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Measuring the Middle Class in Middle Income Countries

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Objective:

This research aims to compare different methods of measuring the middle class in middle-income countries. I compare income-based measures to socio-economic measures, using both per capita and equivalized incomes. First I calculate the size of the middle class using the different measures in six countries: India, South Africa, Peru, Colombia, Guatemala and Mexico. Next I explore whether a socio-economic measure of the middle class is significantly correlated with the income-based measure. I examine the differences across the measures and suggest that per-capita, income-based measures commonly used by international development institutions such as the World Bank, may be insufficient for meaningfully identifying the middle class in middle-income countries. Instead I advocate for the adoption of a hybrid measure, which uses absolute, equivalized income, education and occupation to assign households middle class status in middle-income countries.

I. Introduction

In the development literature, a growing middle class is often hailed as an indicator of healthy economic development and a shift away from poverty (Montgomery 2008). How safe are these middle-class citizens though from falling back into poverty? Ravallion (2010) suggests that although the middle classes, as defined by absolute incomes, are growing in developing countries, most members are still highly vulnerable and only marginally better off than their "poor" counterparts. Is income then, the best measure of middle class, if one hopes to categorize the middle class as a group that is shielded from the harsh realities of poverty?

In this predominantly descriptive analysis, I compare the size of the middle class across six countries using five distinct measures: three absolute income measures, one relative income measure and one socio-economic measure. For each measure, I calculate the percentage of the

working-age population that would fall into the middle class using a per-capita income and an equivalized income measure, yielding ten distinct middle-class measures for each country. Next I test the strength of the correlations between the income and socio-economic measures and question whether measures of the middle class based solely on per-capita income are truly capturing the desired population.

II. Methods for Measuring the Middle Class: A Review of the Literature

Economists tend to favor strictly income, consumption and/or wealth measures for identifying the middle class while sociologists often advocate for a socio-economic approach based on occupation and educational attainment. The question of whether to use absolute or relative income measures is also still currently under debate within cross-country, comparative literature in sociology and economics. Some scholars favor a relative approach for within country analysis, but deem absolute measures more suitable for cross-country comparisons when analyzing middle-income countries.

Relative Measures

Relative measures, such as the middle 60% of the income distribution or 75% to 125% of the median are helpful for identifying the middle class within high-income countries where median income falls far above an absolute poverty line.

However in middle-income countries, where GNI per capita falls between $1,000 and $12,000 USD, and Gini measures of inequality hover at or above 0.5, income distributions are heavily skewed to the right and median income levels often denote poor households on scales of absolute poverty. This makes cross-national comparison of the middle class in these countries more difficult using relative measures.

To deal with high levels of poverty and the skewed nature of the Indian income distribution, Vanneman and Dubey (2013) use a larger range of 75% to 200% of median household income to categorize the middle class. The tactic of using a larger income band around the median is useful when setting the lower bound of the middle class at just above subsistence or around $1.25 USD per day. However, if one hopes to identify as middle class only those who are substantially better off than the poor, this measure is not appropriate. For example, median annual equivalized income in India in 2004 was $894 (PPP) . A middle class defined as 75% to 200% of the median therefore would include those earning less than $2 (PPP) per day.

The middle class is meant to identify those who are "'comfortably' clear of being at-risk-of-poverty" (Atkinson and Brandolini, 2013). When the "middle 60%" of the income distribution are only marginally better off than the bottom 20% and fall below an absolute poverty line, this measure is less useful. The relative measure of the "middle 60%" also does not allow for size comparisons across countries or over time as the size is fixed at 60%.

Atkinson and Brandolini (2013), in their discussion of different approaches to measurement of the middle class, also point to the fact that the "middle 60%" and a band of 75% to 125% of the median may identify different groups. For instance, in the UK in 2004, they note that the "middle 60%" of the population actually had incomes in the range of 61% to 164 % percent of the median.

Hybrid Measures

In her cross-country comparison of the middle class in developing countries, Birdsall (2010) uses a hybrid approach, combining an absolute measure of $10 (2005 PPP) per day as the lower bound of the middle class and a relative measure of the 95th percentile of the income distribution for the upper bound. Although Birdsall (2010) places the middle-class floor at $10

(2005 PPP) per day, she admits that this selection is inherently arbitrary and on the high end of the spectrum. It should however, she claims, effectively net out those in the population that are highly vulnerable to falling back into poverty.

Absolute Measures

Ravallion (2010) uses strictly absolute measures to calculate the middle class in developing countries. The lower bound he sets at the world absolute poverty line of $2 (PPP) a day and for the upper bound, he uses the US poverty line. Ravallion (2010) suggests using the US poverty line as the upper bound for the middle class in developing countries based on the assumption that those who are middle class in developing countries would still be considered poor by US standards. Acknowledging that using the lower bound of $2 a day captures those who are only marginally better off than the poor and still highly vulnerable, Ravallion (2010) experiments with raising the lower bound to $9 (PPP) and notes a significant drop in the size of the middle class under the more narrow parameters. Banerjee and Duflo (2008) also point out that when measuring the middle class using the $2 (PPP) per day cut-off, there is not much difference between the middle class and the poor in terms of employment, occupation and education.

Socio-Economic Measures

In addition to measures of middle class based solely on income, which economists tend to favor, sociologists typically measure class based on socio-economic parameters. Two fundamental class constructs in sociology are the Marxist perspective and the Weberian perspective. The Marxist approach, often used to study advanced capitalist societies, defines class "in terms of social relations of control over investments, decision making, other people's work, and one's own work" (Wright et al. 1982).

Wright et al. (1982) employ a complex categorization scheme to segment out classes based on indicators of power relations within occupations. They use survey data where respondents note levels of autonomy, decision-making and authority at work and make a clear distinction between class and occupation, highlighting that occupation alone is not a sufficient operationalization of class. Their aim however, is to finely segment the working population into eight class categories, rather than differentiate the middle class from the poor and upper classes.

A Weberian sociological approach to class, Wright (1997) explains, is characterized by the notion of *life chances.* Those in the middle class are considered to have sufficient human capital to stay out of poverty. Weber defines this group as those with formal credentials and differentiates them from the working class, whose members have no assets save their ability to work (Breen 2005). The formal credentials in modern society one can consider to be some level of education and the ability to perform skilled labor. Although Goldthorpe (1980) famously operationalizes class using occupation as the main indicator, others believe that inclusion of an education metric is essential to measuring *life chances* at the household level.

Zandy (1996), using a more neo-Weberian than Marxist approach, defines class using economic, social and cultural markers: "Class is an experience of shared economic circumstances and shared social and cultural practices in relation to positions of power." She continues that class is not simply a question of income and wealth. "It is what economic privilege can purchase in terms of access and power that really marks class difference."

The type of work performed and education level completed are also markers of class, Zandy (1996) suggests. Income is just one variable in the class equation, and does not serve to wholly explain differences in class. Race/ethnicity and geography also play a role. The same

household income in the hands of an Indian family of low caste may not offer the same *life*

chances, access or power it would to a white family in Colombia.

Atkinson and Brandolini (2013), following Goldthorpe's approach, attempt to identify

class in the LIS data using occupation variables. They classify non-manual employees, lower-

grade technicians, supervisors of manual workers, small employers and self-employed workers

as belonging to an "intermediate class," and contrast this group with a "working class" (skilled

and unskilled manual workers, low-skilled routine non-manual workers), and a "salariat or

service class" (all professionals, administrative and managerial employees, higher-grade

technicians, large employers). They find that the groups identified with this occupation-based

measure of an "intermediate class" are inconsistent with groups falling within the relative

income measure of 75% to 150% of the median in France, Italy, the US, Sweden and Denmark.

Class Unit of Analysis

The unit of analysis for class is also under debate. Many scholars tend to measure income

at the household level, rather than the individual level, and as such, assign class at the household

level. Some researchers point out that not all members of a household share the same class status

(Breen 2005). For example, an elderly parent may occupy a lower class than his successful,

middle-aged son in the same household. However, the most common way to measure class

position is to define it at the household level.

III. Methods and Data

Methods

The purpose of this analysis is to identify those who are "firmly" middle-class, i.e. have

sufficient insulation to protect themselves and their families from falling into poverty. I use two

distinct types of measures: (a) those based purely on income (absolute and relative) and; (b)

hybrid measures, which use socio-economic characteristics and income to identify the middle class.

For the absolute income measures, I test income levels found in the literature. For the lower bound, I use Birdsall's (2010) cut-off of $10 (PPP) per day, Ravallion's (2010) $2 (PPP) per day and a middle level of $6 (PPP) per day. The $10 cut-off is admittedly high, especially considering that India is included in the analysis. However given that this analysis aims to include a measure of those well insulated from the risk of poverty, this justifies the inclusion of the higher bound of $10 (PPP) per day. For the upper bound, I use Ravallion's (2010) conception of the US poverty line, which captures those who are well-off in their own countries but still considered poor by US standards. Specifically, I set the upper bound of the middle class at the US poverty line for individuals under 65 in the given year.

For the relative income measure, I follow the convention of 75% of the median for the floor and use the same ceiling as with the absolute income measure - the US poverty line. I select the same upper bound for all measures because the aim of this study is to understand how different measures distinguish between those at the bottom and those in the middle. I am less concerned with measures of the upper classes since this group is highly unlikely to fall into poverty.

For the socio-economic measure, I follow a neo-Weberian class analysis approach and attempt to operationalize class with the intention of grouping those with similar *life chances*. Specifically, I operationalize the lower bound of the middle class using the following indicators: education, occupation status and hours worked per week. Education has three levels: low (primary or below), medium (secondary) and high (tertiary or above). Occupation is also grouped into three categories: unskilled, skilled and manager/professional. I define middle class

as those members living in households with at least one member who has at least a "medium" education and has a "skilled" occupation. This may or may not be the same individual. The total hours worked per week per household must total at least 30. Work hours are important since Banerjee and Duflo (2008) emphasize the significance of full-time employment as a marker of the middle class. Banerjee and Duflo (2008) explain that having a well-paying, full-time job is the biggest differentiator between the poor and the middle class. I choose to use total hours worked per household, rather than only one person having a full-time job, to avoid bias against households with children, where parents may each cut back on work hours to care for children. I follow the convention of assigning class at the household level. For example, a less educated woman is still middle class if her husband is employed full time in a skilled position and her adult son, who lives with them, completed secondary education. The upper bound of the middle class is the same income measure used in the income analyses, the US poverty line. I use this income measure for the ceiling to ensure that the observed classification differences between the different measures are a result of differences in classification of the lower classes, not the upper class. In this way, I am holding the upper-class definition constant and varying only the definition of middle and lower class.

I also consider the difference in the size of the middle-class when per capita vs. equivalized household income measures are used. The World Bank tends to focus on per capita income measures as those are best for comparisons across groups of countries with heterogeneous income levels. In the LIS literature, however, researchers typically use equivalized household income, which takes economies of scale into account. Most of the LIS literature is devoted to comparing countries of homogeneous income levels so differences in economies of scale across countries are unlikely to vary significantly. When defining the middle

class by income level, using a per capita income measure, which ignores economies of scale, could lead to under-estimations. To examine whether per capita income measures may, in fact, underestimate the size of the middle class, I conduct the analysis using both per capita and equivalized income measures. It is important to note that while the definition of the ceiling of the middle class (US poverty line for individuals under 65) does not change, those considered upper class will vary between per capita and equivalized measures. Specifically, the upper class will be larger under the equivalized income definition.

To obtain comparable currency rates, I convert incomes to purchasing power parity (PPP) rates for the given year. Given that this analysis compares income definitions of middle class with one based partly on occupation, I restrict the sample to individuals in the working age population, which is defined here as those aged 15 to 64.

Data

LIS, a data and research center, provides harmonized household and individual-level, nationally representative datasets for over 40 middle- and high-income countries around the world. Although continually growing, at the time of this study, the middle-income countries with available data for the purposes of this analysis were India, South Africa, Peru, Colombia, Guatemala and Mexico. I select one time-point for each country. For India, Peru, Colombia and Mexico I use data collected in 2004. Data were unavailable in the same years in Guatemala and South Africa so I choose the closest years available, which are 2006 and 2008 respectively. South Africa, Colombia, Peru and Colombia are all categorized by the World Bank as upper-middle income countries while Guatemala and India are lower-middle income.

It is important to keep in mind the variation of gross national income (GNI) per capita across this group of countries. Although there is significant variation in GNI per capita across the

sample, the Gini index values are more homogenous. Table 1 displays GNI per capita obtained from the World Bank database and Gini index figures calculated by the LIS Key Figures application.

Table 1. Gross National Income per Capita and Gini Index for Six Middle-Income Countries

Dataset	GNI per capita[1]	Gini Index[2]
India 2004	$1,970	0.491
Guatemala 2006	$4,210	0.490
Peru 2004	$5,530	0.502
Colombia 2004	$6,600	0.506
South Africa 2008	$10,710	0.594
Mexico 2004	$11,140	0.457

Operationalizing Middle Class using the LIS Data

To calculate percentages of the population that fall into the middle class for each country, I use disposable household income. Disposable household income is a harmonized variable in the LIS datasets and includes total monetary and non-monetary current income, net of income taxes and employee-paid social security contributions. To calculate per capita income, I divide disposable household income by the number of household members. To obtain the equivalized measures of income, I use the common equivalization method of disposable household income divided by the square root of the number of members per household.

IV. Findings

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[1] World Bank. 2013. "Data: Indicators." Retrieved May 12th, 2013 (http://data.worldbank.org/indicator).

[2] Luxembourg Income Study. 2013. "Key Figures." Retrieved May 12th, 2013 (http://www.lisdatacenter.org/data-access/key-figures/search/)

Table 3 shows weighted, descriptive statistics by country-year. I apply the population weight so that the results indicate the percentage of the working-age population in each country (15-64) that falls into the middle-class under each measure.

Table 3. Percent of Working Age Population in Six Middle-Income Countries Defined as Middle Class (percentages weighted to be representative of the population)

	India 2004	Peru 2004	South Africa 2008	Colombia 2004	Guatemala 2006	Mexico 2004
	Size of Middle Class (%)					
Per-Capita Measures						
$2 per day ($2 PC)	24.21	70.08	71.09	71.36	75.09	85.02
$6 per day ($6 PC)	4.00	31.43	41.79	28.61	34.59	47.86
$10 per day ($10 PC)	1.35	14.33	26.52	13.40	17.16	24.76
Relative Income (Relative PC)	58.65	62.35	54.02	47.85	65.50	57.01
Life-chance (Life-chance PC)	18.69	55.86	32.69	50.11	25.10	38.01
Equivalized Measures						
$2 per day ($2 E)	58.15	78.09	68.83	81.25	80.29	77.73
$6 per day ($6 E)	16.00	52.77	51.47	53.72	58.21	65.09
$10 per day ($10 E)	6.45	34.27	33.44	30.44	37.80	45.83
Relative Income (Relative E)	59.03	54.01	42.84	42.29	55.81	44.16
Life-chance (Life-chance E)	18.07	47.52	23.46	44.47	17.11	26.84
Un-weighted # of Observations	77586	37077	4309	13152	23809	33334

The results above show a clear difference in the size of the middle class across countries depending on which measure is used. Each measure also yields considerably different results depending on whether a per capita or equivalized method is employed to transform household income to individual income. The life-chance measure is the least sensitive to the per capita vs.

equivalized conversion, which is unsurprising, given that only the upper bound of the middle class is affected in the life-chance measure. In Figure 1 the stark difference between the $2 a day per capita measure, the cut-off often used by international development agencies, and the life-chance per capita measure is apparent.
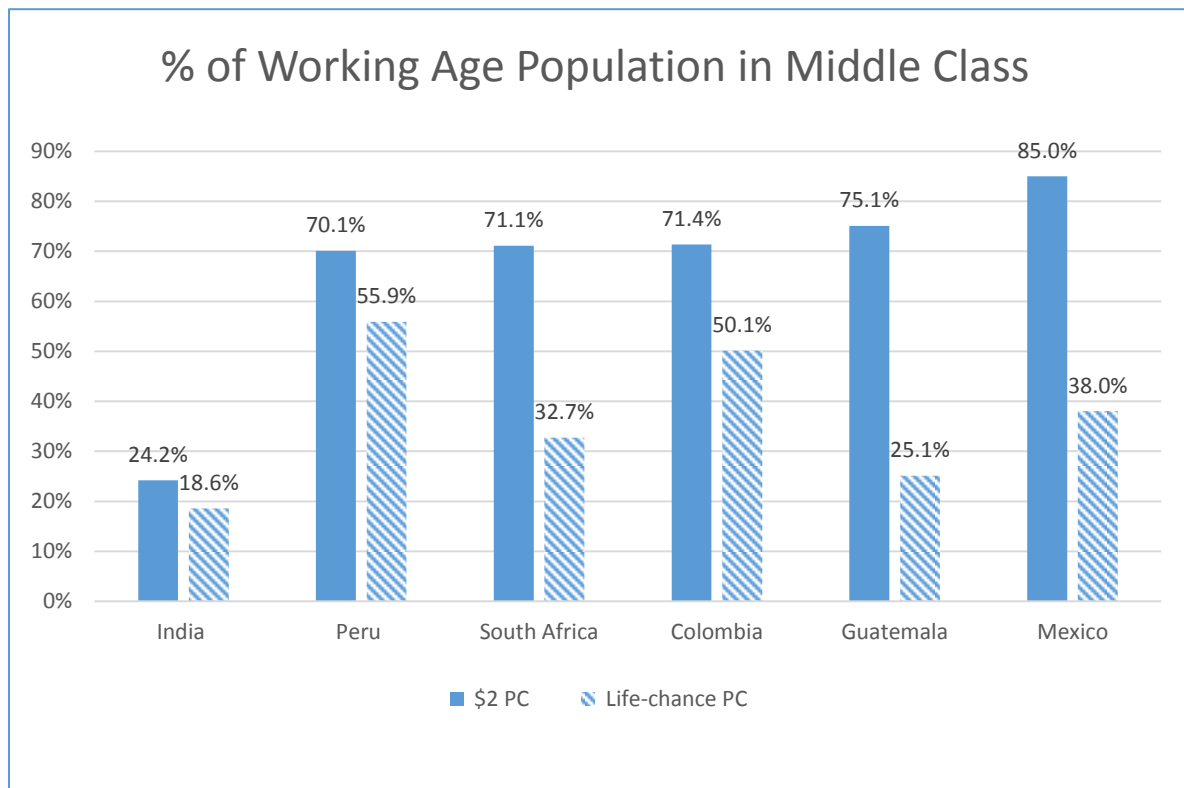

Figure 1. Comparing Absolute Income and Life Chance Measures of the Middle Class: Percent of Adults Aged 15-64 in Six Middle-Income Countries
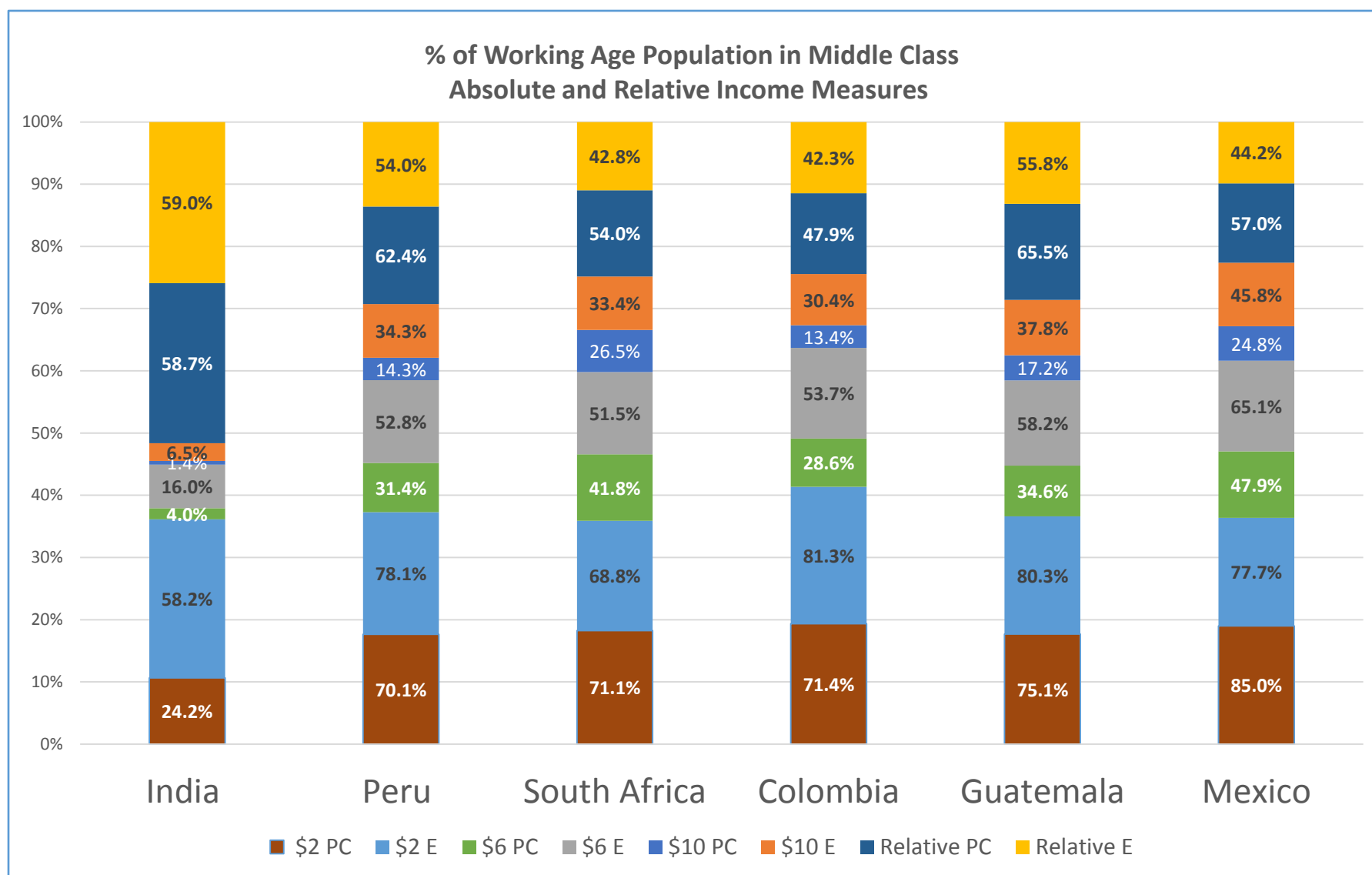
Figure 2. Comparing Income-Based Measures of the Size of the Middle Class

Figure 2 charts the size of the middle class under different income cut-offs calculated using both per capita and equivalized methods. For example, in Mexico, the size of the middle class size is 24.8% using a $10 a day per capita($10 PC) cut-off vs. 85% under the $2 a day per capita, a difference of over 60 percentage points.. In India, the size of the middle class differs by 34 percentage points, depending on whether one uses an equivalized (58.2%) or per capita (24.2%) $2 per day income level. This figure highlights the sensitivity of middle class measures based solely on income to calculation choices of the researchers such as where to set the income cut-off and whether to use per-capita or equivalized measures of income.
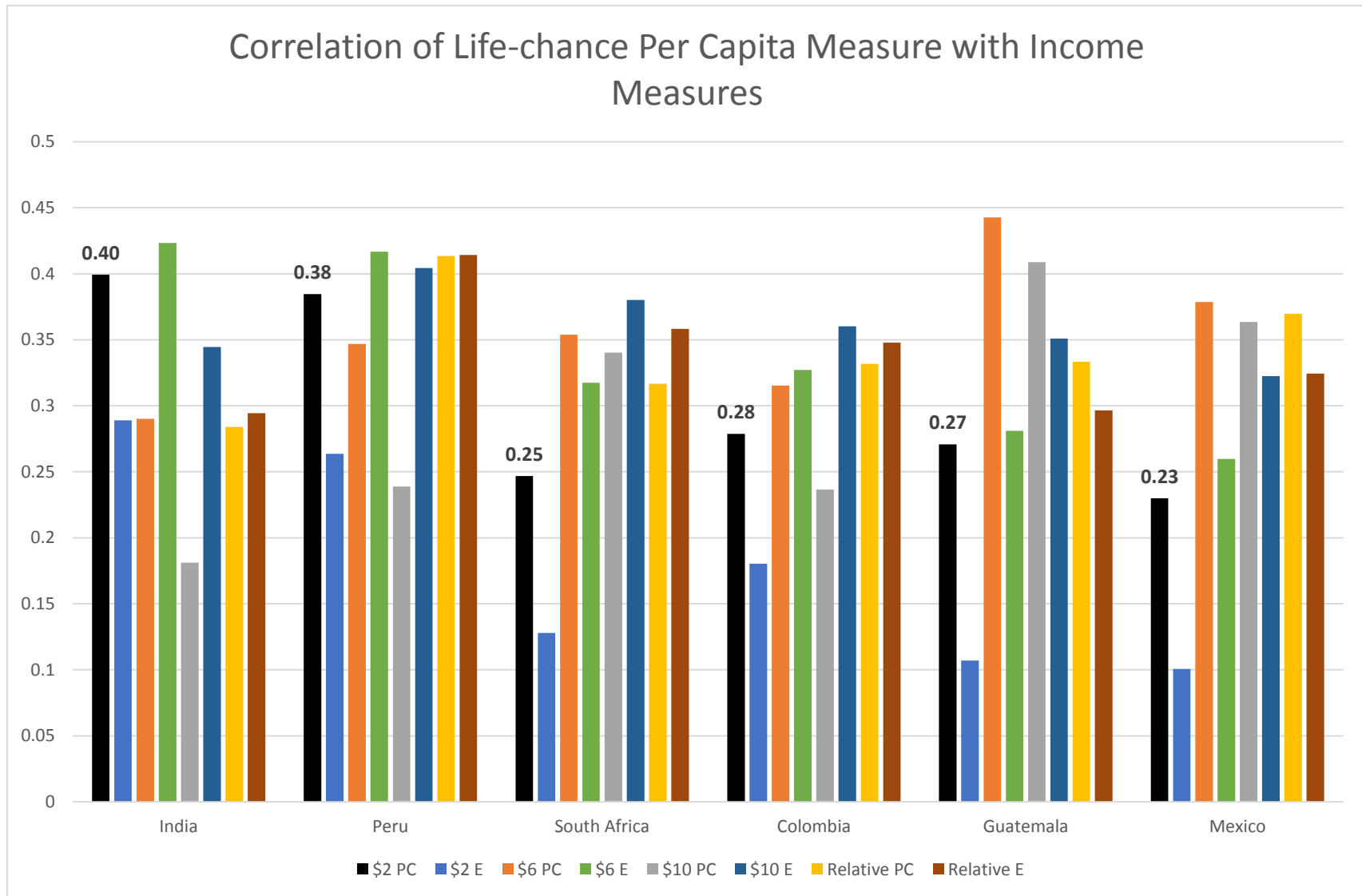
Figure 3: Correlation of Life-chance Per Capita Measure of Middle Class with Various Income Measures

Figure 3. displays the correlations between the per capita life-chance measure and the various income measures of middle class by country (excluding those in the upper class). It is interesting to note that correlations do vary considerably across measures and countries, ranging from 0.10 for the $2 per day equivalized measure ($2 E) for Mexico to 0.44 for the $6 per day per capita measure ($6 PC) for Guatemala. Considering that each measure intends to capture the same individuals, the correlations are quite low. It is also interesting to note that the $2 per day per capita measure, the standard measure used by the World Bank and other multinational institutions, does not consistently out-perform any other measure, save the $2 E measure, in terms of capturing those in the population with the skills to succeed, i.e. those living in households where at least one person has a skilled occupation and a "medium" level of education.
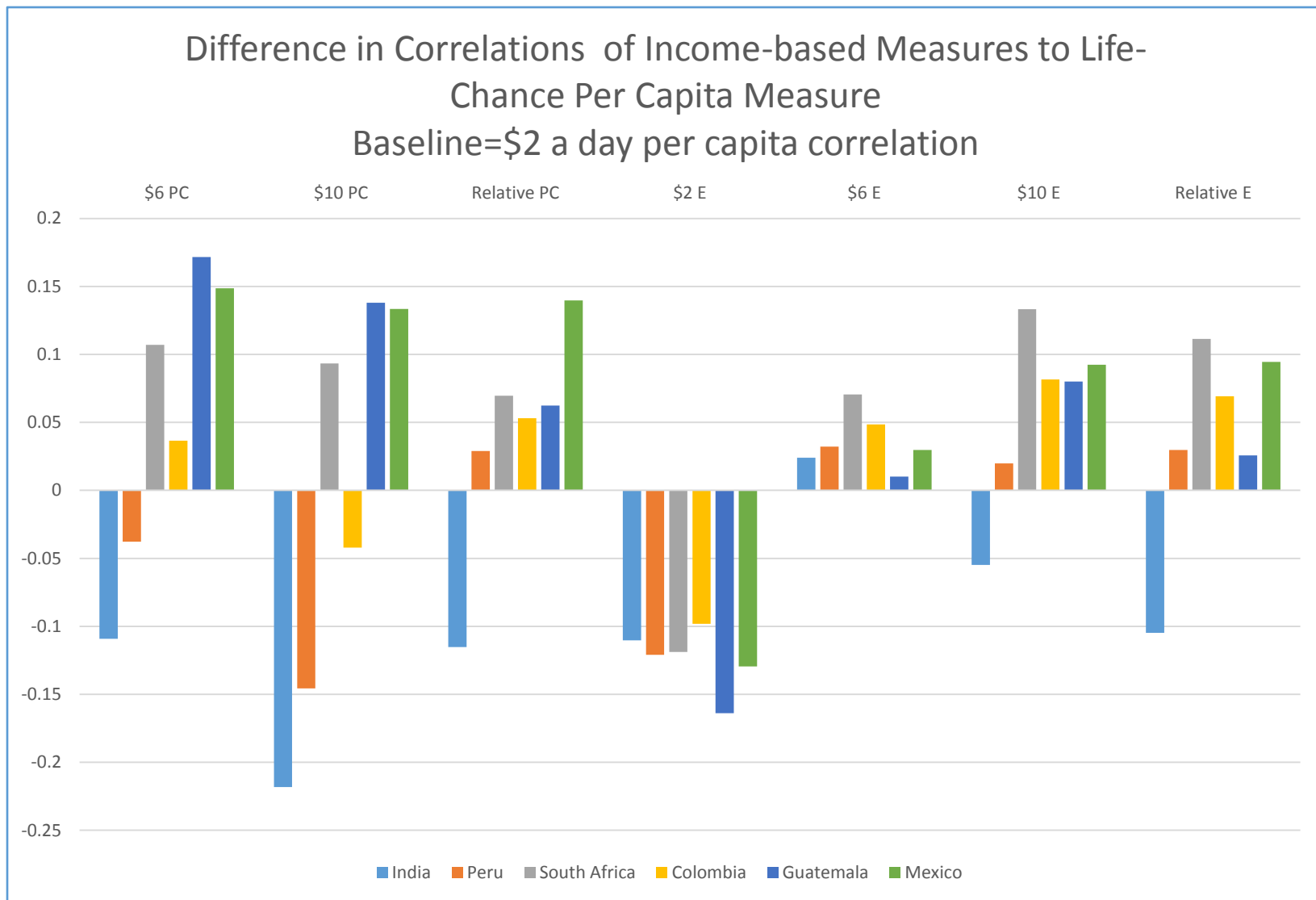
Figure 4. Difference in $2 a day per Capita Correlation to vs. Various Income-based Measure Correlations

Figure 4 displays the difference in correlations of the life-chance per capita measure to the $2 a day per capita measure vs. the various other income-based measures. For example, the correlation of the relative equivalized income measure (Relative E) of the middle class to the life-chance per capita measure of the middle class is higher than the $2 a day per capita correlation for all countries except for India. The $2 a day equivalized measure ($2 E) correlation is lower for all countries, whereas the relative per capita income measure (Relative PC) correlation is higher for all countries save India. On the whole, the equivalized measures yield higher correlations to the life-chance measure compared with the $2 a day per capita measure, excluding the $2 a day equivalized measure, which is likely too low of an income cut-off given the sample of middle-income countries.

V. Conclusions

Determining the size of the middle class in middle income countries in cross-national perspective is not a simple exercise. If one hopes to identify that segment of a population which is truly isolated from the risk of poverty, absolute and/or relative income measures which set a lower bound of $2, $6 or even $10 (PPP) per day or 75% of the median may not yield appropriate results. Relative income measures, which define the middle class as the "middle 60%" of the income distribution, are also inappropriate for countries with over 50% of the population living at or near the absolute poverty line (Vanneman and Dubey, 2013). Careful attention also needs to be paid to the choice of whether to use per capita or equivalized income. This analysis shows that in middle-income countries, the equivalized measures yielded higher correlations to the life-chance measures, compared with the per capita measures. This finding suggests that in middle-income countries, where household sizes are larger on average, compared to high-income countries, that economies of scale should be taken into account. Household

incomes appear to stretch further, in terms of life chances, than the per capita income measure indicates.

Absolute income measures are still not ideal. I used the PPP conversion factor, GDP (Local Currency Unit per international $), which the World Bank defines as "the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as U.S. dollar would buy in the United States (World Bank, 2013)." Although the purchasing power parity conversion attempts to allow for comparisons across countries, it is possible, as Zandy (1996) suggests, that $10 (PPP) in South Africa does not buy the same middle class status it does in India. Therefore, one could argue that using the same absolute income of $10 (PPP) per day for all countries in the sample is inappropriate. Perhaps the basket of goods used in the PPP conversation is only an accurate comparative measure of consumption of subsistence goods, but less reliable for estimating the value of "credentials" across countries such as education and a skilled occupation.

Using just a socio-economic measure, without taking incomes into account, however is also problematic in the middle-income country context. In rich countries, education is a strong predictor of income and skilled occupation yet in middle-income countries, this relationship is less powerful (O'Neill, 1995). Significant portions of the populations, in all countries in this study, with little or no education could find work in skilled professions and earn a decent living. Should these individuals still be considered "middle class?"

Some scholars suggest (Rainwater, 1974; Zandy, 1996; Mayer, 1997) that class is a question of access to opportunities, rather than just a measure of income level. For example, one could argue that those in Mexico that can earn a living, yet still lack access to secondary education and a skilled occupation, should not be classified as middle class.

Unfortunately it is beyond the scope of this analysis to empirically demonstrate whether or not secondary or higher education is a necessary marker of middle class status in middle income countries. From the neo-Weberian life chance theoretical perspective, the answer is also unclear. On the one hand, having a skilled profession, without education, is a valuable credential that isolates individuals and their families from poverty. However, without education, the credential of work experience is surely less valuable compared to someone with the "complete" credentials of both education and a skilled occupation.

Given the current trends of globalization and the variable price of labor across countries, those without "complete" credentials are likely to lose jobs to those in other countries that are more highly educated. Therefore, while education may not be absolutely necessary at present, it is surely going to rise in importance in the future. One hypothesis is that households with middle class incomes and higher levels of education are more likely to maintain or elevate their status in future generations, compared with households who lack the education credentials.

Based on these considerations, a hybrid middle class measure, which incorporates an absolute income measure using *equivalized* household income, education and occupation, can best capture those in middle-income countries who are truly "middle class," understanding middle class as those who are unlikely to fall into poverty. Work-hours may also be a significant marker of middle-class status, however the majority of all households in this study had a total of at least 30 work hours per week. It is therefore likely that this weekly work-hour threshold is too low. By setting a higher weekly hours threshold, this measure could be a more useful marker of middle class status.

There is some debate in the literature over whether consumption, rather than income, is more appropriate for measuring well-being. In developing countries, it is often difficult to obtain

reliable income data (Deaton and Grosh, 2000). The six countries analyzed in this work are relatively developed and the Luxembourg Income Study considers their income data reliable. Indian researchers verified the quality of the income data from India, the least developed country in the analysis (Vanneman and Dubey, 2013). The main argument of this paper is not to advocate for income over consumption data or vice versa. Rather the focus here is to point out the highly sensitive nature of economic indicators to researcher assigned cut-offs and to suggest an alternative method for measuring class in the middle-income country context.

The policy implications for fine-tuning the measure of the middle class in middle income countries are significant. Using strictly income-based measures obscures the fact that a significant percentage of the fabled, emerging middle class in some middle income countries is still highly undereducated, are not in professional/managerial positions and therefore lack the credentials to upgrade their relative positions in the global economy. Incorporating socio-economic indicators, such as occupation and education, allow for a more complete understanding of the characteristics of these new middle class households and highlight their continued vulnerability.

Policies that focus on increasing access to education and job skills training, in addition to job creation, may be the key to ensuring that the middle class in middle-income countries receive not just the income, but also the credentials necessary to maintain, or ideally elevate their status in the years to come.

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