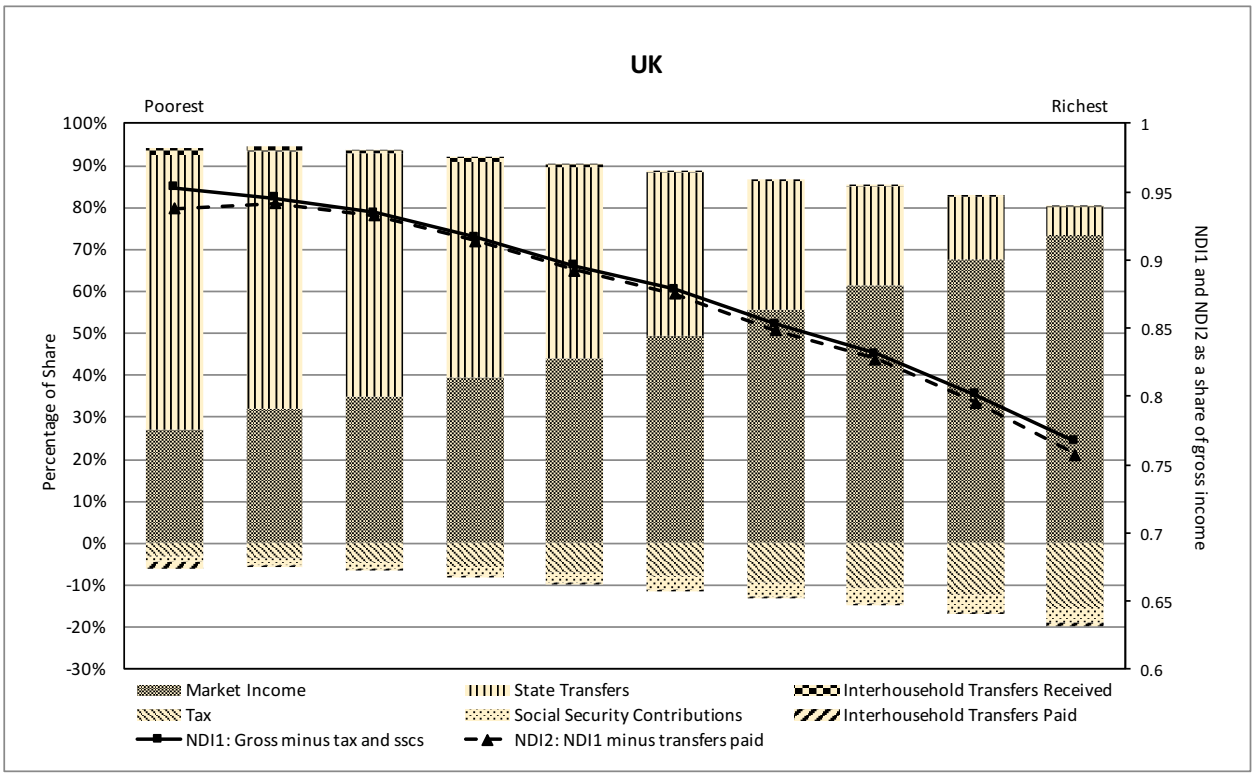
NDI1: Gross minus tax and sscs
NDI2: NDI1 minus transfers paid

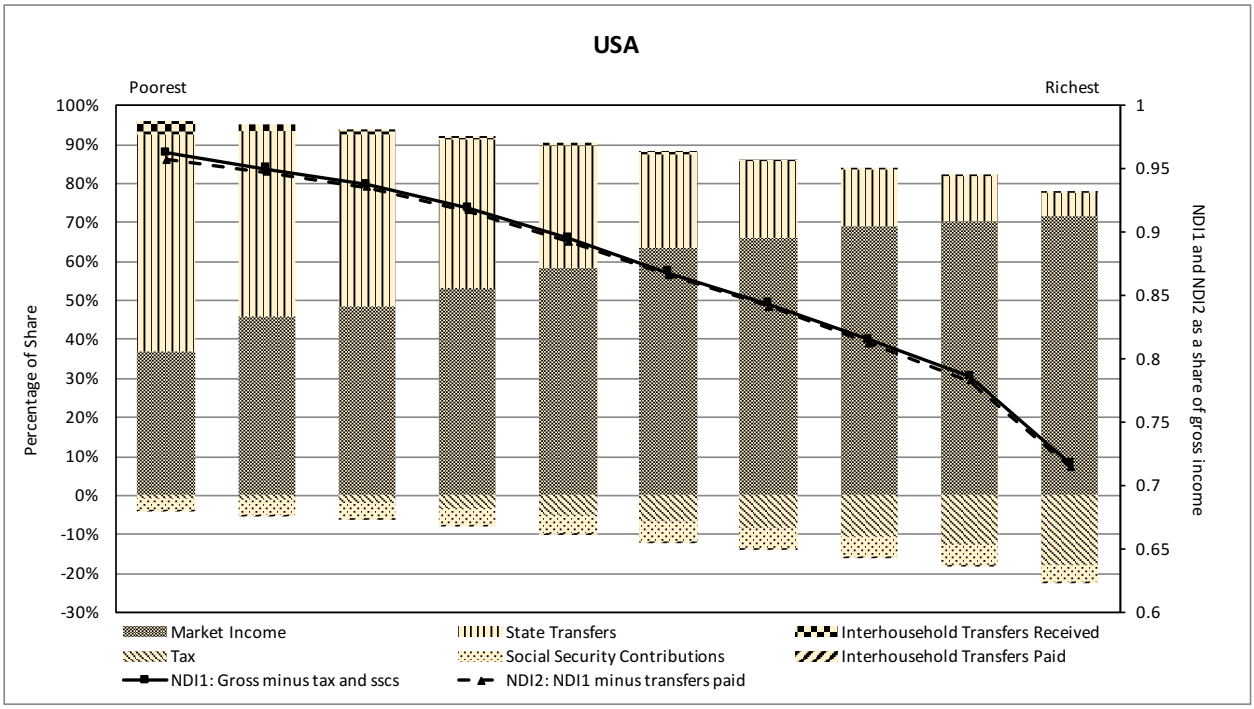


Source: Authors' Calculations from LIS

b). Germany, UK and USA







Source: Authors' Calculations from LIS

Figure 4 shows stacked bars for each decile of gross income by income component for each of the six countries we consider. Note that household income has been equivalised using a simple per-capita approach to allow consistent ranking and to obtain deciles. We graph the differences in disposable income as lines for both NDI1 and NDI2.

In China, we observe a nontrivial share of resources is being transferred from the lowest income decile to assist people in other households on a per capita basis – on average, 13 percent of the gross income and larger than inflows of such transfers from other households, which is approximately 2 percent of the gross income. Surprisingly, across the remaining deciles of Chinese income distribution, we see that inflows from inter-household transfers do not differ greatly but that direct taxes and social transfers both appear to be regressive and thus cumulatively so. The Dominican Republic has large proportions of household income which go to the transfer inflow across all deciles – with average 11.5 percent of the total income, but such payments are progressive, with highest in the poorest decile at 32 percent compared to 9 percent for the richest[8]. Inter-household transfers paid however only appear to have an impact for the poorest decile, and reduce average gross income per capita in the bottom decile by 4 percent overall. A similar story is observed in Peru[9]. The proportion of per capita household income in Peru that includes private transfers received is five times greater among the poor than among the rich, with 11 percent in the bottom decile compared to 2 percent in the upper decile, which is progressive. Yet, approximately 20 percent of the average per capita household income is also accounted for by private transfers paid out in the bottom decile, which is five times greater than the average transfers out of the top decile. The combined impact of receiving and paying inter-household transfers is thus neutral over the distribution.

Turning to consider the high income countries, inter-household transfers received and paid share relatively small proportions of the full household income as shown earlier in the national profiles. The bottom income deciles in the three industrial nations receive the biggest share of inter-household transfers. Amongst the poorest group, in Germany, the private transfers received amount to 4.8 percent of the full income, as compared to a bit under 4 percent in the USA and only 1.9 percent in the UK. The patterns of private transfer paid across these three nations are quite different. The flow of economic resources between households in the USA is scarce. The transfers paid out from the poorest decile in the UK amount to 2 percent of total household income, as compared with a bit under 3 percent in Germany's richest decile.

In summary, when we consider the two lines displaying NDI1 and NDI2 in Figures 4a and 4b, they diverge in a U-shaped profile across the distribution – with most in the bottom and

[8] This may be due to cross-national remittances. We will discuss international remittances in next section.
[9] There is large number of negative values in the reporting of market income in the Peru survey data. We have adjusted market income to zero in these cases and re-computed decile values. Interpretation of results must bear in mind this particular attribute of Peruvian data for the bottom decile.

upper spectrum for China, the Dominican Republic, Peru, and the UK. The pattern in which the divergence in the lowest decile is greater than in the richest group in these four countries suggests that the lowest decile is the most influenced group when taking into account the inter-household transfers paid across these four countries. For Germany, however, the gap between the two income lines gradually widens from the lower to upper spectrum. The new net disposable income corresponds (NDI2) to 62 percent of the gross income as compared to 65 percent with regard to the original disposable income (NDI1).

What is the effect on overall measures of inequality? We use the Gini coefficient to measure inequality of disposable income across the six countries that we examined, with 0 meaning perfect equality and 1 indicating severe inequality. In order to better reflect inequality change within each country, we also calculate the Gini point change as the base. Table 2 shows the results for Gini coefficients for each country using NDI1 and NDI2.

Table 2. Gini coefficients by country

	NDI1	NDI2	Change in Inequality	Score difference (NDI2-NDI1)	Percent difference (NDI2-NDI1)/NDI1
China	0.482	0.487	+	<0.005	1.04%
Peru	0.514	0.517	+	<0.003	0.58%
DR	0.534	0.535	+	<0.001	0.19%
Germany	0.356	0.360	+	<0.004	1.12%
UK	0.388	0.388	+	<0.0001	--
USA	0.415	0.416	+	<0.001	0.24%

Source: Authors' Calculations from LIS

Table 3. Percentile ratios of national distribution by country

	$10^{th}/50^{th}$ percentile ratio (%)			$90^{th}/50^{th}$ percentile ratio (%)		
	NDI1	NDI2	Difference	NDI1	NDI2	Difference
China	0.253	0.247	- 0.006	3.146	3.171	+0.025
Peru	0.132	0.130	- 0.002	3.068	3.075	+0.007
DR	0.266	0.268	+0.002	3.381	3.407	+0.026
Germany	0.408	0.408	0.000	2.198	2.208	+0.010
UK	0.413	0.413	0.000	2.360	2.352	- 0.008
USA	0.298	0.298	0.000	2.460	2.464	+0.004

Source: Authors' Calculations from LIS

A story presents in Table 2 that there is an overall increase in inequality across the six countries when introducing a new version of net disposable income that subtracts private transfer outflow. In particular, the levels of inequality in the three middle-income countries are higher than the ones in the three high-income nations. In terms of income after tax and social security contribution, the inequality in DR is the highest (.534), followed by Peru (.514), and the level of inequality in Germany is the lowest (.356) across these countries, while China has the lowest inequality among the three middle-income countries. That said, China experiences the largest change in Gini point difference and growing inequality when taking inter-household transfers into account. Similarly, such transfer outflow increases inequality in Germany by around 0.4 in the Gini score, resulting in the new inequality of disposable income (.360), through which the growth of inequality is around 1.12 percent.

In a further step, we are interested in detecting patterns of bottom and top halves of income distribution within each country, in hopes of examining whether the top group or the bottom end drives the inequality most and seeing which groups are affected most by the inter-household transfer flows. In Table 3, we calculate the ratios between the 10th percentile and the 50th percentile, as well as between the 90th percentile and the 50th percentile, by using the original and revised net disposable income definition. Across the two disposable income measures, the overall picture indicates that the middle-income nations we examined have more severe income inequality than the three industrial counties.

When looking at the economic gap between the bottom and the median income households for the first measure of disposable income (NDI1), income of the poorest Chinese households accounts for 25.3 percent of that of the median income households, slightly lower than that in DR (26.6 percent). In contrast, income of Peruvian households in the bottom tier of income distribution only equals 13.2 percent of that of the median income households; across the six countries, Peru is the most unequal in terms of the bottom half of income distribution. In the high-income countries, the bottom groups' income accounts for 40.8 percent of that in median income households in Germany, 41.3 percent in UK, and 29.8 percent in the United States. Turning to the newly proposed definition of disposable income (NDI2), the ratios in the three developed nations remain unchanged, while new net disposable income lowers inequality for the bottom half of distribution in the DR. This might be because the large portion of remittances that the poorest receive compensates their payments out. Not surprisingly, the poorest households in both China and Peru are negatively affected by introducing the new net disposable income.

Income in the bottom group of Chinese households is equal to only 24.7 percent of that in median income households, decreasing by 0.6 percentage points, and the ratio of poorest to median households in Peru decreases to 13 percent.

In terms of the top tier of income distribution, an introduction of new net disposable income further strengthens the ability to secure income for the richest in these countries, except the UK, in which equality is achieved, causing the ratio of rich to median-income households to decrease to 23.5 percent. The top halves of income distributions in China and Peru also witness increases in their ratios, with 317 percent and 308 percent, respectively, compared to 221 percent in Germany and 246 percent in the US. Of all the countries, the most unequal distribution exists in DR's top half group. Income of the affluent households in DR is over 340 percent of that in median-income households. Given the decreasing inequality in the bottom half group in DR, the income inequality in DR is more likely being driven by the higher end of distribution. Within all these countries, inter-household transfer flows affect middle-income countries the most, especially the lowest income group in China and Peru. The overall inequalities between the poor and the rich are widening in all these countries, with the UK having the mildest effect.

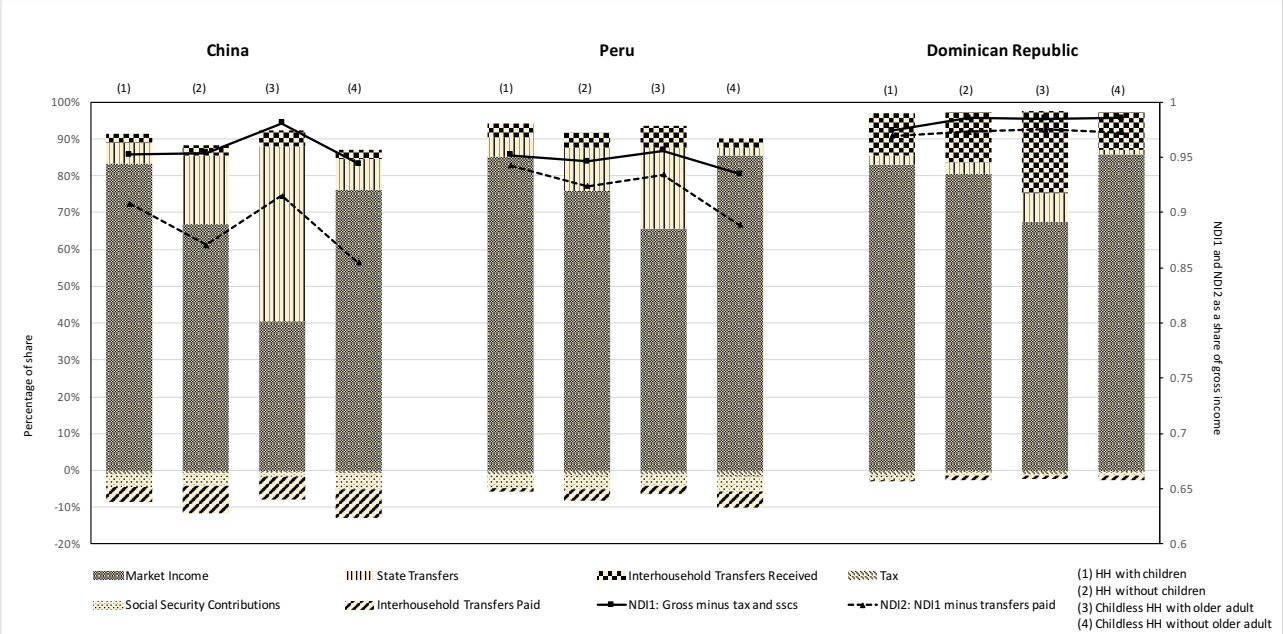
V. Differences in Comparison of Subgroups

Table 4. Population size of household with/without children by country
(Numbers in Thousands)

Country (Year)	Child aged 17 or younger	Child aged over 17	HH with Children	Childless HH
	%/N	*%/N*	*%/N*	*%/N*
Middle-Income Nations				
China (02)	22.7% *(291,001)*	77.3% *(993,303)*	59.8% *(211,916)*	40.2% *(142,500)*
Peru (13)	32.01% *(9,992)*	67.99% *(21,223)*	60.82% *(4,869)*	39.18% *(3,317)*
Dominican Republic (07)	39.59% *(3,703)*	60.41% *(5,651)*	65.88% *(1,679)*	34.12% *(870)*
High-Income Nations				
Germany (10)	16.32% *(13,403)*	83.68% *(68,698)*	21.89% *(8,929)*	78.11% *(31,869)*
United Kingdom (10)	21.03% *(12,835)*	78.97% *(48,206)*	28.79% *(7,674)*	71.21% *(18,979)*
United States (10)	24.47% *(74,916)*	75.53% *(231,194)*	32.80% *(38,946)*	67.20% *(79,803)*

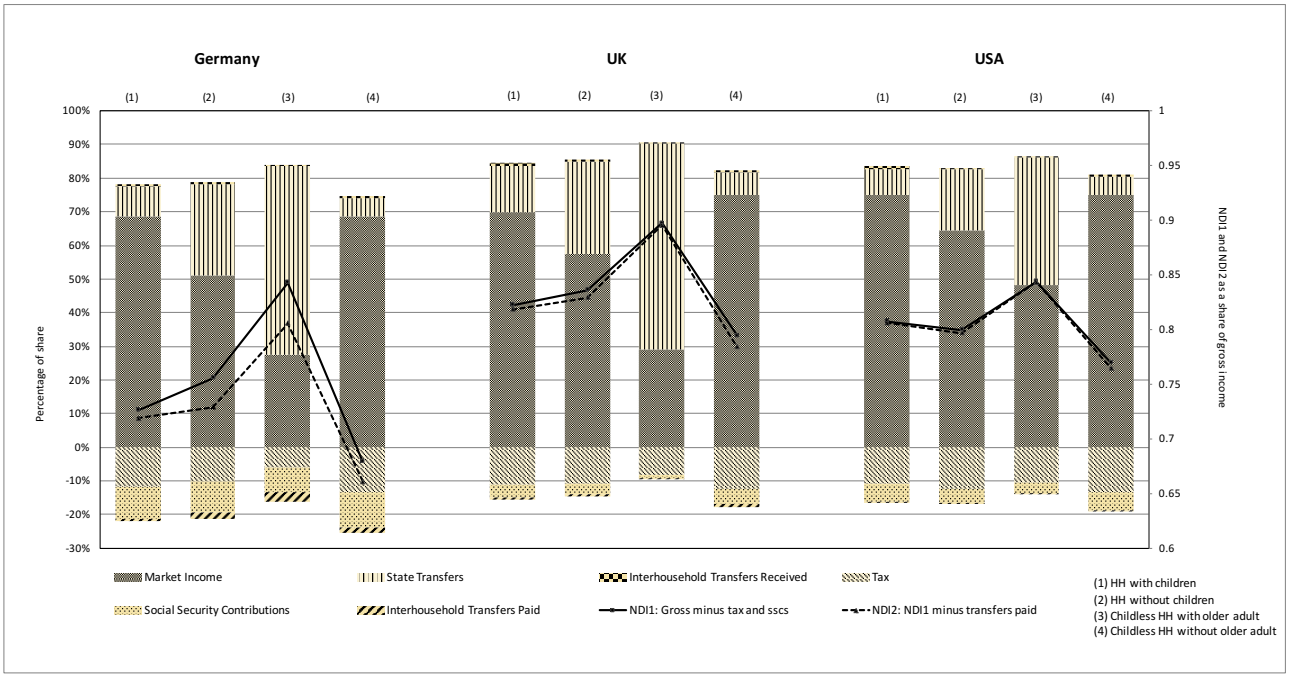
Source: Authors' calculations from LIS; Data are weighted. HH=household

Figure 5. Income components and gross incomes between household with/without children and childless household with/without older adults[10] in middle-income countries



Source: Authors' Calculations from LIS; HH=household

Figure 6. Income components and gross incomes between household with/without children and childless household with/without older adults in high-income countries



Source: Authors' Calculations from LIS; HH=household

[10] Older adults are defined as people aged 60 and over.

As we mentioned earlier in the paper, household members may be separated due to various causes, such as migration to other areas or abroad, failed marriage situations, or new households formed by adult children (Witoelar, 2005). New migrants may leave children behind and move to a better place to earn a better life so that they can afford their children's educations and other necessities. Also, nonresidential parents' obligations to offer financial assistance for the children's development is the other source of inter-household monetary exchange (Hofferth, Forry, & Peters, 2010). Divorced adults are expected to take responsibility for improving their children's well-being by paying regular financial support (Witoelar, 2005).

From another perspective, researchers illustrate that exchanging monetary transfers for transfers of time and care is also a strong and evident motive for intergenerational transfers (Cox and Rank, 1992; Koh and MacDonald, 2006). Thus, it is plausible that older parents are willing to make transfers to their children in the hope of obtaining care and other support from children later in their lives. Also, it is more likely for childless adults to provide financial assistance as gift giving to households with school-aged children (Gauthier, Chu, & Tuljapurkar, 2006). We expect the amount of private transfers paid out from childless households would be far greater than inter-household transfers paid out from households with children.

It is reported that the values of cash transfers for child support in the UK gradually increased between 1995 and 2004 by roughly 25 percent, but the exact private transfers as a portion of receiving parents' total income decreased by over 30 percent. On average, German households received $180 in child support in 2000. In the US, the amount of payments for child support rose over time, from $209 in 1994 to $330 in 2004. That being said, it is also documented that private transfers between households are not encouraged in certain nations, including the UK and the USA (OECD Family Database, 2010).

Figure 5 and Figure 6 describe income components as gross income in households with children and without children across six countries[11], as shown in the first two columns within each country. Because we are also interested in how a childless household's welfare is affected by the presence of elders in the household, we further graph two columns demonstrating trends in childless households with or without older adults. Overall, state transfers occupy larger portions of income in households without children across six countries, accounting for 21.3 percent in China, 12.7 percent in Peru, and 3 percent in the DR, compared to more than 22

[11] Households with children are defined as the presence of at least one child aged 17 or younger within the household examined

percent across three high-income countries. The tax burden in three middle-income countries ranges from 0.6 percent to 1.5 percent, compared to a range of 12 percent to 15 percent in high-income countries. The private transfers paid out from the childless households as their total income are much higher than the transfers paid from households with children, ranging from 8.3 percent in China to 3.4 percent in Peru, 1.2 percent in the DR, and 2.5 percent in Germany, compared to 0.3 percent in the USA and 0.7 percent in the UK. In terms of the transfers received by households with children, the share of gross income ranges from 12 percent in the DR to 4 percent in Peru, and 2.9 percent in China, compared to between 0.7 percent and 1 percent across Germany, the UK, and the USA.

Columns 3 and 4 illustrate the results in more detail, taking the age of household members into account. In general, childless households without older adults across the countries examined struggle the most in their financial capacities when considering private transfers payment, except for Germany, where childless older people are more likely to make transfers to other households. This is consistent with documented studies, which we will discuss further when we look into the second subgroup, elderly households, in the next section.

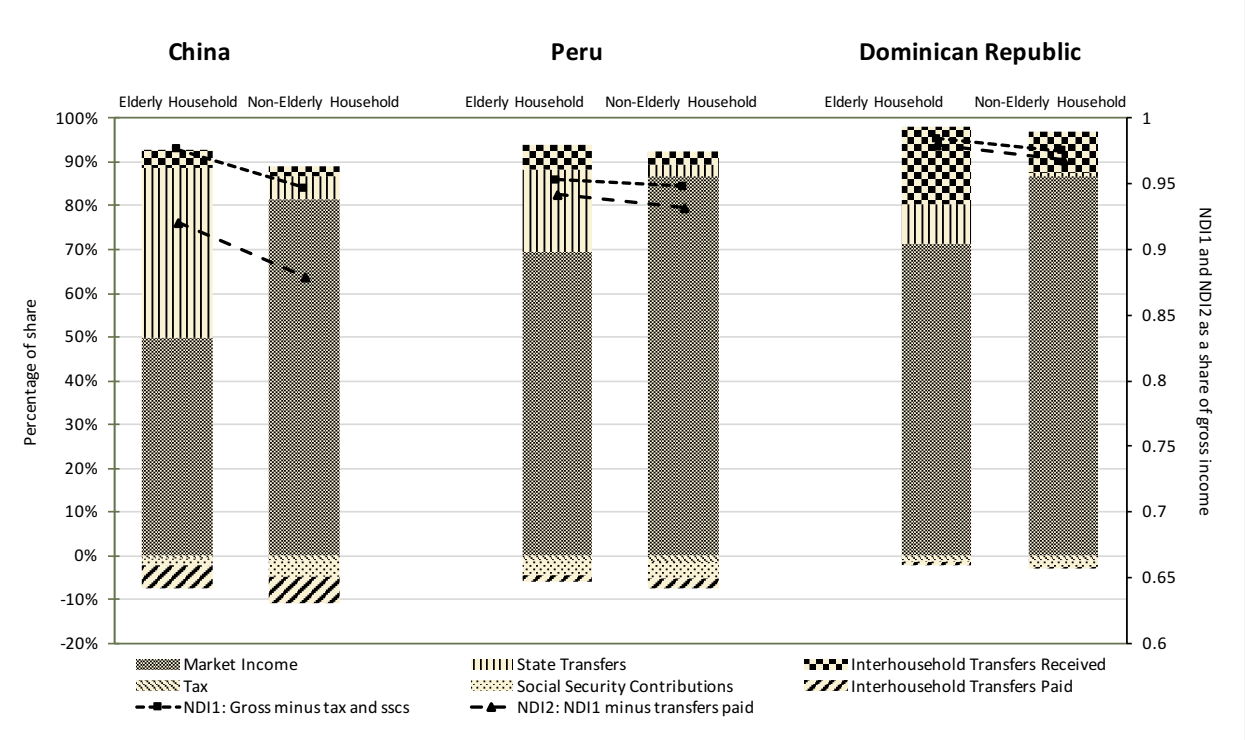
Turning to the two lines indicating NDI1 and NDI2 as gross income in Figure 5 and Figure 6, overall, across six countries, households without children are more affected by private transfers paid out than families with children. The largest gap between original disposable income and the new proposed disposable income as total income exists in Chinese childless households without older adults, with NDI1 representing 94 percent and NDI2 constituting 85 percent of income. The second most affected group, determined by subtracting private transfers from gross income, is German childless households with elders, with 84 percent of total income compared to the original 80 percent. Households without children in the remaining four countries also experience differences, from 0.3 percent to 2.5 percent, regarding net income as total when taking into account private transfers paid.

Table 5. Population size of elderly household and non-elderly household by country
(Numbers in Thousands)

Country (Year)	People aged 60 or over	People younger than 60	Elderly HH	Non-elder HH
	%/N	*%/N*	*%/N*	*%/N*
Middle-Income Nations				
China (02)	9.19% *(117,977)*	90.81% *(1,166,300)*	23.61% *(83,690)*	76.39% *(270,727)*
Peru (13)	13.75% *(4,292)*	86.25% *(26,923)*	38.71% *(3,099)*	61.29% *(4,907)*
Dominican Republic (07)	8.71% *(815)*	91.29% *(8,539)*	24.60% *(627)*	75.40% *(1,922)*
High-Income Nations				
Germany (10)	29.55% *(24,258)*	70.45% *(57,842)*	43.06% *(17,568)*	56.94% *(23,230)*
United Kingdom (10)	22.22% *(13,562)*	77.78% *(47,479)*	36.29% *(9,672)*	63.71% *(16,982)*
United States (10)	18.49% *(56,609)*	81.51% *(249,501)*	34.20% *(40,607)*	65.80% *(78,141)*

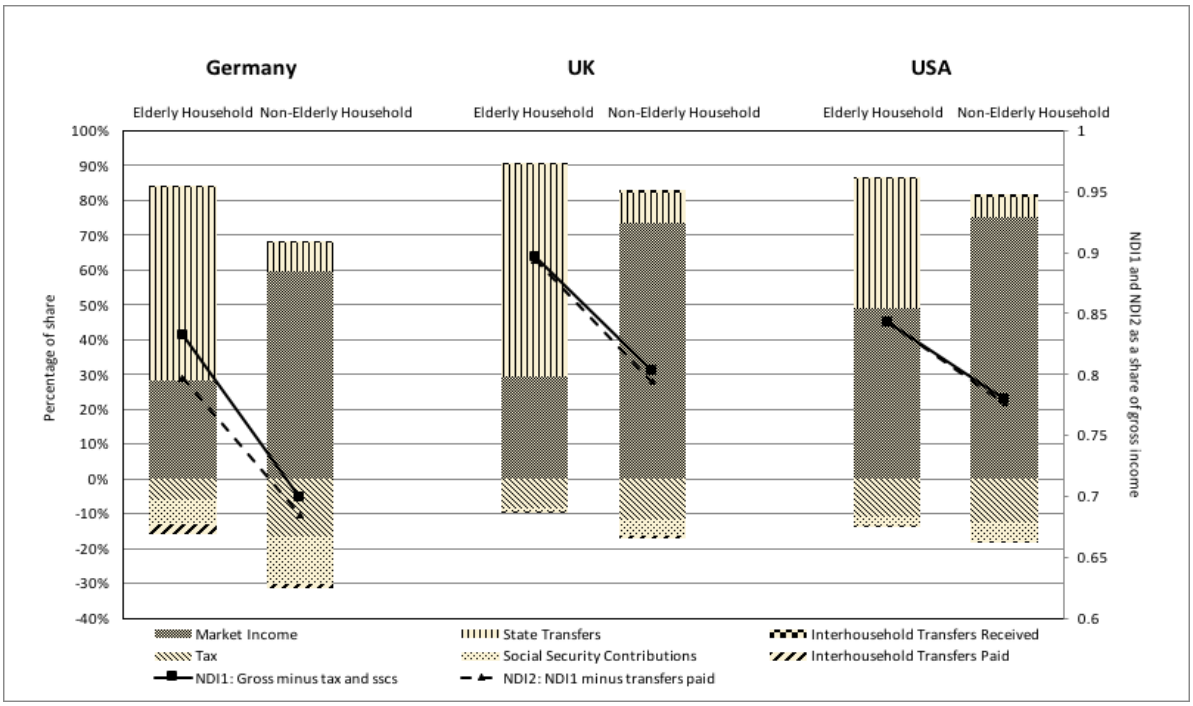
Source: Authors' calculations from the LIS; Data are weighted. HH=household

Figure 7. Income components and gross incomes between household with and without elders in middle-income countries



Source: Authors' Calculations from LIS

Figure 8. Income components and gross incomes between household with and without elders in high-income countries



Source: Authors' Calculations from LIS

An overwhelming amount of literature suggests that providing financial support to elders is widely becoming the case in most areas in Asia and even in certain regions in developed world (Kohil & Künemund, 2003). Although these monetary flows could represent mutual support between generations, the offering of time or materials by elders reinforces the possibility of their receiving financial support from their adult children (Künemund & Rein, 1999).

In recent decades, a great deal of literature has documented that the number of older adults co-residing with adult children has been declining (Giang & Pfau, 2007), which may gradually weaken their perception of societal value and their circle of social networks. However, the obligation that younger adults should provide material support to their elders has been further strengthened under the pressure of societal norms in most developing economies. Working-age people take the responsibility for their needy elders in terms of health care or other issues in their economic lives. Furthermore, if they lack accumulation of wealth, members of the older generation may become vulnerable, especially if the public welfare system is not well-developed. Private material and practical supports from other households become a crucial protective factor for them to achieve self-efficacy (Becker, 1974). Nguyen, Liu and Booth (2012) empirically examined the consequence of motivated transfers, suggesting that monetary transfers tend to

flow from working adults to their elderly parents as a complement to public welfare systems and that, as such, adult children's financial contribution to older generations has a significant impact on reducing health problems. Private financial transfers between households play a substantial role in helping elder households cope with risk and to prosper in most developing regions (Cox, 2002). Accordingly, we can assume that households without older adults may be more generous in giving financial assistance than elderly households across the countries of interest.

Giles, Wang, and Zhao (2010) reported per capita net transfers elderly households received between 2000 –2003, regardless of co-residence with children, was 500–700 RMB (79–110 U.S. dollars). Older adults frequently receive financial support from their children in China. Using the China Health and Retirement Longitudinal Study, Chan (2013) found that average 44.5 percent of older adult households received transfers from their adult children. The mean amount of private transfers ranges from 2100 RMB (roughly 320 U.S. dollars) in undeveloped provinces to 4300 RMB (roughly 650 U.S. dollars) in more affluent provinces. Considering such transfers as a percentage of gross income, older adult households in poorer areas have 67 percent, compared to 59 percent in developed areas.

In Figure 7, across three middle-income nations, we observe a relatively significant proportion of inter-household transfers received by older adult households[12], which do not exist in the three high-income countries shown in Figure 8. This may be attributable to the relatively well-developed public transfer systems for older adults in Western countries; conversely, older adults may be more likely to coreside with children and lean more on their children's financial support. In general, households with older adults in all six countries receive a larger proportion of state transfers (determined as a percentage of total income) than non-older adult households; these figures were 42 percent in China, 20 percent in Peru, and 9 percent in DR, compared to over 43 percent across the US, the UK, and Germany. When looking at inter-household transfer received as a percent of total income in older adult households, we observe a range of 18 percent in DR, 6 percent in Peru, and 4 percent in China, compared to 0.1 to 0.3 percent in the United States, the United Kingdom, and Germany. Non-older adult households in DR also received a large portion of transfers as income (9.7 percent), compared to approximately 3 percent in both Peru and China. In terms of transfers paid out as income, non-older adult households in all three middle-income nations contributed more than the older adult households, though China stood out at 6.7 percent for older adult households and 5.6 percent for non-older adult households.

[12] An elderly household is defined as a household with at least one adult aged 60 or older.

Conversely, older adult households in Germany transferred larger portions than their non-older adult ones (3.4 percent in older adult households).

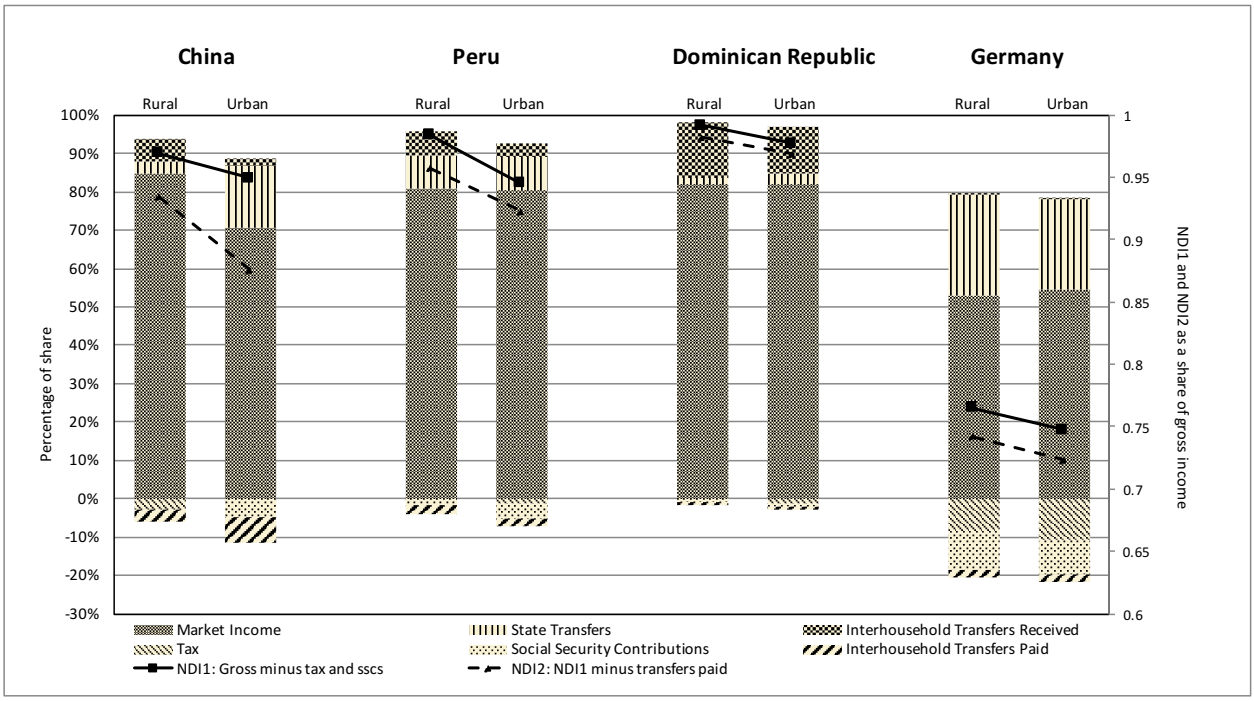
Amongst three middle-income countries, the portions of gross income as inter-household transfers paid are largest in China, especially in Chinese households without older adults. After subtracting private transfer outflow, the new net disposable income only constitutes 88 percent of the total income, compared to the original 95 percent. Conversely, German older adults' private transfers outbound as income is larger than in households without elderly members. When considering such transfers from the disposable income, the new net income as a share decreases from 83.3 percent to 79.7 percent. Across Peru, the DR, the UK, and the US, relatively small declines in the percent of income ranges, from 0.5 percent to 1 percent, are found in households without elderly members.

Table 6. Population size of rural household and urban household by country
(Numbers in Thousands)

Country (Year)	People living in rural area	People living in urban area	Rural HH	Urban HH
	%/N	*%/N*	*%/N*	*%/N*
Middle-Income Nations				
China (02)	64.18% *(460,092)*	35.82% *(824,211)*	57.03% *(202,122)*	42.97% *(152,295)*
Peru (13)	21.48% *(6,706)*	78.52% *(24,510)*	21.05% *(1,685,452)*	78.95% *(6,320,533)*
Dominican Republic (07)	32.85% *(3,072)*	67.15% *(6,281)*	32.42% *(826)*	67.58% *(1,723)*
High-Income Nations				
Germany (10)	21.32% *(17,503)*	78.68% *(64,598)*	21.30% *(8,691)*	78.70% *(32,107)*

Source: Authors' calculations from LIS; Data are weighted. HH=household

Figure 9. Income components and gross incomes between rural and urban households



Note: Data from the UK and the USA not shown as urban–rural classifications are unavailable
Source: Authors' Calculations from LIS

With the increase in urbanization and the large-scale transformation of rural identities into city identities, a large number of farm workers have been moving to the cities, seeking improvement in their economic conditions by joining the urban labor force. The research (Paulson, 2002) suggests that such workers are more likely to migrate to places that are more affluent and where they can cope with deprivations, especially among those who are poor or who live in rural areas without public support. However, although these adults are the breadwinners in their households, they are not permanent residents in the urban areas but rather uncontrollable temporary residents. Thus, their children or older parents remain in rural areas, which inevitably lead to an inter-household financial flow to support their children's schooling and other extended family members' needs.

Due to a lack of formal support from the existing system, people in rural areas have to rely on remittances or gifts from other households to make ends meet (Lucas & Stark, 1985; Rosenzweig & Stark, 1989) and are often at a higher risk of becoming vulnerable than their urban counterparts. However, income in these less developed areas might be underreported, especially in low-income families with large portions of total income from government and private transfers (Meyer & Sullivan, 2012). By analyzing household survey data, Alvi and Dendir (2009) documented that a large number of transfers in urban Ethiopia occur among

kinship nets or friends and that this private financial assistance works better to respond to deprivation than other forms of support. Using a randomized experimental study, Dupas, Keats and Robinson (2015) found that households in rural Kenya tend to receive regular financial support from adult children or relatives who reside outside of the village. We assume urban households would perform much well than their rural counterparts in terms of transferring economic resources out. Also, it is documented that the proportion of urban older adults in terms of non-involvement in such informal transfers are 11 percent higher than the rural elderly (Lee & Xiao, 1998).

Rural households are supposed to be larger recipients of inter-household transfers (Lee & Xiao, 1998). Moreover, in rural China, pensions only accounted for 2 percent of total household income, which is much smaller than the proportion in urban settings, where there is greater reliance on private and regular transfers from other family members. Informal transfers as a median percentage of gross income in urban Peruvian households is 8 percent, larger than the proportion in rural households (Prince et al., 2016). On average, such transfers received comprised 4 percent of household income in urban Peru (Cox & Jimenez, 1992). It is acknowledged that Dominican Republic is one of the largest remittance receivers in the Caribbean; its receiving remittance made up 11.8 percent of GDP on average in 2007 (CEML, 2010). Also, in the Dominican Republic, agricultural productivity and other service activities constitute only a small proportion of rural income, whereas approximately 55 percent of rural income comes from government transfers or private transfers between households (World Bank, 2001). Furthermore, Kimhi (2010) documented that domestic remittances in DR constitute a relatively small percentage of income, whereas international remittances account for around 6 percent of the country's per capita income. In highly developed countries such as Germany, urban and rural poverty are uncommon, there is less inequality, and domestic remittance flows are not common. As one of the largest remitting countries in Europe, the percentage of German remittance to non-European Union nations as total outflows reached 67 percent in 2010 (Eurostat, 2015).

Figure 9 summarizes the percentage of such transfers in the countries examined. Of the three middle-income countries, Chinese urban households had the lowest percentage of gross income from financial support (2 percent), yet, these households transferred out the highest percentage (7 percent). On average, Chinese rural households receive 6 percent of income from inter-household transfers, which is what we expected to find. Peruvian households in both rural

and urban areas transfer out a relatively small percentage of income, whereas rural Peruvians receive an average of 6.5 percent of income from private transfers and such transfers account over 4 percent of household income in urban Peru. A large proportion of private transfers received can be observed in both rural and urban settings in the Dominican Republic (14.8 percent and 12.7 percent, respectively), and this proportion is larger than inter-household outbound transfers. This can be explained by the significant international remittances sent by Dominicans living overseas, which we have already discussed. In contrast, the private transfers received in German households are quite small, namely 2 percent of total transfers sent from Germany to non-German nations.

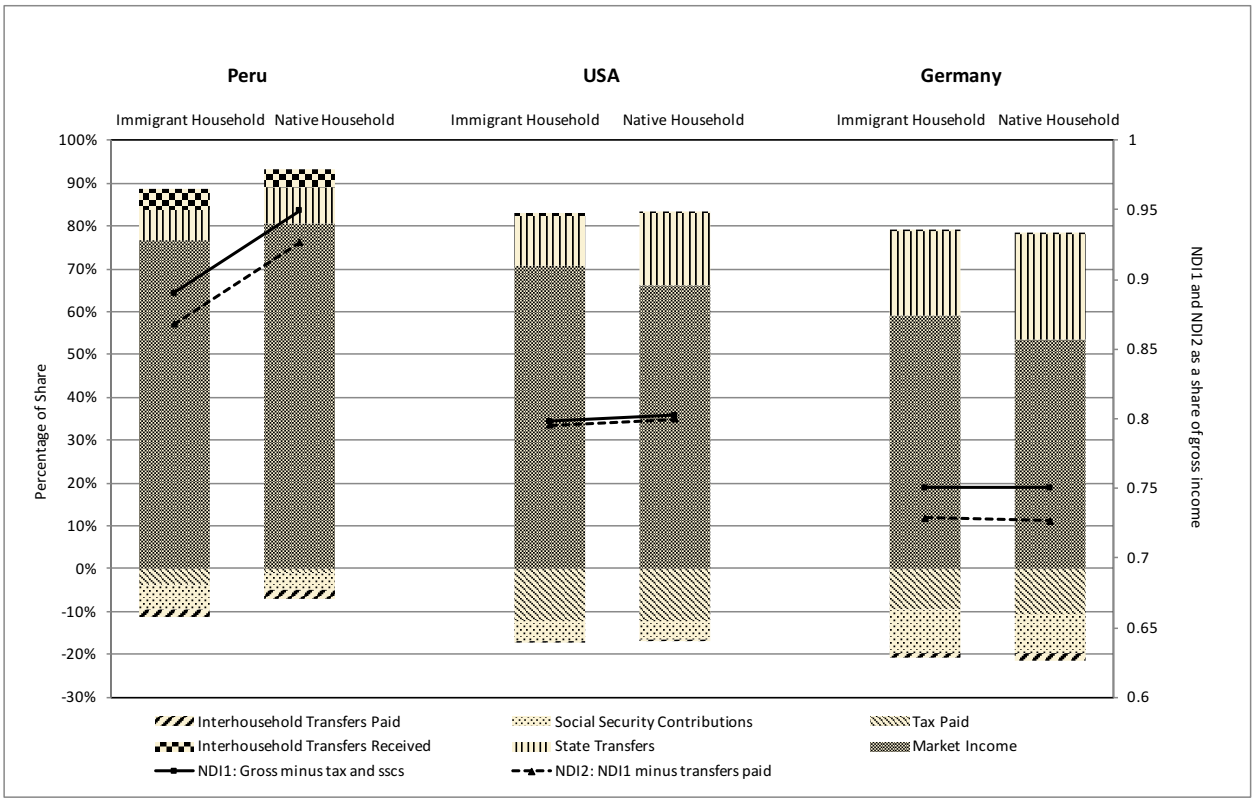
When we look at two versions of net disposable income as total income, two income lines in each of three countries (Peru, the DR, and Germany) nearly parallel each other. The percentage point differences are between 1 percent and 2.5 percent across these three nations. Chinese urban households have a relative 7 percent decrease in the share of net disposable income if we consider their inter-household transfer outflows, with 87.5 percent compared to 95 percent of the original net income. In Chinese rural areas, the decrease is smaller, with a 3 percentage point difference.

Table 7. Population size of immigrant household and native household by country
(Numbers in Thousands)

Country (Year)	Immigrants	Natives	Immigrant HH	Native HH
	%/N	*%/N*	*%/N*	*%/N*
Middle-Income Nations				
Peru (13)	0.26% *(80)*	99.74% *(31,136)*	0.78% *(62)*	99.22% *(7,944)*
High-Income Nations				
Germany (10)	12.18% *(9,999)*	87.82% *(72,102)*	14.35% *(5,856)*	85.65% *(34,941)*
United States (10)	13.74% *(42,061)*	86.26% *(264,049)*	18.53% *(22,000)*	81.47% *(96,748)*

Source: Authors' calculations from LIS; Data are weighted. HH=household

Figure 10. Income components and gross incomes between immigrant and native household



Source: Authors' Calculations from LIS

Alem and Andersson (2015) empirically documented that international remittances boost monetary flows between households. Often being regarded as "the land of opportunity," the U.S. attracts an overwhelmingly large number of international immigrants. Most of the immigrants tend to seek a better future and in the hope of generating more savings to help extended family members break the cycle of hardships in their home countries. Yang and Choi (2007) also found that the more a household's income decreased, the more it received remittances from overseas and that private transfers from overseas migrants play a crucial role in helping recipient households prosper. Table 7 shows the size of immigrant and national populations. Approximately 13 percent of the total U.S. population consists of immigrants. Similarly, Germany attracts large number of immigrants, which account for 12 percent of the national population.

However, one could argue that, to some extent, international remittance comes at a high cost, and only those immigrants at the upper end of income distribution can actually make these transfers happen. Research indicates that international monetary transfers significantly increase income inequality for recipient countries such as Peru (Paerregaard, 2015), Indonesia (Adams &

Cuecuecha, 2010) and the Philippines (Rodriguez, 1998). To date, the trend in the flow of international transfers is still ambiguous.

Recall the overall picture shown in Figure 1. We discussed the income components as a percentage of household gross income for each nation. The domain of informal transfers between households accounts for nearly 12 percent of the total household income in Dominican Republic. We assume that the large amount of private transfers received may come from international remittance. It has been well documented that, being a country with high rates of transition, the Dominican Republic boosts its economy mainly through international transfers from people living abroad and has entered the top group of cross-national remittance receivers (Duany, 2010; Orozco, 2004; Weitz, 2012). Yet, due to the unavailability of data about immigrants from the Dominican Republic, we could not explore this assumption any further in this paper.

Not surprisingly, in less developed countries, remittances have grown in terms of total economy share, increasing from less than 1 percent of GDP in 1995 to 1.75 percent of GDP in 2010 (World Bank, Fact book, 2011). Understandably, in developing countries, people from low-income backgrounds tend to migrate to affluent areas or head abroad for a better return on their labor. Compared to its outflows, Peru's remittances received stood out, accounting for 1.6 percent of GDP in 2010 (World Bank, 2012). Turing to the high-income nations, within the European Union's member countries, Germany is unique in terms of outbound remittance, sending over 17 percent of the EU's total remittance outflow (Obrzut, 2016). In 2010, Germany's remittance outflows were over $15 billion (0.5 percent GDP), whereas the United States' outbound remittance was approximately $52 billion – 0.4 percent of its GDP (World Bank, 2012). However, empirical research by Lowell and de la Garza (2000) revealed that immigrants in the United States share a modest proportion of income on remittance. Each 1 percent increase in immigrants' time in the USA is associated with a 2 percent decrease in the probability of sending money back to their respective countries of origin.

Based on the data available with nativity variables, only three countries are reported in Figure 10. The overall picture indicates that developing economies are more likely to lean on private transfers for immigrant and native households than developed countries[13]. This is consistent with the pattern we discussed regarding international remittance flows. Inter-household transfer inflows in immigrant households as percentage of gross income range from

[13] We use three variables (which are immigration status, citizenship, and country of birth) to define an immigrant household, which is a dichotomous variable where the sum of any of these variables is greater than zero across all members of the same household and are coded as a value of 1, otherwise are coded as 0.

approximately 0.07 percent in the USA and 0.04 percent in Germany to 5.5 percent in Peru. In terms of money sent overseas by immigrant households as percent of household incomes, the USA sends roughly 0.03 percent, Germany 1.3 percent, and Peru, with the largest share, 2.2 percent. Turning to national households, 4.3 percent of gross income in Peruvian domestic households was from transfer inflow. In addition, the amount sent out by German households was 2 percent of sending households.

It is interesting to see that NDI1 and NDI2 lines within each country are almost parallel. There are approximately 2.3 percentage point differences in terms of private transfers as income when taking into account the inter-household transfers outbound in both Peru and Germany. Additionally, immigrant households in Peru have a relatively small portion of disposable income compared to native Peruvian households. A small difference is observed in the US, with a 0.3 percent decrease when generating a new version of disposable income.

VI. Discussion and Conclusion:

To date, income measures included in welfare studies often do not subtract payments of inter-households transfers out of the sender households' net disposable income, which may, to some extent, make international comparisons of poverty and inequality problematic. In order to avoid "double counting at the aggregate level," in this paper, we deduct inter-household financial transfers from the sender households' disposable income and aim to explore the role played by inter-household transfers in the comparison of monetary welfare.

Based on the analyses of data from the Luxembourg Income Study, we investigate changes in patterns of household income distribution when the definition of disposable income varies between the exclusion or inclusion of inter-household transfers and further explore differences in inequality across six nations (China, Peru, Dominican Republic, Germany, UK and US) as well as among four subgroups (households with or without children, households with or without elderly; rural or urban households; immigrant or native households). We argue that a new net disposable income measure that subtracts inter-household transfers paid would more accurately capture comprehensive "material packages" for families to prosper and help to better identify whom social welfare policies should target.

We find that, first, inter-household financial transfer systems tend to be progressive in both Peru and the Dominican Republic, while such inter-household transfers, state transfers, and direct taxes all appear to be regressive in China, with the poor suffering more than the affluent

within the nation. Overall, there exist more well-developed social safety nets in the other three high-income nations. Second, it is interesting to note that both the original and proposed disposable income as a percentage share of gross income appear as an inverted "U" shape in three middle-income nations we examined. When comparing two different disposable income measures, we find that the degree of such divergence tends to be greater in the poorest group of the spectrum in China, Peru, and the Dominican Republic, which suggests that the poor in the three middle-income countries are more vulnerable to the introduction of our proposed net disposable income measure—subtracting private transfer outflows from households' disposable income—while in the three developed nations, the households at the top of the income spectrum are more affected. Third, the overall income inequalities across six countries increase with use of the new measure, mostly driven by the widening economic distances between median-income households and top-earner households in most of these countries as well as the increasing gaps that occur at the bottom halves of income distribution within China and Peru. Fourth, transfer payments are more prevalent in households without children than in households with children present among all the nations we examine except for the UK. Similarly, non-elderly households are more likely to transfer money out from their households than elderly households across countries, while German older adults tend to make more transfer payments out. Fifth, from the geographic aspect, Chinese urban households' transfer outflows as a percentage share are much larger than those of urban households in the rest of the countries. In addition, a nontrivial percentage of gross income comes from inter-household transfers in both Peru and Germany regardless of nativity. Financial transfer inflows are larger than outflows in less developed countries, while Germany stands out in terms of outbound financial transfers.

Considering inter-household transfer flows does make a big difference in the six countries that we examine, especially for the group of middle-income countries. Ignoring inter-household transfer flows misleads us in understanding poverty and inequality studies, especially cross-national comparisons, since less developed nations relatively heavily rely on such informal financial linkages. Also, in most developing economies, a lack of access to financial markets, the low efficiency of the labor market, and poorly developed social protection systems inevitably push large numbers of households that are at high risk of collapse below the poverty line, thereby exacerbating social inequality. Accordingly, private inter-household support networks become a promising way to help these households achieve a better life by providing mutual assistance in practical and material ways. In light of the overwhelming number of studies documenting the

effects of public transfers on households' income distribution, there is a need to study the role of private financial transfers due to the varying trajectories of such private financial support and the significant implications of this attention for disadvantaged populations' well-being.

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