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The Rise of China's Global Middle Class in International Perspective

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DISCUSSION PAPER SERIES

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JULY 2021

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ABSTRACT

The Rise of China's Global Middle Class in International Perspective*

Defining the 'global middle class' as being neither poor nor rich in the developed world, we estimate the size of the global middle class in China and 33 other countries and analyze China's expanding middle class in international perspective. China's global middle class has grown rapidly and has been catching up with that in developed countries. By 2018 China's global middle class constituted 25 percent of China's population; in absolute size it was nearly double the size of the global middle class in the US and similar in size to that in Europe. Cross-country analysis of the relationship between the middle-class population share versus GDP per capita reveals an inverted-U pattern. China is not an outlier from the cross-country pattern, but the speed with which its middle-class has expanded is unusual. The only other countries with similarly large, rapid expansions of the middle class are transition economies.

JEL Classification: D31,O15, O53, P3

Keywords: China, middle class, income distribution, transition

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1. Introduction

In recent decades China has grown substantially faster than and has been catching up with the developed world. By 2018 China's GDP was second largest in the world after the U.S. In purchasing power parity terms, China's GDP was already the largest in the world. This rapid economic growth has supported dramatic improvements in the living standards of China's population. Although on average household incomes remain lower than in North America and Europe, China's citizens increasingly live lives that resemble those in the developed world. Furthermore, a growing share of China's population is now enjoying incomes that make it possible to afford types of consumption considered middle class in North America and Europe, for example, holiday travel and private ownership of an automobile.

The emergence of a well-off consumer class is very much in line with the stated aims of China's policy makers during the reform era. In earlier times peasants and workers were the focus of the official rhetoric, but now the new model citizen is someone with high cultural capital and the economic capacity to consume (Goodman 2014a). The potential benefits for China of a well-off middle class were noted in a joint report by the World Bank and the Development Research Center of the State Council as follows "...a growing middle class will also act as a catalyst for improved governance, better delivery of public services, and the empowerment of civil society" (World Bank and Development Research Center of the State Council 2013: 9). The expansion of the middle class could also have political benefits. To the extent that the middle class has benefited from and has a vested interest in the existing order, it would tend to work within the system rather than challenge the system (Tang 2011). China's middle class is also important from an international perspective. Due to its large population, the size of China's middle class could potentially overtake the middle-class populations of Western countries, thus shifting the global center of gravity of worldwide demand.

The aim of this study is, first, to investigate whether Chinese household incomes have caught up with those of the middle class in the developed world, and, second, to examine how the trajectory of expansion in China's middle class fits into broader patterns worldwide. Because we are interested in international comparisons and catch up, we define the middle-class relative to household incomes in high-income countries, or, specifically, as being neither poor nor rich in high-income countries. We choose middle-class living standards in

high-income countries as our yardstick because they represent an aspirational idea of what it means to be middle class. We refer to households that meet this yardstick as belonging to the ‘global middle class’ or, in short, the ‘middle class’.

Using this definition, we employ household survey data from the China Household Income Project (CHIP) to estimate the share of China’s population that has reached the global middle class. The years of our analysis—2002 through 2018—span a period during which China followed a policy strategy that emphasized the development of a moderately prosperous society (xiaokang shehui 小康社会). Income levels of the middle-class in the developed world are a higher standard than the goal of being moderately prosperous, but even so we find considerable catch up. By our estimates, in 2002 less than one percent of China’s population belonged to the global middle class. By 2018 its share had increased to 25 percent, and in urban areas an even more substantial 40 percent, of the population.

We compare the size of China’s global middle class to those of other countries. Our estimates of the global middle class in other countries uses harmonized income distribution data from the Luxembourg Income Study (LIS). Comparison of China to the US and European countries answers the question of whether China’s middle-class is catching up. The answer to this question is an emphatic yes. The speed and scale of catch up has been rapid. The absolute size of China’s global middle class now exceeds the entire population of the US and is roughly two-thirds the population of Europe. Rising household incomes in China are transforming the global middle class and constitute a tectonic shift in the world distribution of income.

Next, we compare China to the BRICS countries plus Mexico, which share similarities to China in terms of size and GDP per capita. We find that historically China’s middle-class share lagged behind the other BRICS + Mexico. By 2013 China’s middle-class share had caught up with all these countries except Russia, and by 2018 it surpassed the middle-class share in all these countries except Russia.

Lastly, we ask whether the relationship between the size of the middle class and level of development or economic growth follows a pattern, and how China fits into that pattern. Does this relationship, take the shape of an inverted U similar to that proposed by Kuznets for

inequality? Our cross-section estimates of middle-class population shares versus PPP GDP per capita for 33 countries indeed do reveal an inverted U pattern, and China fits the pattern reasonably well.

As noted in the literature on economic growth and inequality, cross-section data may not give an accurate picture of trends over time. We therefore also report panel estimates for 23 countries. The pooled panel data follow a pattern similar to the cross-section data, but many individual countries, including China, do not follow an inverted U over time. The absence of an inverted U at the individual-country level may simply be due to the fact that the panel data do not span a long enough time frame to allow the countries to move all the way from low income to high income. Nevertheless, the data reveal systematic patterns. For countries with initial PPP GDP per capita below \$30,000, the share of the middle class in the population increased with GDP per capita over time. For countries with initial PPP GDP per capita above \$30,000, the middle class share generally was stagnant or declined.

China belongs to the former group, and like the rest of that group follows an upward trajectory in terms of both the size of its middle class and GDP per capita. The slope and speed of China's trajectory, however, exceed those for all other countries except transition economies. Our estimates reveal that countries that have undergone a transition from socialist planned economies to market economies have seen not only substantial economic growth but also undergone a marked expansion in their middle classes. The steep trajectories in the transition economies likely reflect historical characteristics such as relatively large public sectors, high levels of investment in human capital, and low levels of income inequality that are often associated with the development of the middle class.

2. Definition of the global middle class, data, and measurement

Definitions of the middle class differ among studies (Goodman 2014b), with approaches depending on the discipline and theoretical perspective of the authors. A standard approach in the economics literature, which we follow here, is to define the middle class in terms of household income per person. Our aim is to compare the size and growth of China's middle class to other countries. Consequently, our definition is based on an international yardstick. Specifically, we define the global middle class based on the notion of being neither poor nor rich in a high-income country.

With the exception of two earlier studies (Gustafsson, Sicular and Yang 2020; Gustafsson, Yang and Sicular 2020), this definition of middle class has not been used previously for the analysis of the middle class in China.¹ Several studies of the worldwide middle class, however, have used an international yardstick. Milanovic and Yitzhaki (2002) defines the global middle class as having income between the means in Brazil and Italy. Kharas (2017) defines the cutoff for entering the global middle class based on the poverty lines in a set of high-income countries (Portugal, Italy and United States) and the cutoff for entering the upper class at twice the median income of Luxembourg, the richest country in the European Union.

In our analysis we set the cutoff between lower and middle classes equal to the level of household income per person that separates the poor from the non-poor in the European Union (EU). The EU sets its poverty line at 60 percent of median income per equivalent person. Eurostat reports the median income per equivalent person of 28 EU member countries in Euros for 2018. We multiply this median by 0.6 and convert the currency using the purchasing power parity (PPP) exchange rate for 2018.² This yields a cutoff in 2018 prices of US \$37.50 or RMB 154.90 per equivalent person per day (Table 1).

We use this 2018 RMB cutoff and domestic consumer price indexes to calculate the cutoffs for earlier years.³ The RMB cutoffs for 2002, 2007 and 2013 shown in Table 1 are equal to the 2018 RMB cutoffs deflated using the national domestic consumer price index to adjust for changes in the domestic price level between 2018 and the relevant year. Because consumer price trends in China's rural and urban areas have differed, we deflate the rural cutoffs using the rural consumer price index and the urban cutoffs using the urban consumer price index.

¹ Gustafsson, Sicular and Yang (2020) and Gustafsson, Yang and Sicular (2020) report estimates for 2002 and 2013, but not for 2007 and 2018. Their estimates for 2002 and 2013 are slightly different than those reported here because (1) they include as part of income the imputed rent from owner-occupied housing, which here we exclude, and (2) their cut offs between classes are based on the 2013 median income for 15 EU countries, and here the cut-off's are based on the 2018 median income of 28 EU countries.

² We use the 2018 consumption PPP exchange rate given by the World Development Indicators (WDI). Estimates of China's PPP exchange rate are also published by OECD. The WDI and OECD give the same 2018 PPP consumption exchange rate for China.

³ This approach means that our calculations only use the PPP exchange rate estimate for a single year, 2018. Consequently, our estimates are not affected by past revisions in the estimates of China's PPP exchange rate. Note that the 2018 PPP exchange rates in the WDI are based on the most recent (2011) round of the International Comparison Project (ICP), which employed improved price data for China and is thought to give the best PPP estimates for China to date.

/Table 1 about here/

Our cutoff between the middle and upper classes is set at 200 percent of median income (Kharas 2010; Pew Research Center 2012, 2015, and 2016; Gustafsson, Sicular and Yang 2020). We apply this percentage to 2018 median income in the 28 EU countries, which yields a cutoff of US \$125, or RMB 516.40, per equivalent person per day (Table 1). As above, the cutoffs for 2002, 2007 and 2013 are equal to the 2018 cutoff deflated to adjust for changes in the domestic urban and rural consumer price levels.

Although setting the cutoffs for the middle class relative to the median income in the EU is conceptually straightforward, explanation of some details is needed. First, the Eurostat statistics for median incomes are expressed per equivalent person. Eurostat uses an equivalence scale to adjust household size to reflect economies of scale in household consumption. The equivalence scale gives a weight of 1.0 to the first adult in the household, 0.5 for additional adults, and 0.3 for each child (ages 14 years and younger). For consistency, we apply the EU equivalence scale to all the countries analyzed, including China. Unless noted otherwise, all household income calculations reported here are per equivalent person.

Second, when calculating changes in the size of the middle class over time, one has the choice of using fixed goalposts, that is, cutoffs for all years based on the median income in a single year (e.g., 2018), or using moving goalposts, that is, cutoffs in each year based on the median income in the current year. We adopt the fixed goalpost approach, with the goalpost being the real median income for 28 EU countries in 2018. This means that changes over time in the size of the middle class are entirely due to changes in the distribution of real incomes rather than to changes in the cutoffs. We set the fixed goalpost using 2018 EU-28 median income so that our definition of middle class reflects the most current perceptions of a middle-class standard of living.

Our income data for China are from the CHIP household surveys. The CHIP survey samples were drawn from the larger household survey samples of the National Bureau of Statistics of China (NBS). When analyzed using population-based weights, the CHIP survey data are representative at the national, sectoral (urban-rural-migrant) and provincial levels. For this reason, in all our estimations we employ sampling weights constructed by the CHIP team that

are based on the national population statistics from the official censuses and annual population sample surveys.

The use of such weights for our analysis is important because the provincial coverage of the CHIP samples changed across the rounds of the survey, as did the sampling probabilities of the urban/rural/migrant subgroups and of regions (see Table 2). Consequently, in our analysis we employ the CHIP two-level (region x urban/rural/migrant) population-based sampling weights. The population shares calculated with weights are shown in Table 2. These weighted shares are in line with China's official population statistics. When calculated with weights, over time the share of the rural population fell and the share of the formal urban population rose. The share of the rural-urban migrant population rose from 2002 to 2013 and then from 2013 to 2018 declined slightly, which likely reflects the results of hukou policy reforms that allowed more migrants to convert to urban hukou, and perhaps some return migration. More details about the CHIP survey data and weights can be found in Song et al. (2013) and Yue et al. (2018).

/Table 2 around here/

We choose a definition of income for China that is in line with the definition of income used for the comparator countries. For the comparator countries we use the LIS variable 'disposable household income per capita'. This income variable does not include imputed rents on owner-occupied housing. The income variable from the CHIP datasets that we use for our analysis of China is NBS income, that is, income calculated according to the NBS definition of income. So defined, income is comprised of wage earnings and other labor compensation, net business income, pension income, property income, and transfers received by the household net of taxes paid. Prior to 2013 NBS income did not include imputed rents but starting in 2013 it includes an estimate of imputed rents for urban households. We subtract the imputed rent component of NBS income for 2013 and 2018, so that for all four years our income variable is consistent with the LIS income variable in excluding imputed rent.⁴ We then divide household income by household size (the number of household

⁴ Note that the NBS modified its definition of income in 2013, and so the NBS income variable for 2002 and 2007 is not entirely consistent with the income variable for 2013 and 2018. As noted in the text, one modification was that in 2013 the NBS started including an estimate of imputed rent for urban residents. We have subtracted this imputed rent component from NBS income for 2013 and 2018, so in our analysis imputed rent is consistently excluded from income in all four years. The NBS also made some other minor modifications

members adjusted using the Eurostat equivalence scale) to obtain household income per equivalent person.

As mentioned above, income data for all comparator countries is taken from the LIS dataset.⁵ LIS is the largest available income database of micro-data, collected from more than 50 countries in Europe, North America, Latin America, Africa, Asia, and Australasia spanning five decades, and harmonized to permit cross-national comparisons. LIS contains data for China for 2002 and 2013 which in fact is the CHIP data. Most LIS variables are standardized in terms of conceptual content (the variables are as comparable as possible across datasets in terms of concepts/definitions) and in terms of coding structure.

The LIS datasets thus contain harmonized household- and person-level data on labor income, capital income, pensions, other public social security benefits, and private transfers, as well as taxes and contributions, demography, employment, and expenditures. Using these data, we are able to estimate the sizes of the middle classes in comparator countries using individual-level data on household income per person.

The income variables in the LIS are reported in national currencies. To compare monetary amounts across countries and over time, we convert these values into a common currency and a common year's prices. The conversion is done by first applying a national domestic consumer price deflator to the nominal income amounts so that all incomes are expressed in 2018 national prices, and second converting these amounts to international dollars using purchasing power parity (PPP exchange rates for 2018).⁶

For household income for all the countries, we use the variable “disposable household income (DHI)” in the LIS. DHI is the sum of cash and non-cash income from labor, income from capital, income from pensions (including private and public pensions) and non-pension public social benefits stemming from insurance, universal or assistance schemes (including in-kind social assistance transfers), as well as cash and non-cash private transfers, less the

to its income definition in 2013, e.g., starting in 2013 some interest expenses were subtracted from property income and some employer contributions to social insurance programs were added to wage income. The amounts of income involved were small, but their inclusion is likely to have slightly increased urban incomes. Consequently, our estimates of the size of the urban middle class in 2002 and 2007 may be slightly understated.

⁵ Available at <http://www.lisdatacenter.org/our-data/lis-database/>.

⁶ For this we use the “Consumer price index (2010 = 100)” and the “PPP conversion factor, private consumption (LCU per international \$)” downloaded from the WDI dataset of the World Bank.

amount of income taxes and social contributions paid. This income definition is consistent with the NBS definition of income for China in the CHIP datasets. To obtain household income per equivalent person, we divide DHI by the number of household members adjusted using the Eurostat equivalence scale. The LIS country datasets include weight variables that are needed to make the sample representative of the overall population. All our estimates are calculated using these weights.

In summary, we estimate the size of the middle class for China and other countries using consistent criteria. For all countries and for all years, we set our cutoffs for the middle class to be consistent with levels of household income per equivalent person that are neither poor nor rich relative to EU median income in 2018. So that our cutoffs are constant in real terms across countries, we convert the cutoffs into national currencies using purchasing power parity exchange rates for 2018; so that our cutoffs remain constant in real terms over time, we translate the 2018 cutoffs into current year prices using the countries' consumer price indexes. Finally, we apply these cutoffs to individual-level household disposable income data for the different countries.

3. The rise of China's global middle class

/Table 3 about here/

Table 3 shows estimates of China's global middle class in 2002, 2007, 2013 and 2018. In 2018 the size of China's middle class reached 344 million persons and comprised 25 percent of the total population. This compares to only 7.5 million and less than 1 percent of the population in 2002. Growth in China's middle class was rapid and ongoing throughout this 16-year period, averaging 27 percent per year. This growth far outpaced that of China's GDP per capita, which itself had grown very rapidly (Table 3). In terms of China's participation in the global middle class, then, over these sixteen years China experienced a marked catch up with the West that surpassed China's catch up in terms of GDP per capita.

An important feature of China's economy is the structural divide between rural and urban areas. Historically China's household registration system (hukou) strictly limited long-term migration. Policy reforms, especially since 2000, have significantly weakened barriers to labor mobility and promoted the expansion of cities. The result has been a rapid increase in

rural-urban migration and urbanization. Estimates of the scale of migration vary, but by 2018 the rural-urban migrant population had reached 12 percent of the national population or about 25 percent of China's urban population (Table 2). The formal urban population has also expanded substantially (Table 2).⁷

The persistent urban-rural divide is evident in China's global middle class, which is overwhelmingly urban (Table 4). In all years except 2018 more than 80 percent of China's global middle class was formally urban, that is, held urban household registration (*hukou*). If we add in rural-urban migrants, in all years since 2002 more than 90 percent of China's global middle class lived in urban areas. Conversely, a tiny share of China's middle class was rural. Except in 2002, less than 10 percent of China's middle class was rural.

This urban-heavy composition reflects the exceedingly low share of China's rural population that belonged to the middle class (Figure 1). In 2002 less than 1 percent of China's rural population belonged to the middle class, and even in 2018 only 4 percent of China's rural population belonged to the middle class. In contrast, the shares of the middle class in the urban and migrant populations rose markedly and to much higher levels. In 2002 the middle class share of the formal urban population (with urban household registration or *hukou*) was 1.45 percent and that of the migrant population was less than 1 percent. By 2018 nearly 40 percent of both these populations belonged to the middle class.

These sectoral patterns are consistent with the well-documented rural-urban divide in China. They also suggest that for China's rural-born population the main pathway to the middle class is through migration to urban areas (see Gustafsson, Yang and Sicular 2020). We note that the middle-class share of the migrant population rose quickly across the years and by 2018 was on a par with that for the formal urban population. This catch up likely reflects rising wages for migrants, as well as expanded opportunities for migrants to convert to urban *hukou*.

/Table 4 about here/

/Figure 1 about here/

⁷ For discussion of China's rural-urban divide and the history and implications of China's *hukou* system, see Chan (2018, 2019).

4. Catching up to high-income countries⁸

Although in 2018 household incomes in China remained lower than those in high-income countries, the rapid expansion of China's global middle class brought its socioeconomic structure closer to that of the developed world. Table 5 shows the shares of the global lower, middle, and upper classes in the populations of the US, Canada, and Europe (an aggregate of 25 European countries, see notes to Table 5). This table also includes separate estimates for Greece, Poland, and Hungary, three countries that, although classified as high income, are close to the bottom of the European group in terms of per capita GDP.

/Table 5 about here/

In 2018 China's middle class share at 25 percent was substantially smaller than that in high-income countries. In addition, in China most of the remaining population belonged to the lower class, whereas in North America and some higher-income European countries the remainder was largely upper class.

If one looks only at urban China, the gap with high-income countries narrows. In 2018 urban China's class structure was quite similar to those of Greece, Poland and Hungary. The share of the middle class in urban China was 38 percent, not much lower than the middle-class shares in Greece, Poland and Hungary, which ranged from 46 to 52 percent. Moreover, in all four of these countries the remainder of the population was overwhelmingly lower class; their upper classes accounted for less than 2 percent of their populations. Also noteworthy is that median household income as well as GDP per capita in urban China were approaching those of Greece, Poland and Hungary (Table 5). These similarities explain why some European visitors to urban China may perceive little difference in living standards compared to their home countries.

Growth in China's middle class has occurred not only in terms of its share of China's population, but also in terms of absolute numbers. In 2002 at 7.5 million, China's middle class was only a small fraction of that in North America and the Europe. In 2018, only

⁸ We use the term 'high-income' to mean high-income according to the World Bank classifications as of 2018, which are based on GNI per capita in current US \$ (not PPP). In 2018 the cut offs were: for upper middle income from \$3,996 and \$12,375, and for high-income \$12,376 or more. In 2018 China's GNI per capita was \$9,470 and it was classified as an upper-middle income country.

sixteen years later, at 344 million China's middle class was double the size of the US middle class and roughly equal in size to the middle class of Europe (Table 5). Thus, China's middle class constitutes a large and growing component of the global middle class worldwide, which makes it a significant international force. Despite the rapid expansion of China's middle class, as of 2018 most of China's population remained in the lower-income class; the upper class remained small at only 1 percent of the population. We discuss the implications of these trends in the concluding section.

5. Comparisons with the BRICS + Mexico

China along with Brazil, Russia, India, and South Africa comprise the BRICS group of countries. The BRICS countries have large populations, have large economies, and are classified as middle-income in terms of GDP per capita. In recent decades most of the BRICS have experienced periods of substantial economic growth. To this group we add Mexico, which shares similar characteristics. Together these six countries accounted for more than 40 percent of the world population and about 30 percent of world PPP GDP.⁹

Do these countries share similarities with China with respect to their global middle classes? Table 6 shows the population shares of the global lower, middle and upper classes in the BRICS + Mexico. The countries in the table are arranged in descending order with respect to the share of the middle class. For context, Table 6 also shows each country's GDP per capita and median household income per capita.

/Table 6 about here/

All these countries have relatively small upper classes. Variation occurs among them in the division of the population between the lower and middle classes. At the high end is Russia, with over half of its population belonging to the global middle class; at the low end is India, with only 6 percent.¹⁰ If we set aside Russia, which has levels of per capita GDP and median

⁹ Calculated using 2018 population and PPP GDP data from the WDI datasets of the World Bank.

¹⁰ As explained in the notes to Table 6, for comparator countries we extrapolate the 2018 shares using the most recent LIS income data and assuming that during the intervening years all incomes grew at the national average rate of income growth (for India and Brazil the rate of income growth is unavailable so we use the rate of GDP per capita growth instead). Please see the notes to Table 6 for details. For Brazil, Mexico, Russia and South Africa the most recent LIS income data are for 2016 or 2018, so the extrapolation is for only a year or two and

income that are higher than the rest of the BRICS + Mexico, China's middle-class population share is the highest in this group.

Examination of changes over time reveals that China historically lagged far behind the other BRICS + Mexico in terms of the population share of the middle class (Figure 2). After 2000 most BRIC countries experienced some growth in their middle classes; however, China is the only one for which this growth persisted through all the years shown. The middle classes have not expanded in Mexico since 2008 and in Brazil, Russia, and South Africa since 2012/13. Meanwhile, growth in China's middle class was ongoing and rapid, so that by 2013 China had caught up with all these countries except Russia. By 2018 China's middle-class share surpassed that of all these countries except Russia.

/Figure 2 about here/

With respect to absolute size, China's middle class is far larger than that of all the other countries in Table 6. Indeed, the size of China's middle class in 2018 exceeded the sum total of the middle classes in all the other BRICS + Mexico, which was 216.7 million.

The middle classes of the BRICS + Mexico are highly concentrated in urban areas. As shown in Table 7, in all six countries the share of the urban population that is middle class is higher than that for the overall population, and in all six countries the great majority of the middle class is urban. Except for India, which has a lower rate of urbanization (column 3), more than 80 percent of their middle classes live in urban areas. In China, Brazil and Mexico well over 90 percent of the middle classes are urban.

/Table 7 around here/

6. The relationship between the size of the middle class and economic growth

The literature on inequality has devoted much discussion to the relationship between inequality and economic growth. The Kuznets inverted-U hypothesis posits that as the level of development rises, inequality will increase, reach a maximum, and then fall. Numerous

likely to be fairly accurate. For India the most recent LIS income data are for 2011, so the extrapolation is for seven years and may contain a larger margin of error.

empirical studies have tested the Kuznets hypothesis against the data, with mixed results (see, for example, Alvaredo and Gasparini 2013, Bourguignon 2018, Frazer 2006). In general, studies that use cross-section or pooled data tend to support the Kuznets hypothesis, while those that follow changes within countries over time using time-series or panel data do not.

Here we investigate a different but related question: what is the relationship between the size of the middle class and a country's level of development or economic growth? And, specifically, what does this relationship look like in China? In theory an inverted-U relationship is possible. The share of the middle class in the population would first increase and then decline if the shape of the income distribution remains reasonably stable and is thick in the center with thin tails, and if household median income rises with growth in GDP per capita. In this case, poor countries would start with a majority low-income class, and economic growth would shift low-income households into the middle class. As growth continues, the middle class would become the largest group. Then, once the bulk of the population belongs to the middle class, further growth will cause the middle class to shrink as the middle-class population shifts into the high-income class.

Of course, the relationship between economic growth and changes in the size of the middle class is more complex than this, because for example not only does growth affect the size of the middle class, but the size of the middle class can affect economic growth. Our main objective here, however, is empirical rather than theoretical. We therefore concentrate on the data and look for empirical patterns.

/Figure 3 about here/

We begin by examining the cross-section relationship between middle-class population shares and GDP per capita for 33 countries plus China (red color) shown in Figure 3. All data in this figure are for the same year, 2018. In view of China's large rural-urban divide and the concentration of China's middle class in the cities, the figure shows a separate point for urban China (orange color).

Figure 3 shows that from a cross-section perspective, in 2018 China was not an outlier. The share of the middle class in China was basically consistent with the cross-country relationship between the middle-class share and GDP per capita. The same can be said of urban China.

The cross-section data reveal a clear inverted U pattern that is well fitted by a quadratic trendline ($R^2=.88$). The fitted trend gives a middle-class share that reaches a maximum of 73 percent at GDP per capita in the range of PPP \$50,000-\$60,000. China and urban China both lie fairly near to the fitted trend to the left of the maximum. China as a whole is 5 percentage points above the fitted trend, and urban China is 10 percentage points below the fitted trend. These deviations are similar in size to the deviations of other countries.

Can we infer from the cross-section data that in the future China's middle-class share will follow an inverted-U path as its GDP per capita grows further? Panel data are better suited to answering this question. Figure 4 shows panel data for 23 countries for which multiple years of both LIS household incomes and constant-price PPP GDP per capita data are available. The PPP GDP data are available from 1991 onwards. LIS household income data for most of the countries begins in the late 1980s or early 1990s, and the most recent years are between 2015 and 2018, depending on the country. Figure 4's datapoints therefore run from as early as 1991 to as late as 2018. The figure also shows a fitted quadratic trendline for each country. China, with data ranging from 2002 to 2018, is in red color.

/Figure 4 about here/

Unfortunately, the time span of the data is too short for countries to have traversed all the way from low to high development. This could explain why the trendlines of individual countries in Figure 4 appear are mostly upward sloping or downward sloping, rather than having an Inverted-U shape. Nevertheless, inspection of Figure 4 reveals a regularity: the slope of the trendline depends on a country's initial level of GDP per capita.

Lower-income countries clustered at the left-hand side of the figure are characterized by fairly linear, upward sloping trendlines. China is in this group. Immediately to the right are a few countries with steeper upward-sloping trends. These are Hungary, Poland, and Russia, all transition economies. Further to the right, the slope flattens again but remains positive. Finally, at the far right is a cluster of high-income countries with flat or downward-sloping trendlines. These systematic slope changes as one moves from left to right give the pooled panel data a cubic shape rather than the more standard quadratic shape shown given by the cross-section data (Figure 3).

What does Figure 4 tell us? Due to the insufficient time range of for the data, Figure 4 does not confirm, nor does it deny, the existence of an inverted-U path for individual countries over the long run. It can, however, tell us whether, within the time frame for which data are available, the path of China's middle class resembles that of other countries at a similar level of development.

Figure 5 contains only the countries with PPP GDP per capita below \$20,000 and so provides a closer view of this group. Compared to other countries in this group, in 2002 and 2007 China's middle-class share was relatively low, but by 2013 and especially by 2018 China's middle-class share was relatively high given its GDP per capita. China was not the highest, however. The highest middle-class shares relative to GDP per capita belonged to Vietnam and Paraguay, whose trendlines lie everywhere above China's.

/Figure 5 about here/

China's is distinct from the other countries in this group in that its trendline is steeper and it covers a much greater vertical distance in a shorter time span. For example, in the five years 2013 through 2018, China's middle-class share rose 10 percentage points. The only other country in the figure that achieved a vertical rise of 10 percentage points was Paraguay, but Paraguay took sixteen years (2000 to 2016) to cover the same vertical distance.

China's trajectory is steeper not only than that of the lower-income countries, but also than those of most countries with higher levels of GDP per capita (Figure 3). The exceptions are a few countries in the next higher range of GDP per capita, Hungary, Poland and Russia. These all happen to be transition economies. This raises the question of whether countries that undergo transition from socialist planned economies to market economies follow similar trajectories.

Figure 6 contains all the transition economies with available LIS data suitable for this exercise, regardless of level of GDP per capita (China, Vietnam, Georgia, Poland, Russia and Hungary). The small number of data points for Vietnam and Georgia make generalization difficult, but Figure 6 suggests that the transition economies have travelled large vertical distances in relatively short time frames. Poland and Russia's trajectories are the most like China's. Poland sustained its upward trajectory with ongoing growth in both its GDP per

capita and middle-class population share. Russia's middle-class share peaked at 58 percent. Thereafter Russia's GDP per capita growth stalled, and its middle-class share fell back to 53 percent.¹¹

/Figure 6 about here/

The unusual trajectories of the transition economies could reflect some unique features inherited from their previous socialist incarnations. Compared to capitalist economies at similar levels of GDP per capita, socialist economies were historically characterized by larger public sectors, higher levels of investment in human capital, and lower levels of income inequality. These characteristics are thought to be positively associated with the emergence of the middle class.

Although the trajectories of these transition economies are similar, China is still distinct in that its trendline lies to the northwest of all the other transition economies except Vietnam. In other words, even among transition economies, China's middle-class population share is relatively high given its level of GDP per capita.

7. Conclusion

The emergence of China's global middle class is a relatively new phenomenon. China's middle class emerged after 2002 and has grown rapidly thereafter. By 2018 China's middle-class had reached 25 percent of the population and was reshaping the socioeconomic landscape, especially in urban areas.

The rapid emergence of China's global middle class can have effects on the domestic economy. The incomes of this middle-class are high enough to allow discretionary spending on more, higher quality goods and services. The resulting consumer demand can induce economy-wide innovation, and it can contribute to the rebalancing of China's economy away from investment-driven, export-led growth towards growth driven by domestic demand. The

¹¹ Note that the distinct reversal in the size of Russia's middle class has been noted in reports on Russia. See, for example, this discussion by Trudolybulov (2018) <https://www.wilsoncenter.org/blog-post/who-mr-ivanov-why-russias-middle-class-today-different> , accessed 15 February 2021.

middle class also contributes to growth through its investments in education and human capital, which can raise productivity in the long term.

The expansion of China's global middle class also holds domestic political implications. Due to its now significant size and its economic and political clout, the interests of China's middle class affect the domestic political equation. China's global middle class is primarily urban and is dependent on salaried employment, much in public or quasi-public entities such as state enterprises, the civil service, and the education sector. Only a small minority of this group derives its income from private business and entrepreneurship (Gustafsson, Yang and Sicular 2020). The interests of China's global middle class, then, are aligned with a political system that promotes ongoing income growth, supports substantial levels of public or quasi-public sector employment, and protects and strengthens government provision of urban-oriented education, pension, welfare and insurance programs.

The rapid expansion of China's global middle class has shifted the center of gravity in the worldwide global middle class. In the past China accounted for a very small share of the middle class worldwide. Middle-class consumers in North America and Europe were the main source of worldwide demand, and their demand was largely met by supply produced in lower-income countries (Kharas 2010). Rapid growth in China's global middle class, combined with stagnant or shrinking middle class populations in high-income countries, is altering this equation. To date the international impact of China's global middle class remains muted, however. China's middle-class households have high savings rates (Gustafsson, Yang and Sicular 2020) and so do not exercise their global market power as consumers to the same extent as their western counterparts. In addition, the influence of Chinese household savings on international financial markets is reduced by barriers to cross-border financial flows.

Nevertheless, the international impact of China's global middle class is on the rise and already perceptible in many sectors such as tourism, education, real estate, and the digital economy. In the future, global production will increasingly be shaped by and oriented towards the demand of Chinese middle-class consumers. This will provide challenges and opportunities for today's high-income economies.

Our empirical findings raise several questions for further research. One question is the relationship between urbanization and the middle class. Is growth of the global middle-class

largely an urban phenomenon and associated with urbanization? If so, why? Another question is about the upper class. Our analysis reveals large discrepancies among countries in the size of the upper class. What determines growth in the size of the upper class in China and other countries? Such work would tie into the recent, growing literature on top-incomes and wealth. Finally, cross-country analysis of the relationship between the middle class and development raises many questions. Is there a Kuznets-like inverted U relationship, and if so, what explains it?

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Table 1. Cutoffs for the global lower, middle, and upper classes (RMB per equivalent person per day)

	Between the middle class and lower class	Between the middle class and upper class
2002	103.2	343.8
2007	117.5	391.5
2013	141.6	471.9
2018	154.9	516.4

Notes: These cutoffs are in current-year prices. US \$ refers to PPP US dollars. First, we set the 2018 cutoffs at 60 percent and 200 percent of 2018 median income per equalized person for the EU-28 countries (Euros 17,409). This is divided by 365 to obtain the per day value. These cutoffs are converted to PPP US dollars using the 2018 PPP exchange rate for private consumption for the EU-28. This gives lower and upper cutoffs for the middle class of PPP\$ 37.5 and 125.0. Second, the USD cutoffs for 2018 are converted to RMB using the 2018 PPP exchange rate for private consumption for China. Third, the RMB cutoffs for 2002, 2007, and 2013 are obtained by deflating the 2018 RMB cutoffs using China's domestic consumer price index. Note that the cutoffs reported in this table are deflated using China's national consumer price index, but when estimating the middle class shares reported in later tables we deflate the cutoffs for urban China using the urban consumer price index and for rural China using the rural consumer price index. Note that Eurostat statistics for median incomes are expressed per equivalent person based on an equivalence scale to adjust household size to reflect economies of scale in household consumption. The Eurostat equivalence scale gives a weight of 1.0 to the first adult in the household, 0.5 for additional adults, and 0.3 for each child 14 years and younger. For consistency, we have applied the Eurostat equivalence scale to the data for all countries including China in our analyses. Unless noted otherwise, all household income statistics reported here are per equivalent person.

Sources: The EU-28 median income data are from Eurostat (<https://ec.europa.eu/eurostat/data/database>, accessed 17 March 2020) and the EU-28 PPP exchange rates are from the OECD (https://stats.oecd.org/index.aspx?DataSetCode=SNA_Table4, accessed 17 March 2020). The 2018 PPP exchange rate for private consumption is from the WDI (<https://data.worldbank.org/indicator/PA.NUS.PRVT.PP>, accessed 17 March 2020). China's consumer price index is from (<http://www.stats.gov.cn/english/statisticaldata/annualdata/>, accessed 17 March 2020).

Table 2. The composition of the CHIP survey sample, and China's population and its urban/rural/migrant composition

	CHIP observations				Weighted population shares (%)			Population (mlns)
	Total	Urban	Rural	Migrants	Urban	Rural	Migrants	
2002	61822	20599	37927	3296	33.7	64.7	1.6	1285
2007	89642	29553	51712	8377	34.5	54.2	11.3	1321
2013	57821	18668	37090	2063	40.9	45.8	13.3	1367
2018	70431	29030	34491	6910	47.7	39.9	12.4	1405

Notes: The numbers of observations are unweighted. Population shares are calculated using weights that are based on China's official census and population sample surveys, and so reflect the size and composition of the population according to official population statistics. Urban is defined as individuals with urban hukou resident in urban areas; rural as individuals with rural hukou resident in rural areas; and migrant as individuals with rural hukou resident in urban areas. Residency is defined as living in the location for more than six months of the year.

Table 3. China's global middle class: Size and growth

	Size (millions)	Share of population (%)	Average annual growth in size (%)	Average annual growth of GDP per capita (%)
2002	7.5	0.58	--	--
2007	26.7	2.02	29.1	11.0
2013	187.9	13.81	38.4	8.6
2018	344.2	24.67	12.9	6.5

Notes: Average annual growth of GDP per capita is in constant prices. Here and elsewhere, we estimate the sizes and shares of the middle class by counting the numbers of individuals in the survey samples whose household per capita income falls within the middle class cutoffs (with weights). When we calculate the share and size of China's middle class for 2002, 2007 and 2013, we deflate the middle-class income cutoffs separately for urban and rural areas using the urban consumer price index for the urban and migrant samples and using the rural consumer price index for the rural sample.

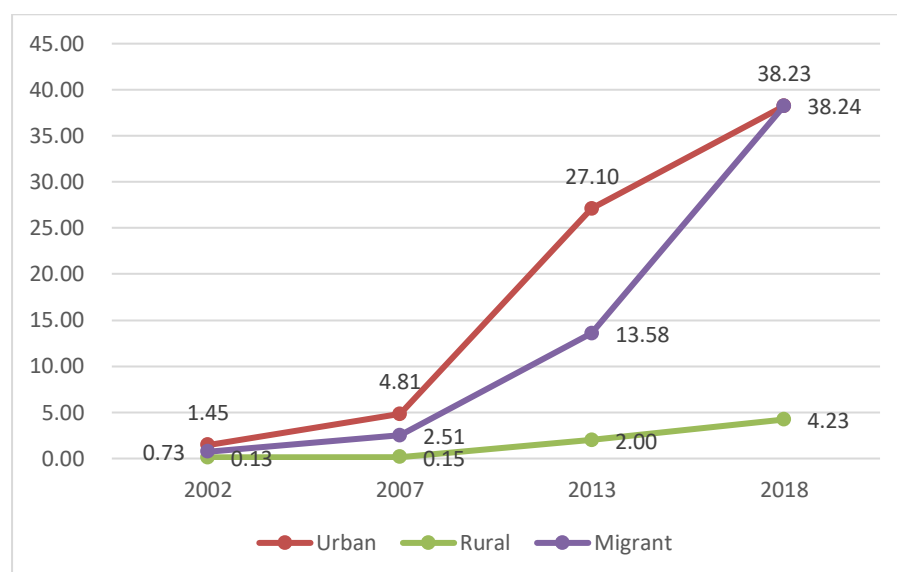
Sources: Authors' calculations using the CHIP data with region x urban/rural/migrant population weights; urban and rural consumer price indexes are from <http://www.stats.gov.cn/tjsj/ndsj/2019/indexeh.htm>, and GDP per capita growth rates are from the WDI dataset of the World Bank <https://databank.worldbank.org/home>, accessed 23 January 2021.

Table 4. China's global middle class: Composition by urban, rural, migrant (%)

	Urban	Rural	Migrant	All
2002	83.51	14.49	2.00	100
2007	81.96	4.03	14.01	100
2013	80.30	6.63	13.07	100
2018	73.99	6.84	19.17	100

Notes: Urban refers to living in urban areas and having an urban hukou; rural refers to living in rural areas and having a rural hukou; migrant refers to living in urban areas and having a rural hukou. See notes to Tables 1 and 3.

Source: Authors' calculations using the CHIP data, with region x urban/rural/migrant population weights.

Figure 1. Shares of China's urban, rural and migrant populations that belong to the global middle class (%)

Notes: Urban refers to living in urban areas and having an urban hukou; rural refers to living in rural areas and having a rural hukou; migrant refers to living in urban areas and having a rural hukou. See notes to Tables 1, 3 and 4.

Source: Authors' calculations using the CHIP data, with region x urban/rural/migrant population weights. Price indexes are from the NBS, see <http://www.stats.gov.cn/tjsj/ndsj/2019/indexeh.htm>, accessed 24 January 2021.

Table 5. Comparisons: China and high-income countries, 2018

	Lower class (%)	Middle class (%)	Upper class (%)	Size of middle class (mlns)	Median household income per equivalent person (PPP\$)	GDP per capita (PPP\$)
China	74.3	24.7	1.1	344.2	23	15,614
China, urban	60.1	38.2	1.6	320.9	31	27,657
USA	9.9	55.1	35.1	179.9	97	62,997
Canada	7.0	67.5	25.6	25.0	89	50,078
Europe	20.4	68.7	11.0	337.4	--	44,466
Greece	52.4	46.3	1.3	5.0	36	29,535
Poland	46.1	52.1	1.8	19.8	39	31,851
Hungary	50.4	48.3	1.2	4.7	37	32,086

Notes: All numbers in this table are for 2018; PPP\$ are in 2018 prices. For estimation of urban China GDP per capita see notes to Figure 3 below. Except for the USA and Mexico, LIS income data are not available for 2018. For these countries we estimate the 2018 class shares and median incomes by multiplying the LIS income data from the most recent available year by the growth rate of mean household income per capita between that year and 2018. For Europe we combine the 25 European countries for which the LIS gives the needed data (Austria, Belgium, Czech Rep, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Netherlands, Norway, Poland, Slovakia, Slovenia, Spain, United Kingdom, Denmark, Sweden, Iceland, Serbia, Switzerland). GDP per capita for Europe is the World Development Indicators aggregate for 28 EU member countries.

Sources: For China, authors' calculations using the CHIP data, with region x urban/rural/migrant population weights. For other countries, class shares are calculated using LIS individual income data. Growth of mean household income per capita is from the OECD (<https://data.oecd.org/hha/household-disposable-income.htm>, downloaded in Dec.19 of 2020). GDP per capita is from the World Development Indicators (WDI)

(<https://api.worldbank.org/v2/en/indicator/NY.GDP.PCAP.PP.CD?downloadformat=excel>), accessed January 28, 2021.

Table 6. Comparisons: The BRICS + Mexico, 2018

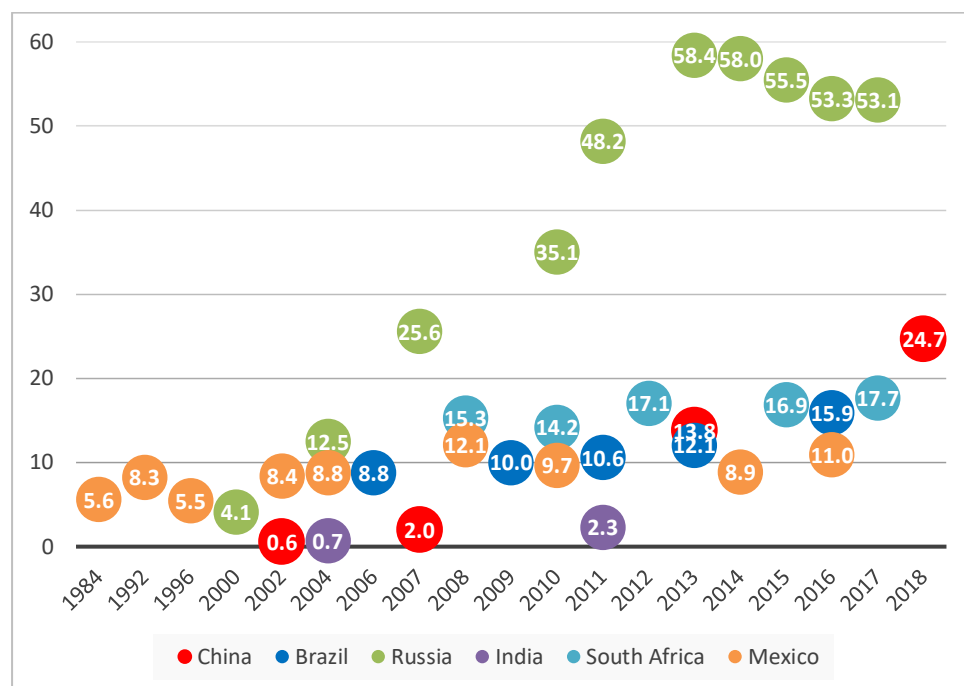
	Lower class (%)	Middle class (%)	Upper class (%)	Size of middle class (mlns)	Median household income per equivalent person (PPP\$)	GDP per capita (PPP\$)
Russia	42.9	54.2	2.9	78.2	42	28,764
China	74.3	24.7	1.1	344.2	23	15,614
South Africa	78.6	17.9	3.5	10.3	13	12,838
Brazil	81.1	16.1	2.8	33.8	22	14,951
Mexico	88.4	11.0	0.7	13.9	16	20,424
India	94.0	6.0	0.1	80.5	9	6,655

Notes: All numbers in this table are for 2018; PPP\$ are in current 2018 prices. For some countries, income data are not available for 2018. For these countries we estimate the 2018 class shares and median incomes by multiplying the LIS income data from the most recent available year by the growth rate of mean household disposable income between that year and 2018 (or, for Brazil and India, for which the mean household income growth rate is unavailable, by the growth rate of GDP per capita). The most recent year for which the LIS income data are available is: Russian 2017, China 2018, South Africa 2017, Brazil 2016, Mexico 2018, India 2011.

Sources: For China, authors' calculations using the CHIP data, with region x urban/rural/migrant population weights. For other countries, class shares are calculated using LIS income data. Growth of mean household income per capita is from the OECD (<https://data.oecd.org/hha/household-disposable-income.htm>, downloaded in Dec.19 of 2020). GDP per capita and Growth of GDP per capita is from the World Development Indicators

(<https://api.worldbank.org/v2/en/indicator/NY.GDP.PCAP.PP.CD?downloadformat=excel>), accessed January 28, 2021.

Figure 2. Changes in global middle class share over time, BRICS + Mexico



Notes: For specific year of each country, we first use the CPI to adjust the income into 2018 price level, and then use the PPP (downloaded from WDI) to adjust the national currencies into international dollars. Specifically, The PPP is “PPP conversion factor, private consumption (LCU per international \$)” downloaded from WDI in Jan. 21th of 2021.

Sources: For China, authors’ calculations using the CHIP data, with region x urban/rural/migrant population weights. For other countries, calculated using LIS income data.

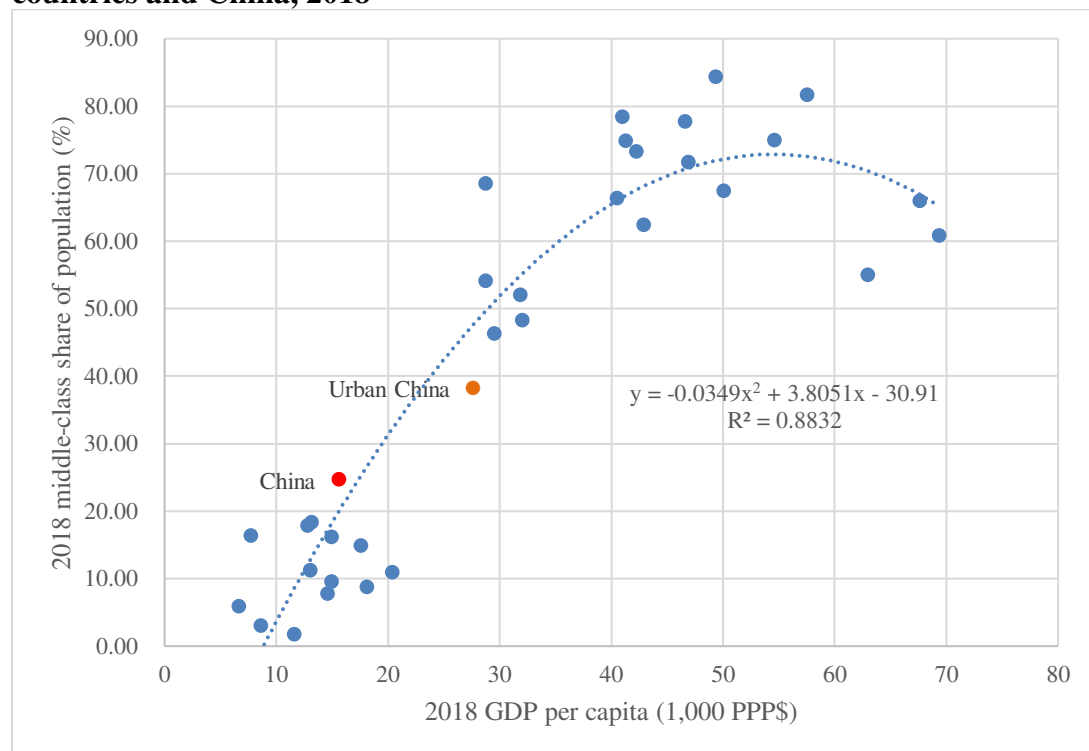
Table 7. Comparisons: Urban middle classes in the BRICS + Mexico, 2018

	share of the middle class that is urban (%)	share of the urban population that is middle class (%)	urban population share (%)
Russia	83.4	60.7	74.4
China	93.2	38.2	60.1
South Africa	86.1	23.9	66.4
Brazil	95.8	18.2	86.6
Mexico	93.2	13.6	80.2
India	60.9	11.4	35.0

Notes: See notes to Table 5. Population shares are for 2018. Note that ‘urban population’ refers to people living in urban areas as defined by each country’s national statistical office. The definitions for different countries therefore may not be consistent.

Sources: For China, authors’ calculations using the CHIP data, with region x urban/rural/migrant population weights. For other countries, LIS. Urban population share for China is from Table 1 and for other countries from World Development Indicators <https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS>, accessed January 29, 2021.

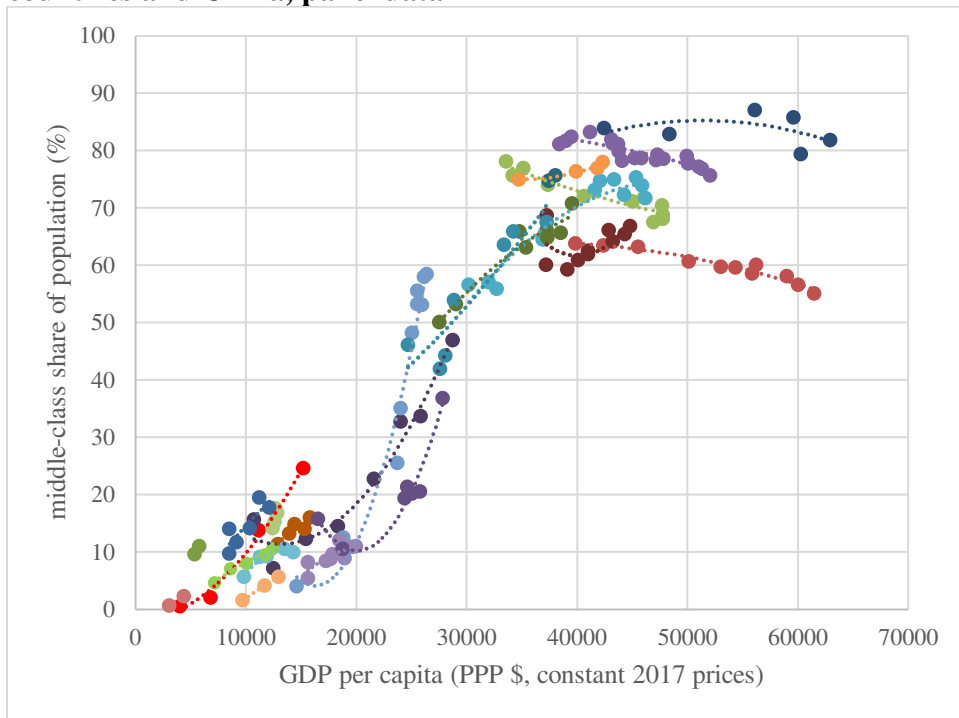
Figure 3. Global middle-class population shares versus PPP GDP per capita for 33 countries and China, 2018



Note: For the USA and Mexico, middle-class shares are calculated using LIS income data for 2018. For all other countries, we estimate the 2018 class shares and median incomes by multiplying the LIS income data from the most recent available year by the growth rate of average household disposable income (from OECD) between that year and 2018. For Brazil and India for which the household disposable income growth rates are unavailable, we use the growth rate of GDP per capita. Note that the extrapolation assumes that incomes of all households in the income distribution grew at the same, average rate between the most recent year of the LIS data and 2018. Because the household income (and GDP per capita) growth rates are in constant prices, we use each country's CPI to convert our estimates of 2018 income into 2018 prices. Then, we use the 2018 PPP exchange rates for private consumption (from the WDI) to adjust the national currencies into international dollars. For urban China, GDP per capita is only available for 2017 and is calculated as the sum of GDP for all of China's provincial- and prefectural-level cities divided by the sum of their registered populations (including registered migrants). We then multiply 2017 urban GDP per capita by the national GDP growth rate from 2017 to 2018 (6.7%) to obtain an estimate of 2018 urban GDP per capita. The 33 countries are: Australia, Brazil, Canada, China, Colombia, Dominican Republic, Egypt, Finland, France, Georgia, Germany, Greece, Guatemala, Hungary, India, Italy, Japan, Luxembourg, Mexico, Netherlands, Norway, Paraguay, Peru, Poland, Russian Federation, Serbia, South Africa, South Korea, Spain, Switzerland, UK, US, Vietnam.

Sources: For China, authors' calculations using household income data from CHIP 2018, with region x urban/rural/migrant population weights. For urban China, per capita GDP is estimated using 2017 data for provincial and prefectural level cities available from https://en.wikipedia.org/wiki/List_of_Chinese_prefecture-level_cities_by_GDP_per_capita, accessed January 31, 2021. For all other countries, household income data are from the LIS, income growth rates are from the OECD and WDI datasets, and per capita GDP is from the WDI dataset of the World Bank.

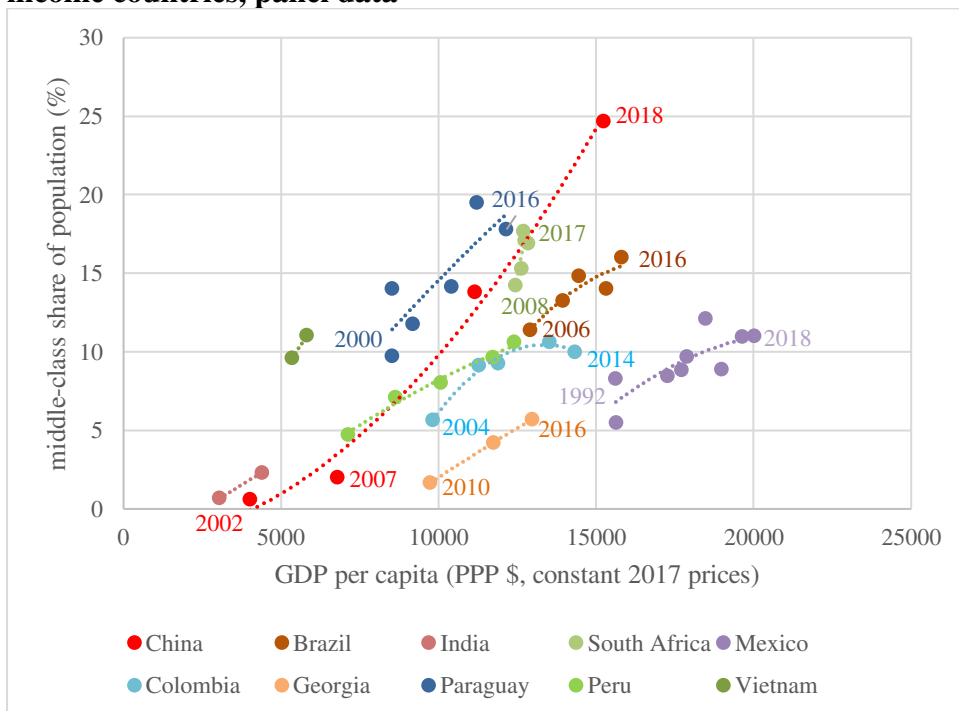
Figure 4. Global middle-class population share and PPP GDP per capita for 23 countries and China, panel data



Note: Countries included are those for which the LIS data contain adequate data over multiple years. Years available differ among countries. Fitted quadratic trend lines are shown for each country. The 23 countries are: Brazil, Canada, China, Colombia, France, Georgia, Germany, Greece, Hungary, India, Italy, Japan, Mexico, Norway, Paraguay, Peru, Poland, Russian Federation, South Africa, Spain, UK, US, Vietnam.

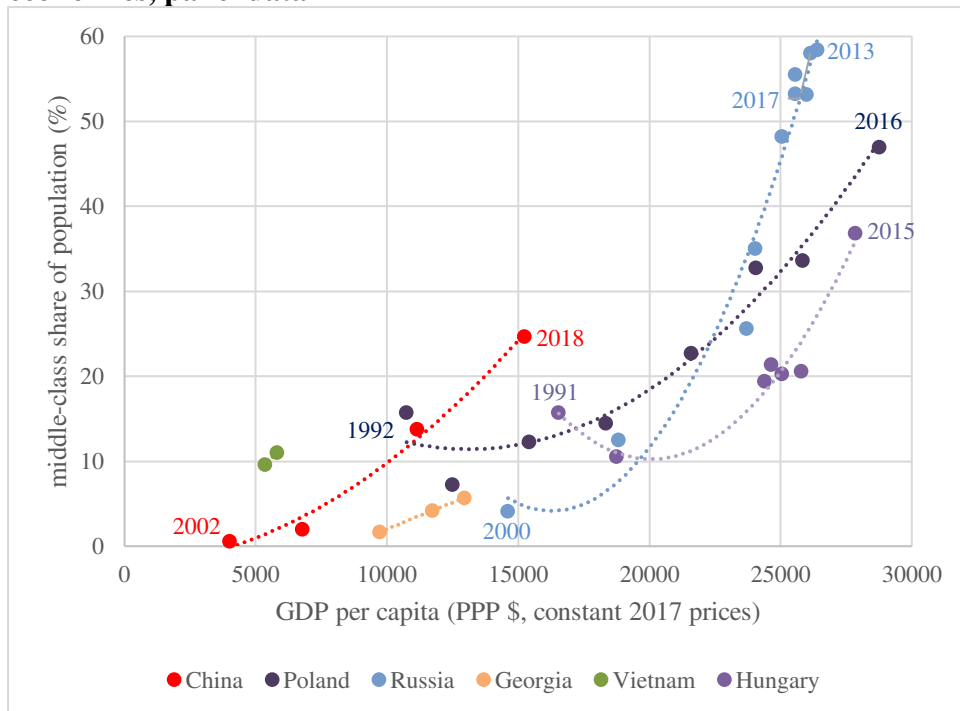
Sources: For China, authors' calculations using household income data from CHIP 2018, with region x urban/rural/migrant population weights. For all other countries, household income data are from the LIS. For all countries including China per capita GDP in constant 2017 PPP dollars is from the WDI dataset of the World Bank.

Figure 5. Global middle-class population share and PPP GDP per capita for lower-income countries, panel data



Note: See Figure 4 for notes and sources.

Figure 6. Global middle-class population share and PPP GDP per capita for transition economies, panel data



Note: See Figure 4 for notes and sources.