Capital Accumulation, Private Property
and Rising Inequality in China, 1978-2015

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Abstract. This paper combines national accounts, survey, wealth and fiscal data (including recently released tax data on high-income taxpayers) in order to provide consistent series on the accumulation and distribution of income and wealth in China over the 1978-2015 period. We find that the aggregate national wealth-income ratio has increased, from 350% in 1978 to almost 700% in 2015. This can be accounted for by a combination of high saving and investment rates and a gradual rise in relative asset prices, reflecting changes in the legal system of property. The share of public property in national wealth has declined from about 70% in 1978 to less than 35% in 2015, which is still a lot higher than in rich countries (close to 0% or negative). Next, we provide sharp upward revision of official inequality estimates. The top 10% income share rose from 26% to 41% of national income between 1978 and 2015, while the bottom 50% share dropped from 28% to 15%. China's inequality levels used to be close to Nordic countries, and are now approaching U.S. levels.

Section 1. Introduction

Between 1978 and 2015, China has moved from a poor, underdeveloped country to the world's leading emerging economy. Indeed, China's share in world GDP has increased from less than 4% in 1978 to about 18% by 2015 (while its share in world population has declined somewhat, from 22% in 1978 to 19% in 2015) (see Figure 1). According to official statistics, real per adult national income was multiplied by more than 10 between 1978 and 2015, with an average annual growth rate of 6.9%. Expressed in 2015 €, average adult national income was less than 100€ per month in 1978, and it rose to about 1000€ per month in 2015 (see Figure 2).[1]

Unfortunately, relatively little is known about how the distribution of income and wealth within China has changed over this critical period. In other words, we do not have reliable and consistent estimates of the extent to which the various income and wealth classes have benefited (or not) from this enormous macroeconomic growth. The household surveys that are used to study distributional issues in China suffer from massive under-reporting, particularly at the top of the distribution, and are typically not consistent with the data sources that are used to measure macroeconomic growth (namely, national accounts). This is an issue of tremendous importance not only for China and its future development path, but also for the rest of the world and the social sustainability of globalization.

In this paper, we combine and confront several different data sources in a systematic manner, in particular national accounts, survey, wealth and fiscal data (including

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[1] Annual per adult national income rose from less than 5000 yuans in 1978 to almost 55 000 yuans in 2015, i.e. from about 1000 euros in 1978 to about 12000 euros in 2015 (these amounts are expressed in 2015 yuans and euros using the latest purchasing power parity estimates).

recently released tax data high-income taxpayers) in order to provide consistent series on the accumulation and distribution of income and wealth in China over the 1978-2015 period. We make two main contributions.

First, we combine official and non-official sources (including independent estimates of China's balance sheets) in order to provide the first systematic estimates of the level and structure of national wealth in China since the beginning of the market reform process. We find that the aggregate national wealth-income ratio has increased, from 350% in 1978 to almost 700% in 2015. This can be accounted for by a combination of high saving and investment rates and a gradual rise in relative asset prices, reflecting changes in the legal system of property. The share of public property in national wealth has declined from about 70% in 1978 to less than 35% in 2015. Most of the housing stock is now owned by private households: the share of private ownership is close to 90% in 2015, as compared to as little as 20% in 1978. But the equity ownership of Chinese corporations is still predominantly public: almost 60% public (with a small but significant rebound since 2009), vs. about 30% for private Chinese ownership, and 10% for foreign ownership (less than in the U.S., and much less than in Europe).

In brief: China has moved a long way toward private property between 1978 and 2015, but the property regime of the country is still very different from that found in other parts of the world. In most developed countries, the share of public property in national wealth used to be around 15-25% in the 1960s-1970s, and is now close to 0%. It has even become negative in recent years in the U.S., Britain, Japan and Italy, with public debt exceeding public assets, and it is only slightly positive in Germany

and France. To put it differently: China has ceased to be communist, but is not entirely capitalist; it should rather be viewed as a "mixed economy" with a strong public ownership component. In effect, the share of public property in China today is somewhat larger than – though not incomparable to – what it was in the West during the "mixed economy" regime of the post-World War 2 decades (30-35% in China today vs. 15-25% in the West in the 1950s-1970s). If anything, the public share in China's mixed economy seems to have strengthened since the 2008 financial crises, while it has dropped again in rich countries. These findings are not completely unexpected, but we feel that it is important to be able to put numbers on these evolutions. By constructing comparable aggregate series on the structure of national wealth, we can better monitor and analyze the change and diversity of property structures over time and across countries.

Next, we combine recently released statistics on high-income taxpayers with household survey data and national accounts in order to revise official estimates of income inequality. To our knowledge, this is the first time that income tax data on high-income tax payers is used in order to correct inequality measures in China.[2] An income tax has been in place in China since 1980, but until recently no detailed income tax statistics was available, so that scholars working on income inequality in China had to rely solely on household surveys (based upon self-reported information). In 2006, the Chinese tax administration started to release data on the numbers and incomes of high-income taxpayers (i.e. taxpayers with individual taxable income above 120 000 yuans per year). We should make clear that this data is highly imperfect, and that our revised estimates might well under-estimate

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[2] Previous work on income inequality in China was almost entirely based upon household surveys. See e.g. Piketty and Qian (2009). See also the collection of essays on rising inequality in China collected by Shi, Sato and Sicular (2013).

inequality and should be viewed as lower-bound estimates. We also include some conservative estimates of undistributed profits owned by privately owned corporations (by combining our national wealth series with survey and wealth data).

What is interesting, however, is that these lower-bound estimates are already a lot larger than official survey-based estimation. E.g. for recent years we find corrected top 10% income shares around 41% of total income (as opposed to 31% for raw survery-based estimates), and corrected top 1% income shares around 13% of total income (as opposed to 7% for raw survey-based estimates). According to our series, the top 10% income share rose from 26% to 41% of national income between 1978 and 2015, while the bottom 50% share dropped from 28% to 15%. The urban-rural gap did increase, but most importantly income concentration rose very significantly within urban China and within rural China.

In effect, in the late 1970s China's inequality level used to be less than European average levels (close to levels observed in the most egalitarian Nordic countries), and is now approaching U.S. levels. It should be noted, however, that up until today inequality levels in China are significantly lower than in the U.S., in spite of the much larger population. E.g. the bottom 50% income share is about 15% of total income in China (19% in rural China, 23% in urban China), vs 12% in the U.S. and 22% in France. For the time being, China's development model appears to be more egalitarian than the U.S., and less than Europe. Chinese inequality levels seem to have stabilized in recent years (the biggest increase in inequality took place between the mid-1980s and the mid-2000s), but of course this does mean that they will remain at the same level in the future.

We should stress again that although the new series on the evolution of income and wealth in China reported in this paper are more homogenous and comparable previous series, they are still provisional and subject to revision, as new raw data sources become available and better methods are deigned.[3] These series are part of a broader on-going international project aimed at producing Distributional National Accounts (DINA). The general objective is to combine in a systematic manner national accounts, household survey and fiscal data on an international basis so as to produce more homogenous and comparable inequality estimates (for recent series constructed for the U.S. and France, see Piketty, Saez and Zucman, 2016, and Garbinti, Goupille and Piketty 2016, 2017). All series follow the same DINA guidelines (see Alvaredo et al 2016). New and updated series will be regularly made available on-line in the World Wealth and Income Database (WID.world).

The rest of this paper is organized as follows. In section 2 we describe our main data sources, concepts and methodology. In section 3 we present our results on the evolution of aggregate wealth-income ratios and the comparison with other countries. In section 4 we present our results on the evolution of income and wealth inequality, which we also compare to other countries. In section 5, we provide concluding comments. This paper is supplemented by an extensive data appendix available on-line and including all our raw data sources, computer codes and robustness checks.

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[3] It should also be added that Hong Kong and Macao are excluded from our data (both from the national accounts and from the household survey, income tax and wealth rankings data). This can lead to underestimate the rise of inequality, and this should be taken into account in future research.

Section 2. Data Sources, Concepts and Methodology

We use five broad categories of data sources: national income and wealth accounts; household income surveys; income tax data; household wealth surveys; wealth rankings. Our concepts and methods generally follow those described in the DINA Guidelines used for WID (Alvaredo et al 2016). We start with national income and national wealth series and then proceed with distributional series.

Section 2.1. National income and wealth series

Section 2.1.1. Basic concepts and conceptual framework

We follow the U.N. System of National Accounts (SNA 2008) conceptual framework and the definitions used by Piketty-Zucman (2014), Piketty (2014) and Alvaredo et al (2016). By combining official Chinese official national accounts series together with a number of unofficial balance sheet estimates – including those by Cho (1993), Ma (2012) and especially Yang (2013, 2015) – we provide consistent series for the following income and wealth concepts over the 1978-2015 period.

National income Y_t is defined in the standard manner: GDP minus capital depreciation plus net foreign income. Private wealth W_t is is defined as the total value of assets owned by households and non-profit institutions, minus their debt.[4]

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[4] At this stage Chinese data sources do not allow do decompose private wealth into personal wealth (households) and non-profit wealth (non-profit institutions, usually a relatively small part of private wealth), so we only provide series for aggregate private wealth (personal and non-profit).

Following SNA guidelines, assets include all the non-financial (real) assets – housing, land, buildings, machines, intellectual property etc. -- and financial assets -- including life insurance and pensions funds -- over which ownership rights can be enforced and that provide economic benefits to their owners. Pay-as-you-go social security pension wealth is excluded, just like all other claims on future government expenditures and transfers (like education expenses for one's children and health benefits). Durable goods owned by households, such as cars and furniture, are excluded as well. Non-financial assets are the only "real" assets, in the sense that financial assets and financial liabilities exactly balance each other at the world level and do not contribute to global net wealth. As a general rule, all assets and liabilities are valued at their prevailing market prices. Corporations are included in private wealth through the market value of equities owned by households. Unquoted shares are typically valued on the basis of observed market prices for comparable, publicly traded companies.

We similarly define public (or government) wealth W_{gt} as the net wealth of public administrations and government agencies. In available balance sheets, public non-financial assets like administrative buildings, schools and hospitals are valued by cumulating past investment flows and upgrading them using observed real estate prices. We define market-value national wealth W_{nt} as the sum of private and public wealth: $W_{nt}=W_t+W_{gt}$. National wealth can also be decomposed into domestic capital and net foreign assets: $W_{nt}=K_t+NFA_t$. Domestic capital K_t can in turn be decomposed as the sum of agricultural land, housing, and other domestic capital (including the market value of corporations, and the value of other non-financial assets held by the private and public sectors, net of their liabilities).

An alternative measure of the wealth of corporations is the total value of corporate assets net of non-equity liabilities, what we call the corporations' book value. We define residual corporate wealth W_{ct} as the difference between the book-value of corporations and their market value (which is the value of their equities). By definition, W_{ct} is equal to 0 when Tobin's Q -- the ratio between market and book values -- is equal to 1. In practice there are several reasons why Tobin's Q can be different from 1, so that residual corporate wealth is at times positive, at times negative. We define book-value national wealth W_{bt} as the sum of market-value national wealth and residual corporate wealth: $W_{bt}=W_{nt}+W_{ct}=W_t+W_{gt}+W_{ct}$. Although we tend to prefer our market-value concept of national wealth (or national capital), both definitions have some merit.[5]

Balance sheets are constructed by national statistical institutes and central banks using a large number of census-like sources, in particular reports from financial and non-financial corporations about their balance sheet and off-balance sheet positions, and housing surveys. The perpetual inventory method usually plays a secondary role. The interested reader is referred to Piketty-Zucman (2014) for a precise discussion of the methods used by the leading rich countries.

In the case of China's balance sheets, two remarks at in order. The notions of private vs. public property do not have exactly the same meaning in China and in developed capitalist countries, so we need to make choices in the way we present our series. In

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[5] W_{bt} corresponds to the concept of "national net worth" in the SNA (see Piketty-Zucman 2014, Data Appendix A.4.2). In this paper, we propose to use "national wealth" and "national capital" interchangeably (and similarly for "domestic wealth" and "domestic capital", and "private wealth" and "private capital"), and to specify whether one uses "market-value" or "book-value" aggregates. Note that 19th century authors such as Giffen and Foville also used "national wealth" and "national capital" interchangeably. The difference is that they viewed market values as the only possible value, while we recognize that both definitions have some merit.

particular, the private property of agricultural land (and other agricultural equipment and assets) is relatively unsecure in China, in the sense that individual owners have land use rights that can be transmitted to their children as long as they stay in the countryside (more precisely, as long they keep their rural Hukou), but loose all rights to the land in case they move permanently to the cities (their land is then returned to the local government and allocated to other individuals).[6] In order to reflect this semi-private semi-public of agricultural land, we allocate it 50-50 into private and public wealth. We also show how our results would be affected if we were to use other private-public splitting rules (see section 3 below). By adopting a fixed splitting rule, we probably under-estimate somewhat the real rise in private property rights over the 1978-2015 period, since land use and transmission rights have been increased during this period particularly in the 1980s and 1990s. It is difficult however to express these rights in monetary terms, so a fixed rule around 50-50 seems like the most natural solution. As we shall see, this has a limited impact on our main findings.

Next, in the data appendix we provide both market-value and book-value estimates for China's national wealth. Tobin's Q ratios display significant time variations (e.g. they fall after the 2008 crisis, as expected), but overall they appear to be relatively close to 1 in our Chinese series. In effect, they seem to be closer than what we find in the U.S. and in the U.K. (where Q ratios are close to 1 and sometime higher to 1)

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[6] In China there are two type of "Hukou" (Residence Registration), agriculture Hukou (in rural China) and non-agriculture Hukou (in urban China). People with agriculture Hukou from rural China can keep their agriculture Hukou even when they are working in the cities, and in this way they are still entitled to their lands. They can also choose to change their Hukou to non-agriculture Hukou (city Hukou), providing they are working in the city and satisfying the requirements of Hukou change process (for example, working more than a certain number of years in the city), which give them access to various other rights (access to certain schools and public services for their family, etc.). After they change their Hukou, they will lose their lands in their village. Due to the price of land is increasing very fast in the last 20 years, agriculture Hukou has became more and more valuable, and a number of migrant workers in the city prefer keep their agriculture Hukou even if it means more limited access to other rights. It is almost impossible to change Hukou from non-agriculture to agriculture.

than in Japan, Germany or France (where Q ratios are systematically below 1, typically in the 0.5-0.8 range). Whether this reflects stronger shareholder rights in China or data comparability problems or both is an open issue at this stage.[7] In the rest of the paper we concentrate on market-value series.

Section 2.1.2. Sources for China's national income and wealth accounts

There exists a relatively long tradition of national accounts in China. In particular, the seminal study by Wu Baosan (1947) provides estimates of the national Income of China for the 1930s with detailed sectoral breakdown. It was the first time the national income of China had been estimated. Liu-Yeh (1965) estimated the the national income for the period of 1933-1959, followed by Rawski (1989), which estimate the national income and economic growth of China for the period of 1913-1945. We begin our series in 1978 so we do not use this work.

For the recent period, we use official national accounts, described below, that comply with the latest international guidelines (SNA, 1993, 2008). In earlier series, generally before 1985 or 1992 (depending on the series), the national accounts of China were based on the Material Planning System. We have homogenized these data (described in data appendix files) using the same concepts and definitions as those used in the most recent official accounts. The basic sources for income and output come from China's Statistical Yearbook (CSY) and China's Compendium of Statistics (available since 1949).

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[7] Our Q ratios series begin in 1993 (like other annual series, below). For earlier estimates (1978 and 1985) we simply assume that book value and market value of corporations are the same.

For national income and its subcomponents, we provide annual series over the entire 1978-2015 period. However for national wealth and its subcomponents, available data sources before 1993 are relatively limited, so we choose to begin our annual series in 1993, and to provide two separate estimates for 1978 and 1985.

Regarding stock accounts, there exists an early attempt by Chow (1993) to document and understand capital formation and growth in China. However Chow does not a provide a complete balance sheet (in particular, it is impossible to fully address the division between public and private property and assess the role of price effects and the role for land).

Official research on the national balance sheet of China started in 1995, when the national balance account was first included in the system of national accounts. In 1997, NBS (National Bureau of Statistics) of China published "Methods of Compiling Balance Sheet of China (1997)" as a guide for calculating the national balance sheet, an updated version of the book was published in 2007. Ever since, NBS of China started to compile its national balance sheets on a trial basis since 1997. Although there has been great interest, the NBS has never published them (Faqi Shi 2011). Official series on stock of fixed assets have also been published in CSY, China Compendium of Statistics 1949-2008, PBC (People's Bank of China), NBS, and China Economic Census.

In addition to these incomplete official series, there exists a small number of recent academic studies of the national balance sheet of China. The most important studies are those of Ma et al. (2012), Cao et al. (2012) and especially Yang et al. (2013,

2015). Yang's research team is from Academy of Social Sciences of China. They estimate the balance sheet of China from 2007 to 2014. For some of the sector level balance-sheet, such as household, enterprises, the data covers the period from 2000 to 2014. They cover both public and private sectors. This is one the most complete attempts to estimate China's national wealth so far. We construct our own series based on Ma and Yang's studies and the official estimates, and a number of adjustments in order to ensure homogeneity and comparability with developed countries balance sheets. In particular, we include some new estimates for the value of agricultural land and housing for 1978, 1985 and 1993-2015, and we adjust the value of agricultural land in order to take into account the semi-private semi-public nature of rural assets in China (see the discussion above). All details about our computations and assumptions are described in our extensive data appendix.

Section 2.2. Series on income and wealth distribution in China

Section 2.2.1. Income distribution series

In order to construct our income distribution series, we combine national accounts, survey, wealth and fiscal data. More precisely, we proceed in three steps: we start from household income survey data, which are then corrected using income tax data on high-income taxpayers, and finally we use national accounts and wealth data in order to introduce a correction for tax-exempt capital income. All corresponding computer codes and robustness checks are provided in our on-line data appendix.

Step 1. We start from the large, nationally representative household surveys organized each year in rural China and urban China by CSB (China's Statistical Bureau).[8] The micro-files from these surveys are not available, but CSB publishes detailed tabulations using a large number of income brackets and detailed information about income categories (wage income, pension and other replacement income, business and capital income) and household size. We use all annual tabulations from 1978 to 2015 for both the rural and the urban surveys.[9]

Using the generalized Pareto interpolation techniques developed by Blanchet-Fournier-Piketty (2016), we estimate the full distribution of income expressed in generalized percentiles, separately for rural China, urban China and total China.[10]

The survey income concept that we use is pre-tax post-replacement income, i.e. pension income (and other replacement income such as unemployment insurance) is included in income, while pension contributions (and other social contributions financing replacement income flows) are deducted from income.[11] The observation unit is the equal-split adult individual (see Alvaredo et al 2016). I.e. we are interested

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[8] The sample size has varied between 10 000 households (for older surveys) and 50 000 households (in recent surveys) per year in both the rural and the urban survey.

[9] Note that these surveys have been conducted by CSB since the early 1950s, and that the 1950-1978 tabulations could also be used using the same methods. Preliminary examination of the data suggest that income inequality during the 1950s-1970s (as measured by these surveys) was relatively stable at very low levels (close to the levels that we observe in 1978, which are indeed extremely low by historical and international standards.

[10] Generalized percentiles (or g-percentiles) are defined in the DINA Guidelines (see Alvaredo et al, 2016). There are 127 g-percentiles: 99 for the bottom 99 percentiles, 9 for the bottom 9 tenth-of-percentiles of the top percentile, 9 for the bottom 9 one-hundredth-of-percentiles of top tenth-of-percentile, and 10 for the 10 one-thousandth-of-percentile of the top one-hundredth-of-percentile.

[11] This is similar to the pre-tax national concept presented in DINA Guidelines (as opposed to the pre-tax factor income concept, which treats pension and other replacement income on a contribution basis rather than a distribution basis), except of course that survey income misses important components of incomes, especially among top income earners, hence the corrections described below.

to estimate the distribution of per adult income. In order to do this, we divide household income by the number of adults in the household.[12]

Step 2. We then proceed to correct the top of the distribution of survey income by using income tax data. A progressive income tax has been in place since 1980 in China (see on-line appendix for all tax rates and income brackets between 1980 and 2015). However until recently the Chinese tax administration released no detailed income tax statistic: the only information available was the aggregate income tax revenue, sometime with a break-down by income sources (but not by income bracket). In previous research, and in the absence of better data, Piketty and Qian (2009) used household survey data and income tax law in order to simulate theoretical income tax revenues, and found that simulated revenues were smaller than observed revenues, thereby suggesting that top incomes are under-reported in surveys, in line with what we usually find in other countries.[13]

In 2006, the Chinese tax administration issued a circular requiring all taxpayers with individual taxable income higher than 120 000 yuans to file a special declaration and started to release on the total number and taxable income of these taxpayers.[14]

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[12] This is the same equal-split-adult concept as that used in DINA series recently constructed for the U.S. and France (see Piketty-Saez-Zucman 2016 and Garbinti-Goupille-Piketty 2016), except that the equal-split operation is done at the household level with the Chinese data rather than at the tax unit level (married couples) with the U.S. and French data. This implies that we probably underestimate somewhat equal-split inequality for China (i.e. we impute more intra-household redistribution than for the U.S. and France). Note also the raw household survey tabulations that we use were actually based on per capita household income (total income divided by number of adults and children), which we corrected assuming the same ratio adults/children for all brackets, which may reinforce this bias. Finally note also that the top decile household income shares reported by Piketty and Qian (2009) for China over the 1986-2003 period do not control at all for household size, which explains why they are significantly higher (2-3 points) than the (uncorrected) top decile household income shares reported here (which are based upon per adult income).

[13] See also Xu and Yue (2013), who also combine urban household survey data, tax legislation and aggregate tax revenues to simulate the redistributive impact of China's income tax.

[14] According to the circular, taxable income is defined the sum of wage income, business income and taxable capital income, minus deductions (which can be estimated to represent on average about 20%

These new fiscal statistics on high-income taxpayers were released at the national level on a yearly basis for income years 2006 to 2010, but the publication was interrupted in 2011. However the circular still applies today, and for income years 2011 to 2015 the publication of the data continued at the provincial level in a large number of provinces (sometime with additional information on taxpayers with incomes above 500 000 yuans and 1 million yuans). We collected all these tabulations, which together provide useful information about top incomes in China. In effect, the number of taxpayers reporting over 120 000 yuans in taxable income represents approximately the top 0.5% of the urban adult population at the national level between 2006 and 2010 (less than 0.4% in 2006, over 0.6% in 2010).[15]

Although this fiscal data is highly imperfect (and should probably be seen as a lower bound), the interesting point is that the fiscal income levels reported by this top 0.5% group are substantially larger than the levels observed for the top 0.5% fractile in the urban household survey: during the 2006-2010 period, ratios between fiscal and survey incomes fall in the 1.3-1.6 range if we look at the quantile function q(p) (i.e. the income threshold q(p) corresponding to percentile p=0.995) and in the 2.5-3 range when we look at the upper incomes y(p) (i.e. the average income y(p) above

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of pre-deduction fiscal income, so that the taxable income threshold of 120 000 yuans corresponds to a fiscal income threshold of about 150 000 yuans). China's income tax is a three-part system, in the sense that that wage income, business income and capital income are taxed separately (the first are taxed at progressive rates going from 0% to 45% for wage income and 0% to 35% for business income, while capital income is taxed at a flat rate of usually 20%), so that total taxable income does not usually need to declared, except in the context of the 2006 circular. The objective of the circular was to improve tax collection and to fight corruption.

[15] The absolute number of high-income taxpayers rises from about 1.6 million in 2006 to 3.1 million in 2010. We compare to urban population, first because rural incomes are much lower than urban incomes and much less likely to meet the 120 000 yuans threshold, next because agricultural income is entirely exempt from the income tax, which in effect should be viewed as a urban income tax.

percentile p=0.995). This reflects that fact that very top incomes are massively underestimated in the survey (as compared to fiscal data).[16]

Our benchmark correction is based upon the following assumption: the survey data is reliable below percentile p_1=0.9, the fiscal data is reliable above p_1=0.995, and we assume that the quantile ratio upgrade factor f(p) rises linearly from $f(p_1)$=1 to the observed fiscal/survey ratio $f(p_2)$ between p_1 and p_2. We then apply the generalized-Pareto-interpolation techniques to the corrected tabulations in order to obtain our g-percentiles series for the distribution of fiscal income among equal-split adults in urban China and rural China over the 1978-2015 period.[17] We also provide several alternative variants based upon different piecewise linear profiles for the upgrade factor between $f(p_1)$ and $f(p_2)$ and find this has limited impact on the resulting series (see on-line appendix for detailed computer codes and robustness checks).[18]

Step 3. Finally, we correct our fiscal income series in order to take into account tax-exempt capital income and to obtain pre-tax national income series. In practice, important components of capital income are usually missing from fiscal income data,

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[16] In particular, the inverted Pareto coefficient b(p)=y(p)/q(p) is as low as 1.5 or less in the survey, as opposed to 2.5-3 or more in the tax data.

[17] In the absence of any other information, we choose to apply for all years of the period 1978-2005 the average profile of upgrade factors f(p) between p_1=0.9 and p_2=0.995 estimated for the 2006-2010 period. This assumption is further justified by the absence of any clear trend in the observed/simulated income tax revenue ratios computed by Piketty and Qian (2009) over the 1986-2003 period. We also choose to apply this same average profile of upgrade factors for all years of the period 2011-2015 (available provincial data on high-income taxpayers again suggest that there is no clear trend in the magnitude of survey-induced downward bias). See on-line appendix for robustness checks and alternative assumptions and specifications.

[18] One should note that the Chinese high-income tax data that is entirely based upon individual incomes. This corresponds to equal-split income (in the sense of U.S. or French tax data) only if we assume that all high-income taxpayers are either single or married to other high-income taxpayers, which strictly speaking cannot be true. This implies that our estimates tend to over-estimate inequality as compared to the equal-split benchmark, and to under-estimate inequality as compare to the individualistic benchmark. If and when we obtain access to micro-level Chinese tax data, we will be able to refine this analysis and compute separate equal-split and individualistic series.

even in the absence of any tax evasion. In particular, the capital income accumulated as undistributed profits of privately owned corporations is not included in fiscal income subject to income tax in China (nor in most other countries). It is important to correct for this, because the extent to which private shareholders choose to accumulate wealth as undistributed profits (as opposed to distributed dividends and other forms of capital payments such as own-shares buybacks and induced capital gains) may well vary over time and across countries (e.g. due to changing tax incentives), which might introduces various biases in distributional series, particularly at the top of the distribution. As discussed in the DINA Guidelines (Alvaredo et al 2016), the best way to proceed is to use income tax micro files and to upgrade the observed individual-level taxable capital payments (in particular dividends and capital gains) in order to estimate individual-level undistributed profits (using the observed macroeconomic ratio between undistributed profits and dividend payments, and a simple linear upgrading rule, unless other available information suggests otherwise). This procedure can be used in DINA series for countries where detailed income tax micro-files are available, such as the U.S. and France (see Piketty, Saez and Zucman, 2016, and Garbinti, Goupille and Piketty, 2016). In countries with no access to income tax micro-files, such as China, we need to use other techniques.

Here we proceed as follows. First, we estimate from our national accounts series the evolution of total non-fiscal capital income y_{nf}, which we define as the private share of undistributed profits and other tax-exempt capital income flows accruing to Chinese private households. We find that y_{nf} gradually rises from 1% of per adult national income in 1978 to as much as 12% in 2015 (largely due to the rise of private corporate ownership, and also to the rise of other capital and business income flows

recorded in national accounts and which do not appear fiscal). In contrast, total fiscal income y_f (i.e. total income subject to income tax, before any deduction) represents approximately 70% of national income throughout the 1978-2015 period.[19] In order to estimate the distribution of total personal income $y_p = y_f + y_{nf}$, we need to make an assumption about the distribution of y_{nf} and the structure of the correlation between y_f and y_{nf}. Regarding the distribution of y_{nf}, we assume it follows the same distribution as the distribution of wealth, which we estimate by applying generalized Pareto interpolation techniques to household wealth surveys and wealth rankings (see below).[20] Regarding the correlation structure between y_f and y_{nf}, on the basis of estimates done for countries with adequate micro-files (in particular the U.S. and France), we use the family of Gumbel copulas, with Gumbel parameter $\theta=2$ (see Blanchet, Fournier and Piketty, 2016).[21]

Finally, we apply a proportional upgrade factor in order to transform the distribution of personal income $y_p = y_f + y_{nf}$ into the distribution of national income y. By construction this has no impact on income shares. The objective is simply to normalize the distribution by national income, so as to make the series more comparable across countries in terms of income levels (see Alvaredo et al 2016).[22]

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[19] See Data Appendix B, table B0. In effect, we break down national income y as $y = y_f + y_{nf} + y_g$, with y_g = government net capital income (including government share of undistributed profits) + indirect taxes (net production taxes) received by government. See Data Appendix and Alvaredo et al (2016).

[20] The distribution of corporate equity is more concentrated than the distribution of wealth in general, so this assumption leads to under-estimate the concentration of y_{nf}. Also note that we do not have annual estimates for the distribution of wealth (see below), so for missing years we use linear interpolations. Given that the aggregate value of y_{nf} is limited as compared to y_f, the total impact of these simplifying assumptions on the distribution of $y_p = y_f + y_{nf}$ is relatively small, as we show in robustness checks and alternative series presented in the data appendix.

[21] Gumbel parameter $\theta=1$ corresponds to perfect independence, and $\theta=+\infty$ to perfect correlation. Blanchet, Fournier and Piketty (2016) find that observed distributions for the U.S. and France over the 1960-2014 period are well approximated by Gumbel parameters around 1.8-2.2. In the data appendix we show that assuming Gumbel parameters in the 1.5-2.5 range instead of 2 has a relatively small impact on our final Chinese series.

[22] Note that $y_g = y - y_p$ = government net capital income (including government share of undistributed profits) + indirect taxes (net production taxes) received by government. We have no particular reason

Section 2.2.2. Wealth distribution series

The raw data sources that are at your disposal to measure the evolution of the wealth distribution in China are more limited than for the distribution of income. We use the CHIP household wealth surveys conducted in 1995 and 2002, and the CFPS household wealth surveys conducted in 2010 and 2012.[23] In contrast to household income surveys, we were able to access the micro-files of the wealth surveys. These surveys show substantial rise in wealth concentration.[24] However it is likely that they under-estimate very top wealth levels. Therefore we combine the wealth survey data with the data from the annual Hurun wealth rankings covering the 2001-2016 period. We apply generalized Pareto interpolation techniques to the combined data in order to produce wealth distribution series over this period. These series should be viewed as provisional and subject to revision.

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to allocate y_g in a non-proportional manner, so we adopt this distribution-neutral strategy. See Alvaredo et al (2016).

[23] CHIP surveys were also conducted in 2008 and 2013, but these two survey years raise difficulties, so we do not use them (the 2008 survey had problems with the sampling process and is considered not to be nationally representative, and the 2013 survey has no information on housing values).

[24] E.g. Li Shi (2013) uses the CHIP 2002 survey and the CFPS 2010 survey and finds that the top 10% wealth share rose from 38.7% to 65.4% of total wealth between these two dates.

Section 3. The Rise of Wealth-Income Ratio and Private Property in China

In this section we present our main results regarding the evolution of aggregate wealth in China during the 1978-2015 period.

We start with the general evolution of level and structure of national wealth. The national wealth-national income ratio has increased substantially in China in recent decades, from about 350% in 1978 to over 500% by 1993 and over 700% in 2015, with very large in the composition of national wealth (see Figure 3). The share of agricultural land used to be very large (almost half of the total in 1978) and dropped sharply (less than a tenth in 2015). In contrast, the shares of housing and other domestic capital (buildings, equipment, machinery, patents, etc. assets used by corporations, public administrations and households) increased enormously, in shares and in levels. It is also worth noting that net foreign assets have become a significant addition to China's national wealth by the end of the period.

The most spectacular evolution has to do with the division of national wealth into private and public wealth (see Figure 4). In brief: China used to be a communist country, and is now a mixed economy. Private wealth was relatively small in 1978 (about 100% of national income), and now represents over 450% of national income. Public wealth was roughly stable around 250% of national income (first increasing slightly until 1993-1994, and then declining back to its initial level). In 1978, about 70% of national wealth was public, and 30% private; by 2015, the proportion are almost reversed: 35% of the national wealth is public, and 65% private.

The privatization process was particularly strong for the case of housing: only 20% of the housing stock was in private hands in 1978, while it has become 90% private in 2015 (see Figure 5). The situation is fairly different for other domestic capital and net financial assets: the public share has declined, but it is still about 50%. If we look more specifically at the ownership of domestic equity (traded and non-traded), we find that private ownership was negligible in 1978 (about 5%), and represents about 30% in 2015: this is obviously a large rise, but at the same time this means that the government remains the owner of about 60% of Chinese domestic equity (vs. about 10% for foreign owners). It is also worth stressing that the public share in Chinese equity dropped substantially until 2006, but seems to have increased somewhat - or stabilized - since 2007-2008 (see Figure 6).

When we compare China to other countries, we find that the private wealth-national income ratio in China is now close to its Western counterparts: 450% in China in 2015, vs. 500% in the US, and 550-600% in Britain and France (see Figure 7a). The major difference is that public wealth has become very small – or even negative, with public debt exceeding public assets – in Western countries, while it has remained substantial in China (see Figure 7b). It is worth noting that in 1978 net public wealth was positive and substantial in all Western countries. I.e. in the late 1970s-early 1980s, the share of public ownership in national wealth was between 15% and 25% in the US, Japan, France, Germany and Britain (see Figure 7b). This is fairly representative of a situation that prevailed during the postwar decades, with as much as 20%-30% of national wealth in public hands during the 1950s-1970s (see Piketty and Zucman 2014 and Piketty 2014). This "mixed economy" regime resulted from a combination of low public debt (following post-WW2 debt restructuring and inflation)

and large public sector, including in some cases a share of public property well above 50% of corporate equity for large companies in banking and manufacturing (e.g. in France until the mid-1980s). In effect, the share of public property in China today is somewhat larger than – though not incomparable to – what it was in the West during post-WW2 decades (30-35% in China vs. 15-25% in the West between the 1950s and the early 1980s).

If anything, the public share in China's mixed economy seems to have strengthened since the 2008 financial crises, while it has dropped again in rich countries (net public wealth is now slightly negative in the U.S., Japan and the U.K., and only slightly positive in Germany and France). Large public property has obviously important consequences on the state's ability to conduct industrial policy or regional development policy (sometime in an efficient way, and sometime less so). It also has potentially enormous fiscal consequences: governments with negative net public wealth typically have to pay large interest payments before they can finance public spending and welfare transfers, while those with large positive net public wealth can potentially benefit from substantial capital income and finance more public spending than what they levy in taxes.

Generally speaking, the structure of public vs. private property has enormous implications for economic development. This is to large extent an under-studied subject, partly because of the lack of adequate data collection on national balance sheets. In the future it would be particularly interesting to collect more data so as to be able compare the evolution of China's property structure not only with advanced

capitalist countries but also with other emerging or middle-income countries (such as India, Brasil, Indonesia, South Africa or Russia).

We also present two alternative series on the public share in China's national wealth, depending on how one treats the public vs. private nature of agricultural land (see the discussion in section 2.1 above). This makes a very large difference at the beginning of the period (given the importance of agricultural land in 1978), but this has relatively little effect in 2015 (see Figure 7d).

It is also interesting to compare the evolution of the public share in national wealth in China and in an oil-based sovereign-wealth-fund country such as Norway. We find that both countries have basically switched positions: the public share declined from 70% to 35% in China between 1978 and 2015, while it rose from 30% to 60% in Norway (see Figure 7e). At this stage, Norway's large positive net public wealth is mostly used to generate large capital income, which is then used to finance further foreign capital accumulation, and which in the long-run can be used to reduce the tax burden of Norwegian households and/or to finance more public spending and welfare payments. In that sense, it is a very different form of public property than in China: in Norway public property has mostly a fiscal/financial dimension and not so much an industrial/control dimension (although the sovereign fund is sometime also used to promote certain policy priorities, e.g. social or environmental objectives).

It is worth stressing that China's net foreign position, although it has increased substantially in the past 15 years (about 25% of national income, vs. less than 2% of national income in 2000), remains relatively modest when we express it in proportion

of national income, not only as compared to oil countries like Norway (over 250% of national income in 2015), but most importantly as compared to Japan (78% in 2015) and Germany (35%). In contrast the national wealth-national income ratio is now higher in China than in Japan and other developed countries (see Figure 8). In other words, as compared to the other two major countries with positive net foreign wealth (Japan and Germany), China's wealth accumulation is primarily driven by domestic capital accumulation.

In the data appendix, we also present volume vs. price decompositions (similar to the those presented in Piketty and Zucman, 2014, for the top eight developed countries) in order to account for the rise of the national wealth-national income ratio in China over the 1978-2015 period. We find that the very high saving and investment rates observed in China over this period are obviously an important part of the explanation, but are not sufficient to account for the full rise of the national wealth-income ratio. Another part of the explanation is the rise of relative asset prices, in particular housing prices and stock market prices.[25]

Just like in developed countries, the rise in relative asset prices can itself be accounted for by a series of different factors, including very high taste and demand for housing assets by Chinese households (partly due to limited access to alternative saving vehicles and to insufficient visibility on public pension system expansion), as well as changes in the legal system reinforcing private property rights for asset

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[25] Depending on the specification (in particular additive vs. multiplicative), we find that volume effects account between 50% and 70% of the rise in the wealth-income ratio in China between 1978 and 1995 (and the price effects between 30% and 50%). The price effect is actually negative for foreign assets (given the cumulated trade and current account surpluses, the net foreign asset position should be substantially larger than what it is today), but strongly positive for housing and other domestic capital assets. Regarding household wealth accumulation, we find strong positive capital gains for housing investment and small positive gains for financial savings. See data appendix.

owners (e.g. lift of rent control, strong landlord rights vis-à-vis tenants, strong shareholder rights vis-à-vis workers). From that respect, it is striking that Tobin's Q ratio between market value and book value of corporations appears to be very large in China (close to 100%, like in the U.S. or in the U.K., as opposed to 40%-60% in Germany or Japan). Whether this reflects strong shareholders rights in China is however unclear at this stage: the series at our disposal are imperfect, and some of these differences might reflect data limitations. More research is needed before we can reach firm conclusions regarding the volume vs. price (vs. taste vs. legal system) decomposition of wealth accumulation in China vis-à-vis other countries. Similarly, our series do not allow us to take a stance about the (arguably even more complicated) issue of dynamic efficiency of China's capital accumulation.[26]

Finally, we also compare the rise of domestic financial intermediation in China and other countries. The ratio between total domestic financial liabilities (i.e. total financial debt and equity issued by domestic sectors: household, government and corporate sectors combined) and total domestic capital has risen from 60% to 140% in China between 1978 and 2015. This is a very substantial rise, starting from a situation characterized by small financial development, but this is much less strong than in developed capitalist countries, where the corresponding ratio rose from 100-140% in

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[26] Given China's huge growth rates and very high wealth-income ratios, one might be tempted to conclude that China falls in the paradigmatic situation of dynamic inefficiency and excessive capital accumulation. Indeed, and although there is uncertainty about the exact level of the net-of-depreciation capital share α, it is clear that the average rate of return to capital r is less than the growth rate g (i.e. with a capital share $\alpha \approx 35\%$ and a national wealth-income ratio $\beta \approx 700\%$ we have r= $\beta/\alpha \approx 5\% < g \approx 7-8\%$). In a standard one-good model of capital accumulation, r<g implies excessive capital accumulation, so that in principle an extension of the pay-as-you-go pension system (and/or higher public debt) could generate Pareto improvements. See e.g. Song et al (2015) for a discussion in the case of China. However the analysis is made more complicated by the fact that we are not in a simple one-good model: relative land prices matter, and so does the relative bargaining power of owners vs non-owners, and more generally the legal system. Our data series do not allow us to put precise numbers on all these parameters and are not sufficient to do a proper welfare analysis (which in any case would require an explicitly distributional analysis).

1978 to 200-300% by 2015 (see Figure 9a). The fraction of domestic financial liabilities that is owned by the rest of the world rose to about 5% in China in 2015, as compared to almost 10% in Japan, 15% in the U.S. and 25-30% in Germany and France (see Figure 9b). This partly reflects size effects (European countries are smaller, and if we were to consolidate ownership at the European level, the rest-of-the-world fraction observed in Europe would fall to U.S. levels), but there seems to be more than this: Asian countries – Japan and even more so China – seem to be more suspicious vis-à-vis foreign ownership than Europe or North America.

Section 4. The Rise of Income and Wealth Inequality in China

We now present our results regarding the evolution of income and wealth inequality in China. We begin with income inequality.

Our basic results are the following. According to our corrected estimates (combining survey, fiscal and national accounts data), the share of national income going to the top 10% of the population has increased in China, from 26% in 1978 to 41% by 2015, while the share going to the bottom 50% has dropped from 28% to 15% (see Figure 10). In other words, the bottom 50% of the population used to receive about the same income share as the top 10% (which also means that their average income was about 5 times lower), while their income share is now about 2.5 times lower (which means that their average income is now about 12.5 times lower). Over the same period, the share going to the middle 40% has been roughly stable (around 45% of total income, which also means that their average income is very close – slightly higher – than the average per adult income of the entire population).

If we compare our corrected inequality series to the official survey-based raw estimates, two remarks are in order. First, official survey data also show a strong rise in the top 10% income share and a strong decline in the top 50% income share over the 1978-2015 period. Next, both the level of inequality and the magnitude of the rise in inequality are substantially larger with our corrected series. E.g. the top 10% income share rises from 26% to 41% in our corrected series, and from 22% to 31% in the raw series (see Figure 11). The upward correction is particularly spectacular for

the top 1% income share, which appears to be about twice as large in our corrected series than in raw series: about 13% of total income in 2015, vs 6.5% in raw series.

It is also worth noting that most of the upward correction comes from the high-income taxpayers data. The undistributed-profits correction does rise at the end of the period, particularly for very top incomes (reflecting the growing important of private business owners in China), but it always remains less important quantitatively than the fiscal correction. E.g. in 2015 the top 1% income share is about 6.5% for the distribution of survey income, 11% for the distribution of fiscal income (after correcting for high-income taxpayers data) and 13% for the distribution of pre-tax national income (after correcting for undistributed profits and other tax-exempt income).

According to our series, most of the increase in top income shares took place between 1980 and 2006. In contrast, income inequality appears to be relatively stable in China since 2006. According to the raw survey data, there has actually been a small but regular decline in income inequality since 2006, which in our series is compensated by the rise of the undistributed-profits correction (i.e. the rise of private business owners). We should add however that this result – stabilization of inequality since 2006 – should be taken with caution. This could partly be due to limitations in our data (especially the fiscal data).[27]

We now come to the urban vs. rural China decomposition. Adult urban population rose from 100 million in 1978 to almost 600 million by 2015. In the meantime, adult

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[27] In particular this could be due to the lack of national data on high-income taxpayers since 2011, which forces us to apply the 2006-2010 average correction factors to years 2011-2015 (in effect this makes it impossible to detect a possible rebound of inequality since 2011). See discussion in section 2.2 above and data appendix.

rural population was roughly stable: it was 400 million in 1978, rose to almost 600 million by the mid-1990s, and then declined to less than 500 million in 2015, so that it now slightly less than adult urban population (see Figure 13). The income gap between urban and rural China has always been very large, and it has grown over time: the average income ratio was less than 200% in 1978 and it is now about 350% (see Figure 14). In effect, the urban share in adult population has grown from less than 20% to 55% between 1978 and 2015, and the urban share in income from 30% to 80% (see Figure 15).

It is worth stressing, however, that the rise of inequality in China is primarily due to rising income dispersion both within urban China and within rural China, rather than to the growing urban-rural gap. E.g. if we look at the top 10% income share, we find that the rise as been approximately as large within urban and rural China than at the national level (see Figure 16). It is also interesting to note that inequality levels have always been larger within rural China than within urban China. Finally, one can see the strong impact of the urban-rural gap when we look at the bottom 50%. The income share going to the bottom 50% has declined very sharply between 1978 and 2015, both within rural and urban China and at the national level (see Figure 19). However the level of the bottom 50% income share is markedly lower at the level of the entire country: 15% at the national level, vs 19% within rural China and 23% within urban China.

We now come to the comparison with our countries. Namely, we compare our corrected income inequality series for China with the series recently computed for the USA and France by Piketty-Saez-Zucman 2016 and Garbinti-Goupille-Piketty 2016.

These series follow the same DINA Guidelines (Alvaredo et al. 2016) for the three countries. They all attempt to combine national accounts, survey and fiscal data in order to estimate the distribution of pre-tax national income (including undistributed profits and other tax-exempt capital income) among equal-split adults.

Our basic finding is the following. In the late 1970s, China used to be substantially more equal than France and the USA. In the mid-2010s, it is more unequal than France (a country that is broadly representative of European inequality levels), and is now approaching U.S. levels. E.g. the top 10% income share rose from 26% to 41% in China between 1978 and 2015 , while it increased in smaller proportions in the USA (from 35% to 47%), and   only moderately in France (from 31% to 33%) (see Figure 21).

It should be noted, however, that up until today inequality levels in China are significantly lower than in the U.S., in spite of the much larger population. This is particularly striking at the level of the top 1% income share, which rose from 6% to 13% in China, and from 11% to 20% in the US (see Figure 22). This is also highly visible at the level of the bottom 50%, especially if one compares the USA to urban China (a region that is already twice as populated as the US) rather than total China. I.e. the bottom 50% income share is about 15% of total income in China (19% in rural China, 23% in urban China), vs 12% in the U.S. and 22% in France (see Figure 23, and Figure 18 above).

We should stress again that despite our best efforts, these series must still be viewed as provisional and imperfect. Our corrected inequality estimates for China are more

satisfactory and plausible than previous estimates. But they are still fragile and incomplete, and they are definitely not meant to the last word on the issue. In particular it is possible our top 1% income shares estimates for China will rise if and when more detailed fiscal data becomes available (and/or Chinese tax administration becomes more transparent and efficient). However it seems difficult at this stage to imagine a correction that would make China more unequal than the USA, especially if one thinks of the comparison of the bottom 50% income share between urban China and the USA.

Finally, we compare the structure of real income growth across the three countries between 1978 and 2015 (see Figure 27 and Table 3). The magnitude of aggregate income growth was obviously very different in the three countries over this period. Average per adult national income was multiplied by more than 10 in China (+1081%), while it increased by 59% in the USA and by 39% in France. In all three countries, income growth accruing to the bottom 50% has been smaller than macroeconomic growth (or equal to macro growth in France), while income growth accruing to the top 10% has been larger, and even more so if one looks at the top 1%, and so on until the top 0.001%. Even in France, a country with a moderate rise in total inequality, top 10% incomes increased more than average income (unlike middle 40% incomes), and the top 0.001% increased by 158% between 1978 and 2015 (vs. 39% for macro growth). In China the top 0.001% was multiplied by 40 (+4065%, vs +1081% for macro growth), and in the US the top 0.001% was multiplied by almost 7 (+685%, vs +59% for macro growth).

The key difference, however, is that in China the bottom 50% also benefited enormously from growth at an absolute level: the average income of the bottom 50% was multiplied by more than 5 in real terms between 1978 and 2015 (+550%), which is less than macro growth and top income growth, but which is still very substantial. Presumably this can make rising inequality much more acceptable, especially for a country starting from very low living conditions, and at least until a certain point. In contrast, bottom 50% income growth has been negative in the US (-1%).

In our view, these findings clearly illustrate the usefulness of Distributional National Accounts (DINA). I.e. looking at macroeconomic growth is not enough: it is critical to be able to decompose macro growth across income quantiles, so as to analyze which social groups benefit – or not – from growth.

Regarding wealth inequality, we have the same basic finding as for income inequality: wealth inequality used to be lower in China than everywhere else, and it is now intermediate between Europe and the USA (see Figure 28).

Section 5. Concluding comments and perspectives

Has inequality gone too far in China? The evidence compiled in this paper is evidently not sufficient to provide firm conclusions about such a complex issue. However, at the very least, our findings clearly indicate that there is a need for more transparency about income and wealth in China, both about the structure of property and the distribution of income. In particular, the recently released statistics on high-income taxpayers lead us to propose a large upward correction of official income inequality estimates. More transparency could lead to further revisions.

Our two main findings are the following. First, the property structure in China is that of mixed economy, with a large share of public property: about 30-35% of national wealth in 2015, including about 60% of domestic corporate equity. This is larger than than the share of public property in Western mixed economies during the post-World War 2 decades, though not incomparable. The public share stopped declining since 2007-2008 and might be a long-lasting feature of the Chinese system. Next, we found that income inequality increased substantially in China since the beginning of the reform process. However it is still substantially lower than in the United States, which given the size of the country and the large gaps between rural and urban China is striking. An interesting question is whether these two findings about public ownership and inequality dynamics are related. I.e. to what extent does China's mixed-economy structure contributes to mitigate rising inequality, in addition to the system of taxes, public services and welfare spending ? We leave these important issues for future research.

Another equally important issue which we cannot address here is the long-run evolution of income and wealth concentration in China. In countries where we have access to detailed income tax micro-files, we can estimate synthetic saving rates by income and wealth groups. This allows us to analyze the extent to which long-run steady-state wealth concentration is affected by a combination of unequal saving rates, labor incomes and rates of return, as well by the progressivity of the tax system (see Saez and Zucman 2016 and Garbinti, Goupille and Piketty 2016b). The general conclusion that we reach – namely that steady-state wealth inequality can respond hugely to relatively small changes in these structural parameters – certainly applies to China as well. However in order to better understand the long-run dynamics of Chinese inequality one would need to access more detailed data sources.

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Figure 1: China's share in world population and GDP, 1978-2015

- China's share in world population
- China's share in world GDP (PPP)
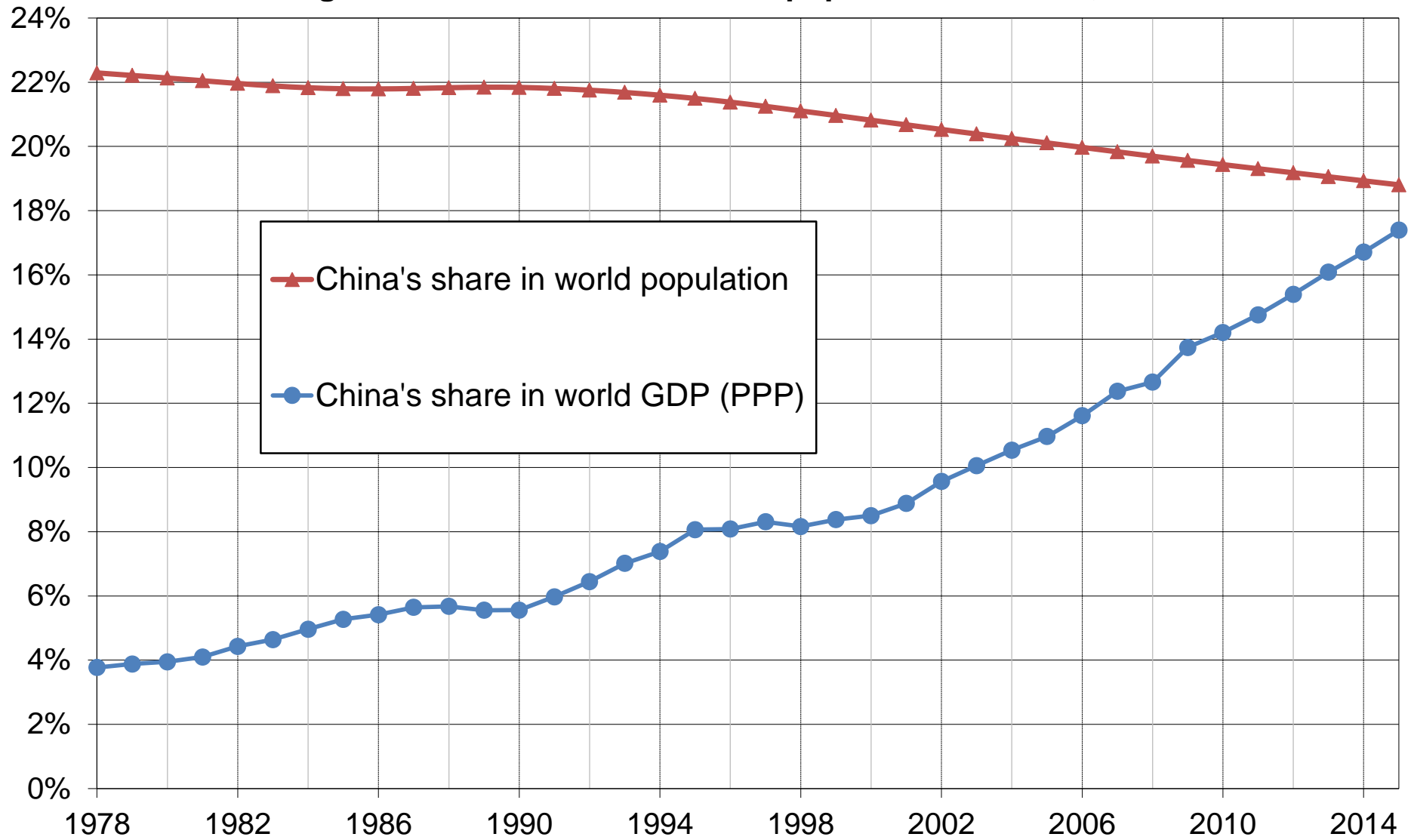
Figure 2: The rise of per adult real national income in China, 1978-2015

(yuans 2015)

Real growth rate
1978-2015 :
+6.9%/year

Average national
income per adult
(2015) : 54 300 yuans
(1€ = 4.6 yuans) (PPP)
(1€ = 7.0 yuans) (MER)

Real growth rate
1978-1998 :
+5.8%/year

Real growth rate
1998-2015 :
+8.2%/year
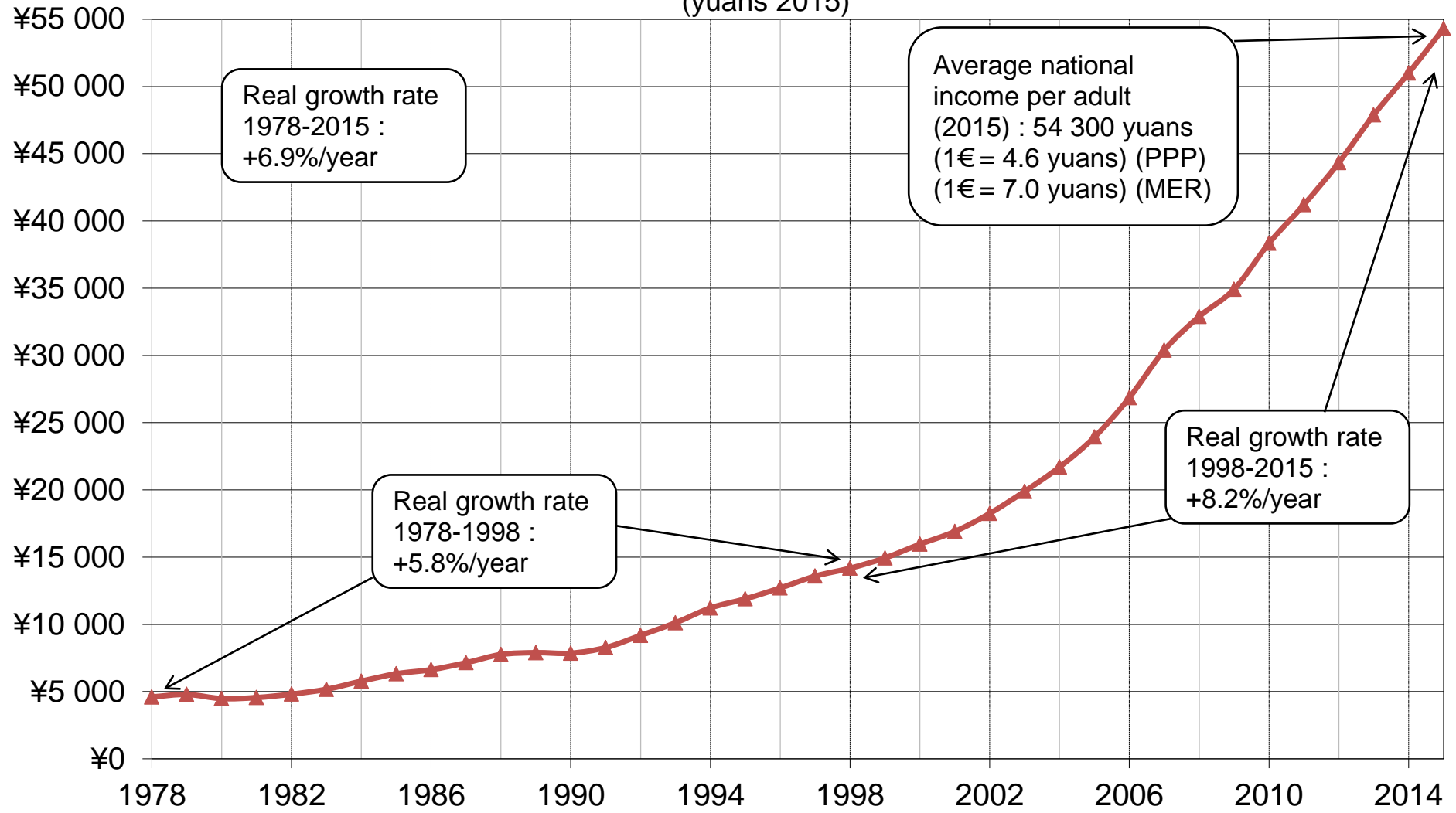
National income divided by adult population. National income = GDP - capital depreciation + net foreign income.

Figure 3. The structure of national wealth in China 1978-2015 (% national income)

Net foreign assets

Other domestic capital

Housing

Agricultural land
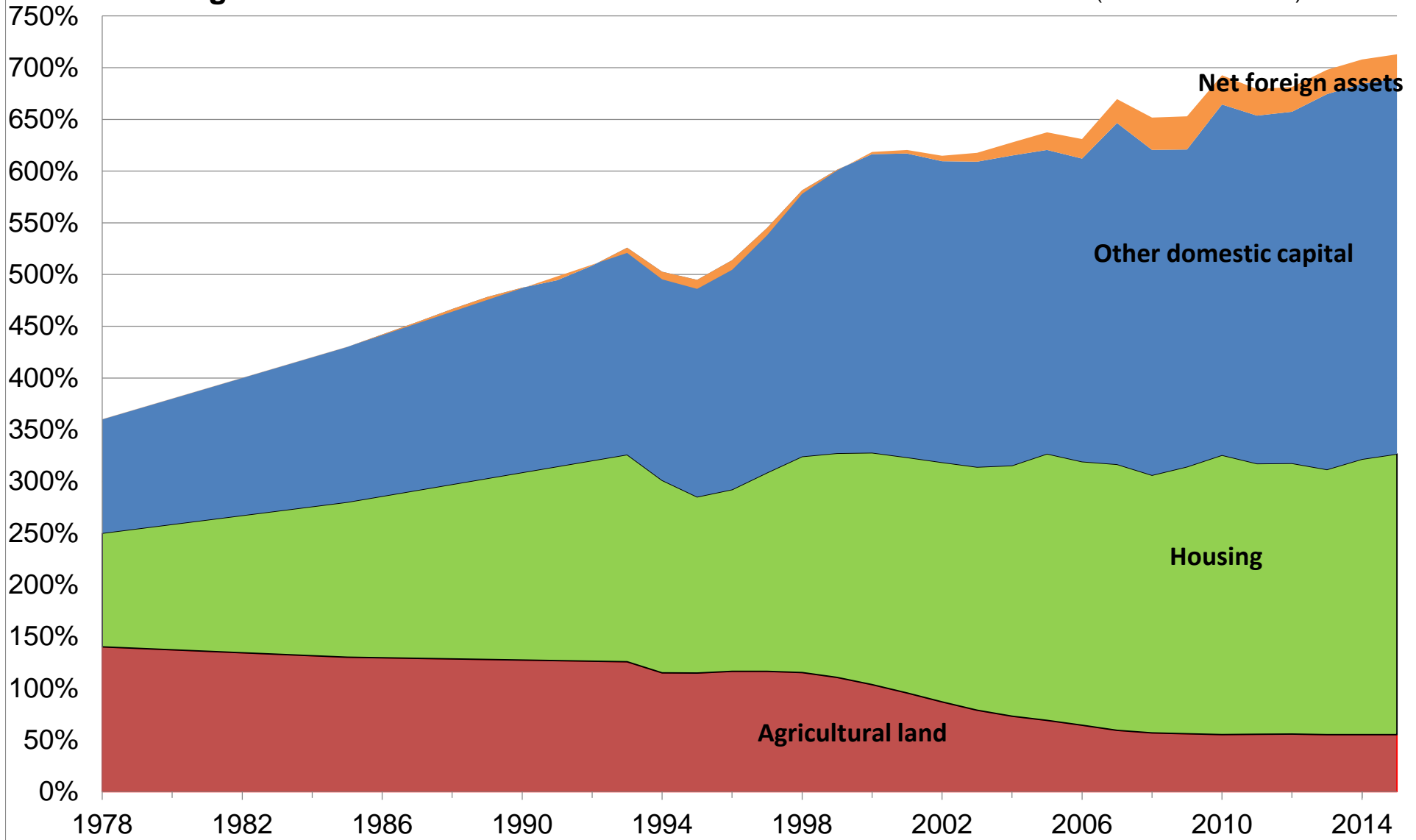
Figure 4: Public vs private property in China 1978-2015 (% national income)

Legend:
- Net national wealth (public+private)
- Net public wealth (government)
- Net private wealth (households)
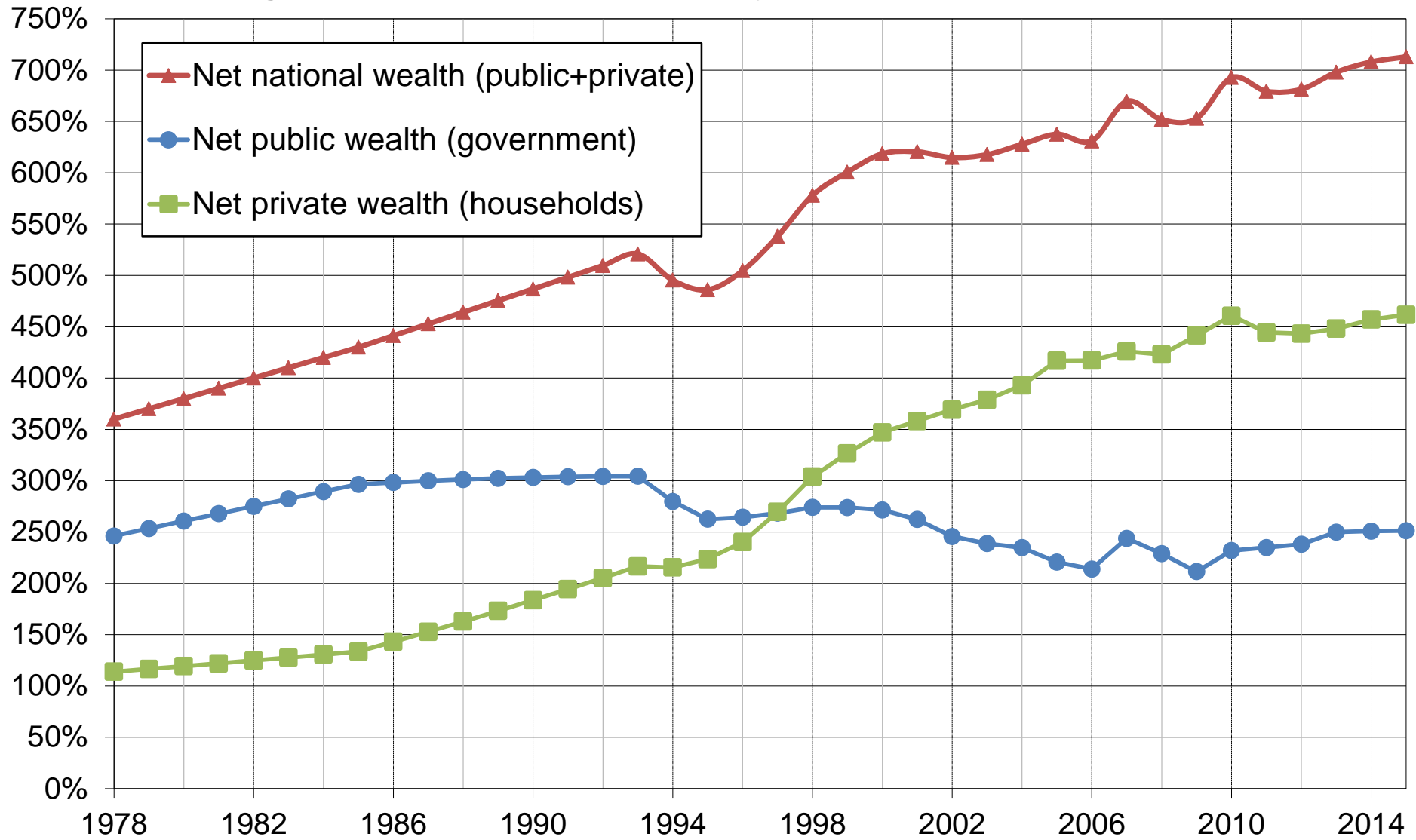
Figure 5. The rise of private property in China 1978-2015

Share of private property in....

- Total national wealth
- Housing
- Other domestic capital and net financial assets
- Domestic corporate equity (listed and unlisted)
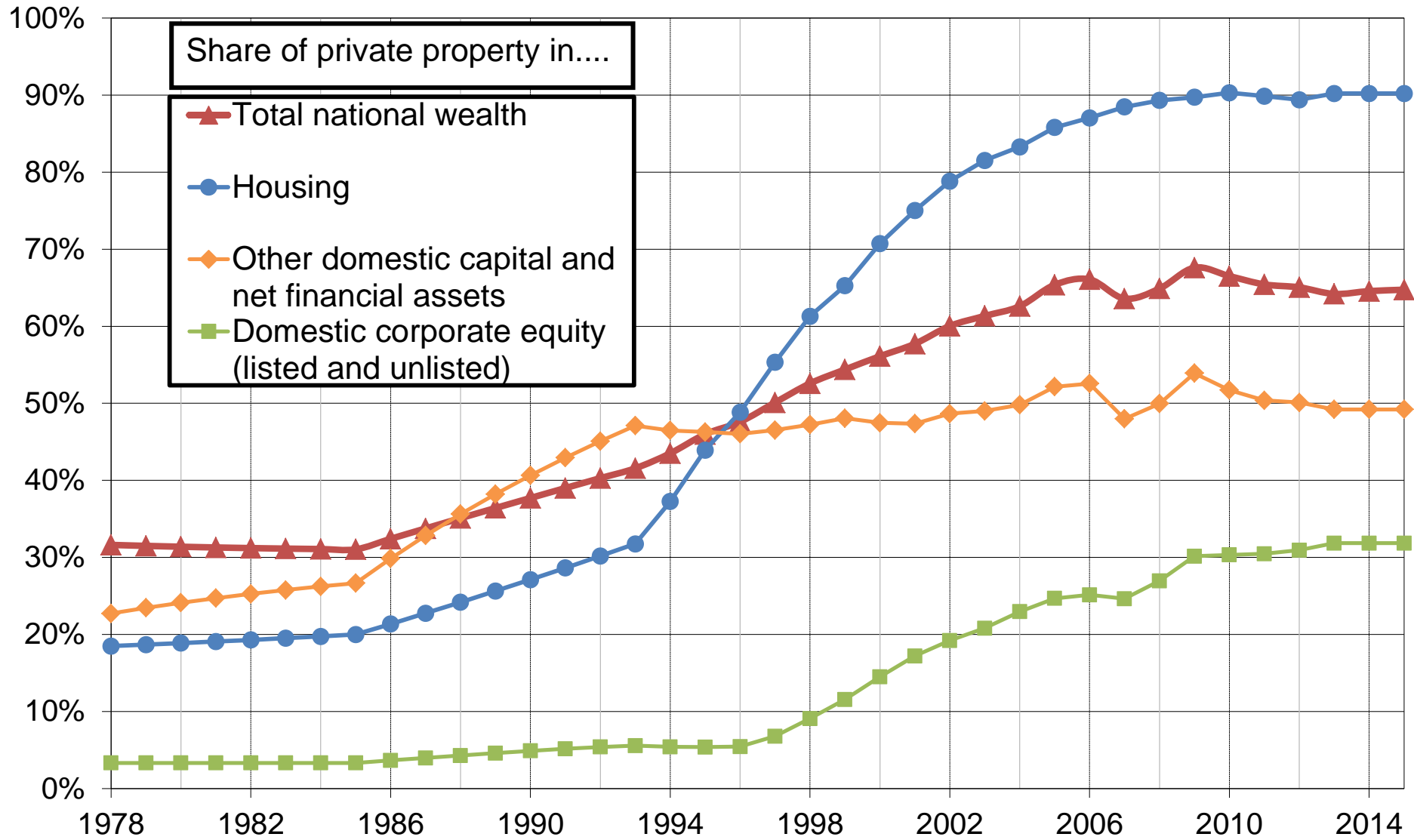
Figure 6. Corporate ownership in China 1978-2015

Share of domestic corporate equity
(listed and unlisted) owned by....

▲ Public (Chinese government)

● Private (Chinese households)

◆ Foreign (rest of the world)
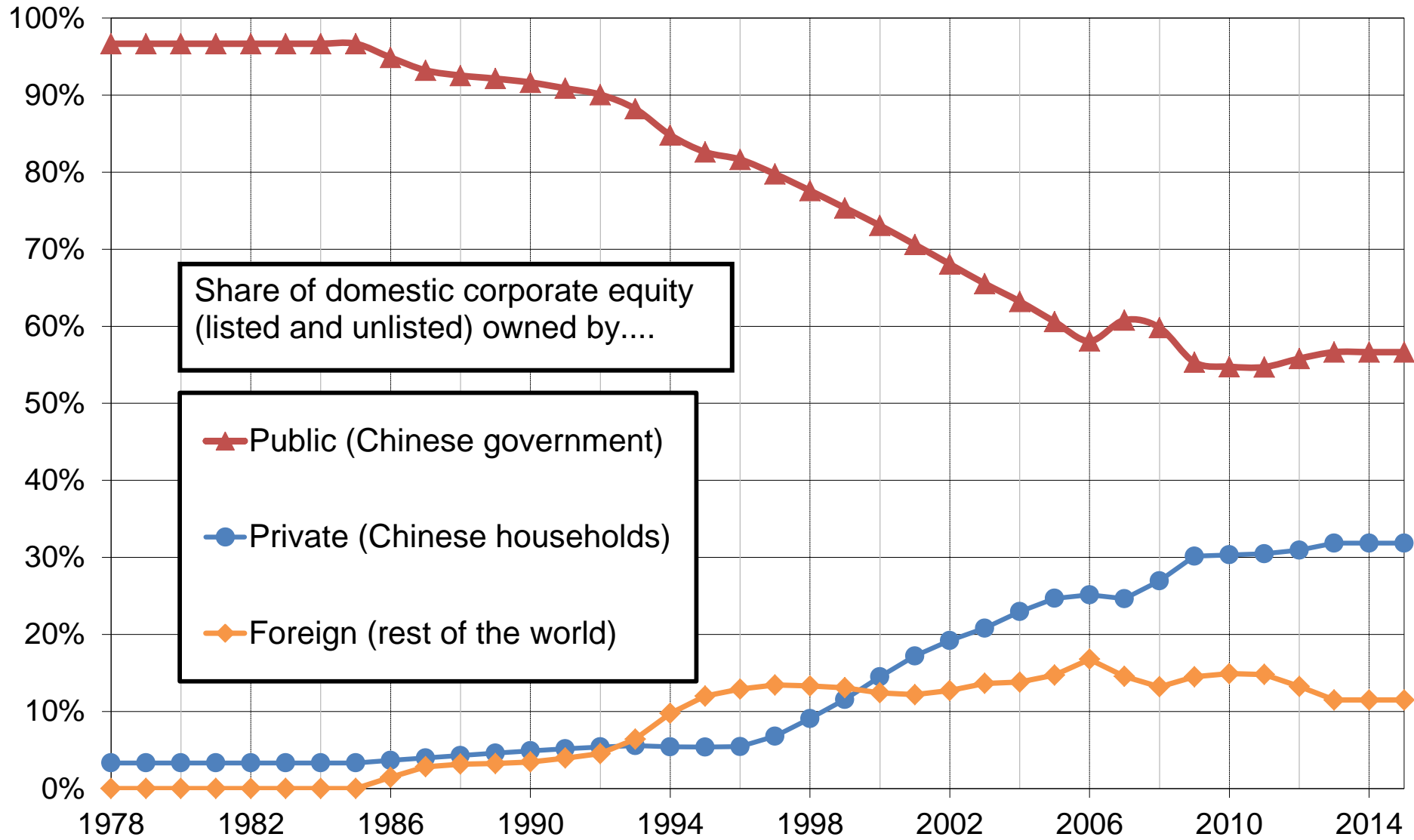
Figure 7a: The rise of wealth-income ratios: China vs rich countries

(private wealth (households), in % national income)

Legend: China, USA, France, Britain
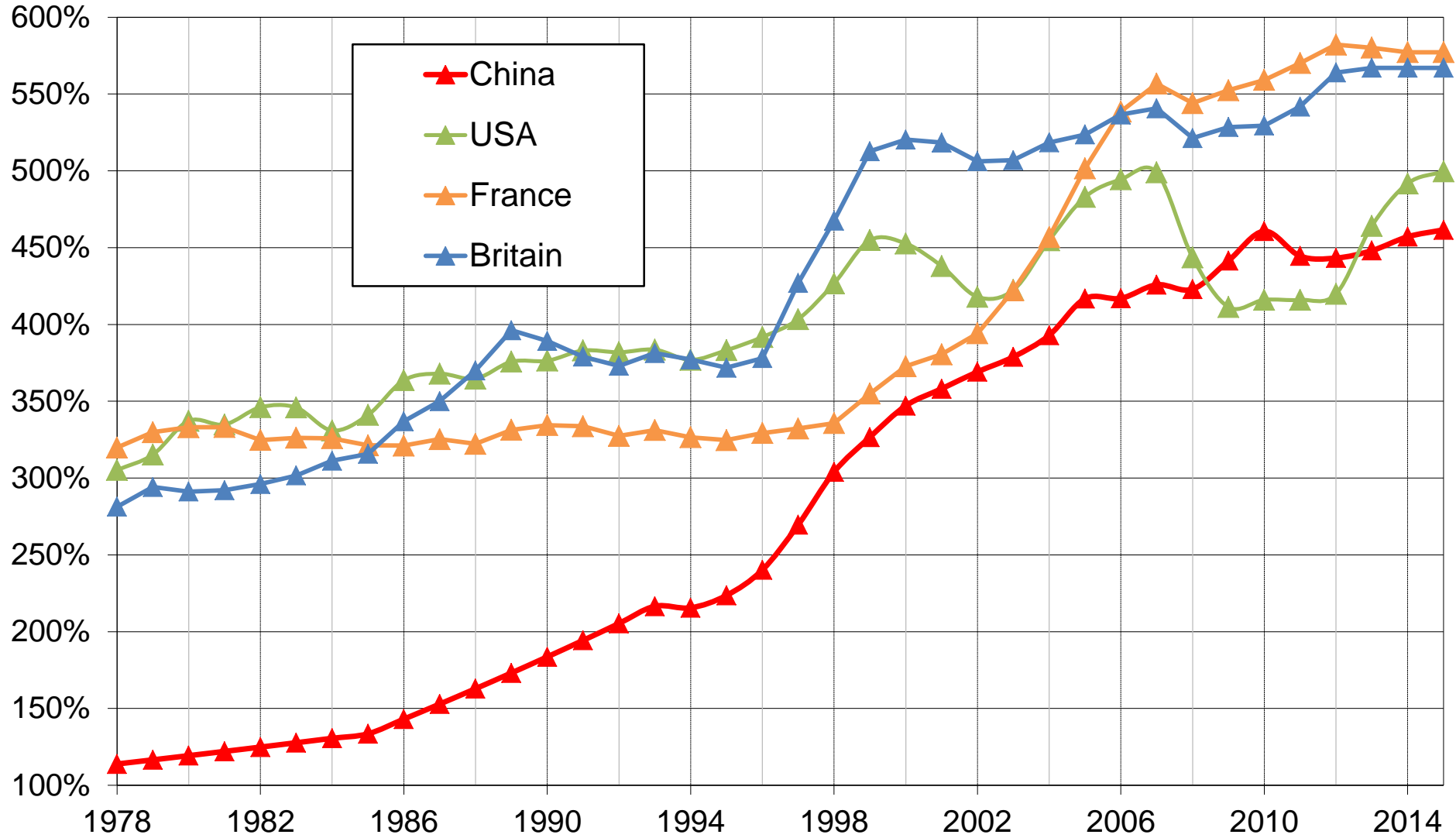
Figure 7b: The rise of wealth-income ratios: China vs rich countries

(private wealth (households) vs public wealth (government), in % national income)
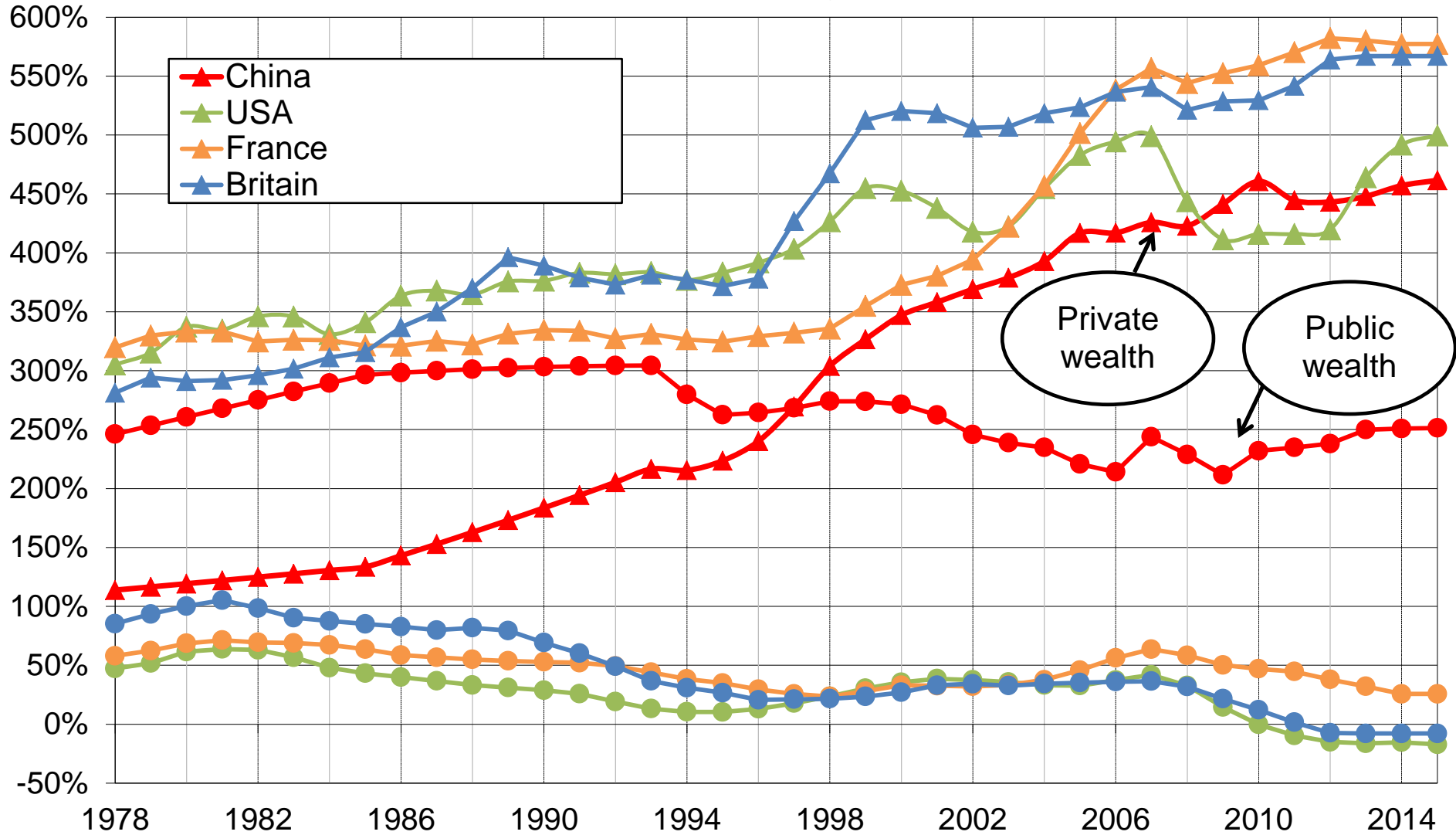
Figure 7c. The decline of public property: China vs rich countries
(share of public wealth in national wealth)
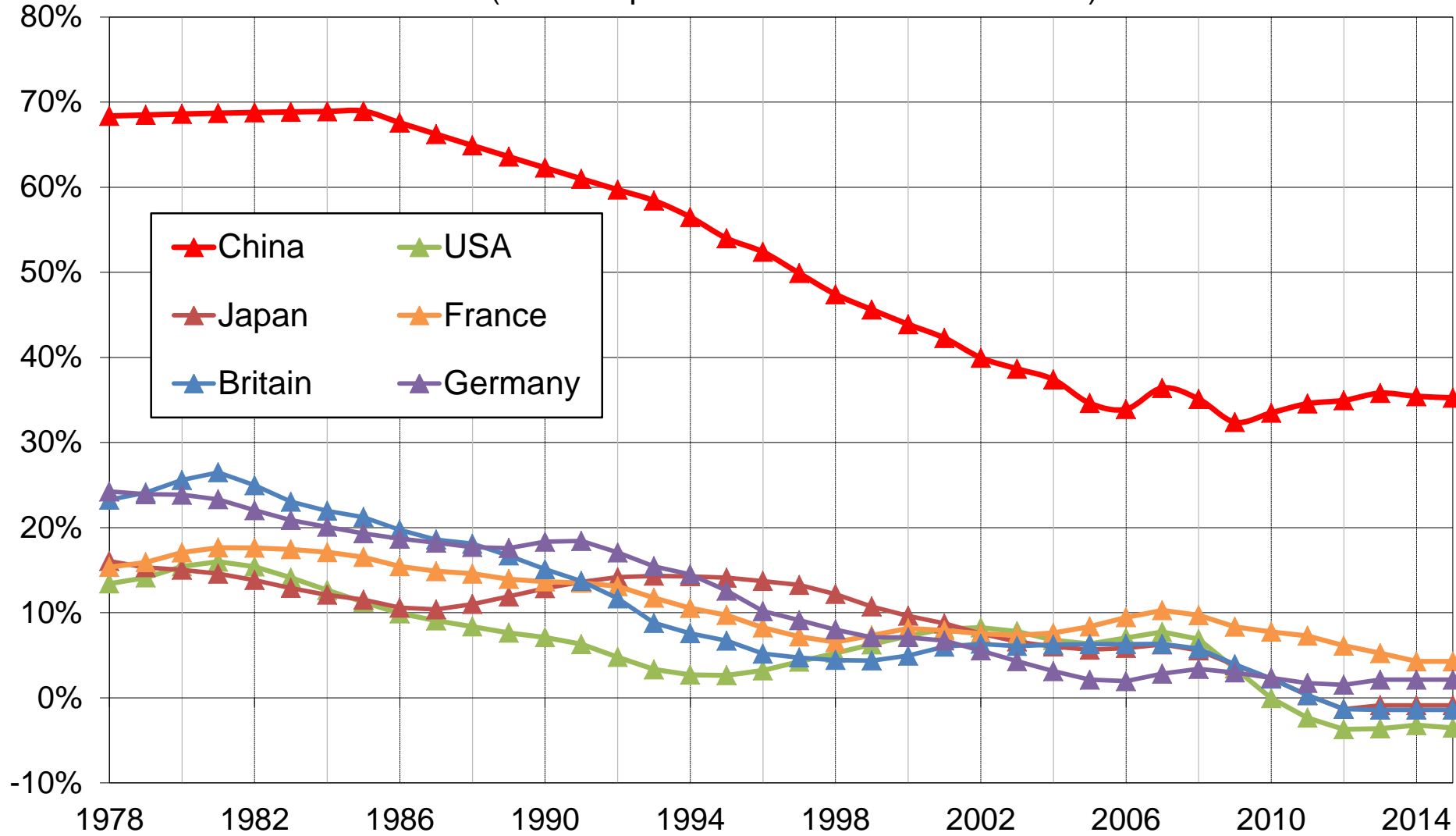
Figure 7d. The decline of public property: China vs rich countries
(share of public wealth in national wealth: alternative estimates)
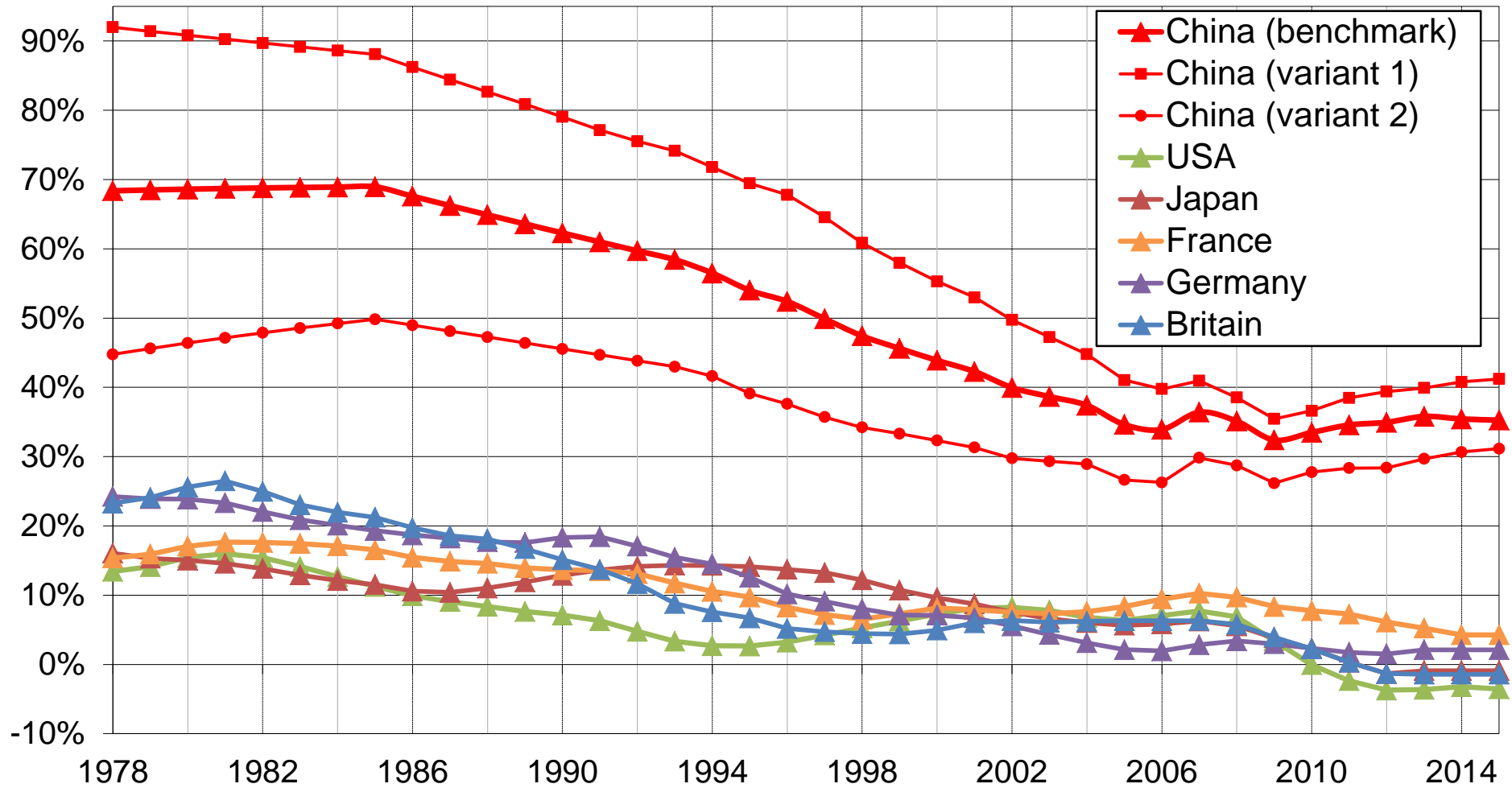
Note. Public share in agricultural land = 50% (benchmark), 100% (variant 1), 0% (variant 2)

Figure 7e. The decline of public property: China vs rich countries
(share of public wealth in national wealth)
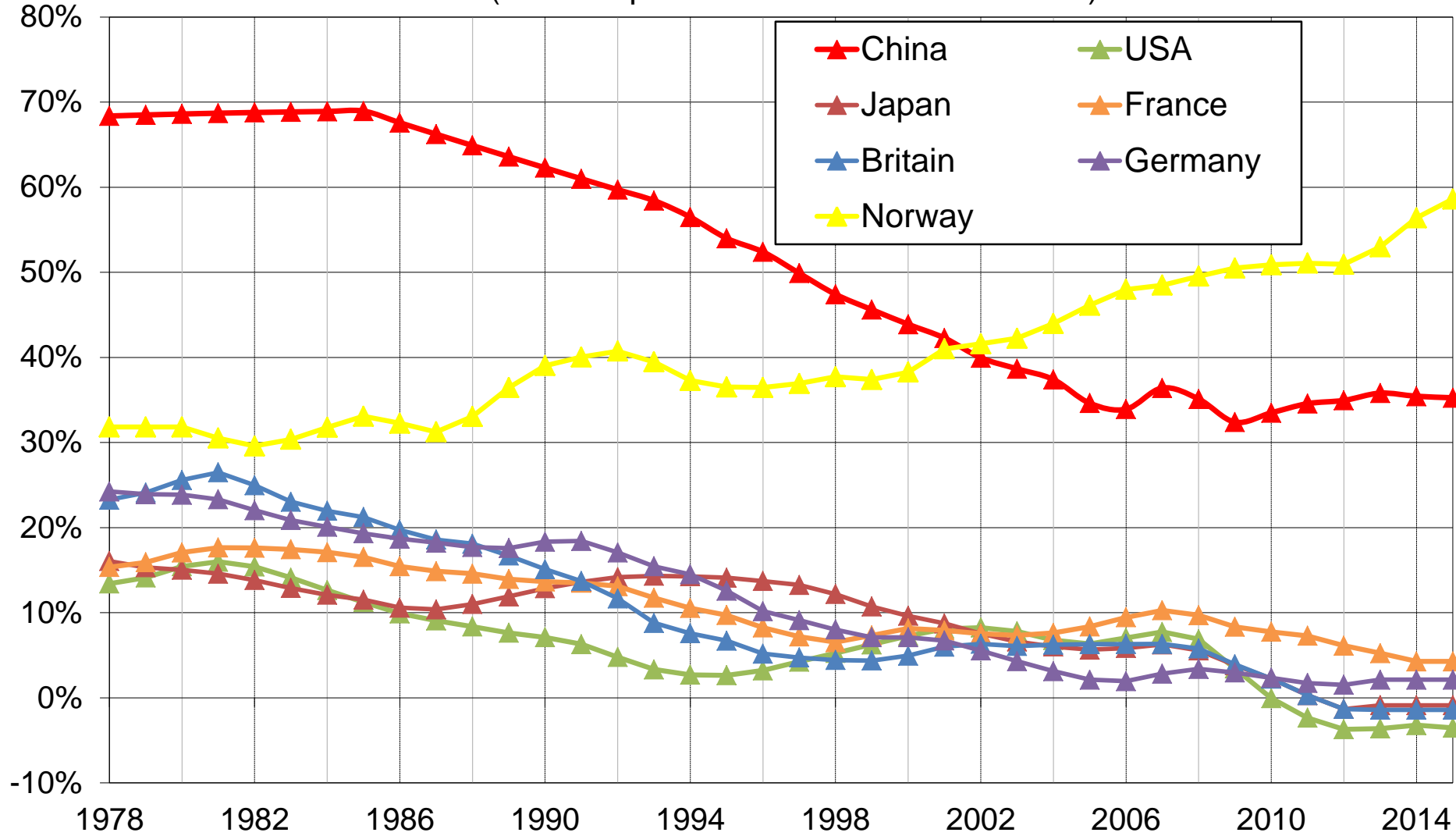
Figure 8: The rise of wealth-income ratios: China vs rich countries
(national wealth (public + private) vs net foreign wealth, in % national income)

China
USA
Japan
France
Germany
Britain

National wealth

Net foreign wealth
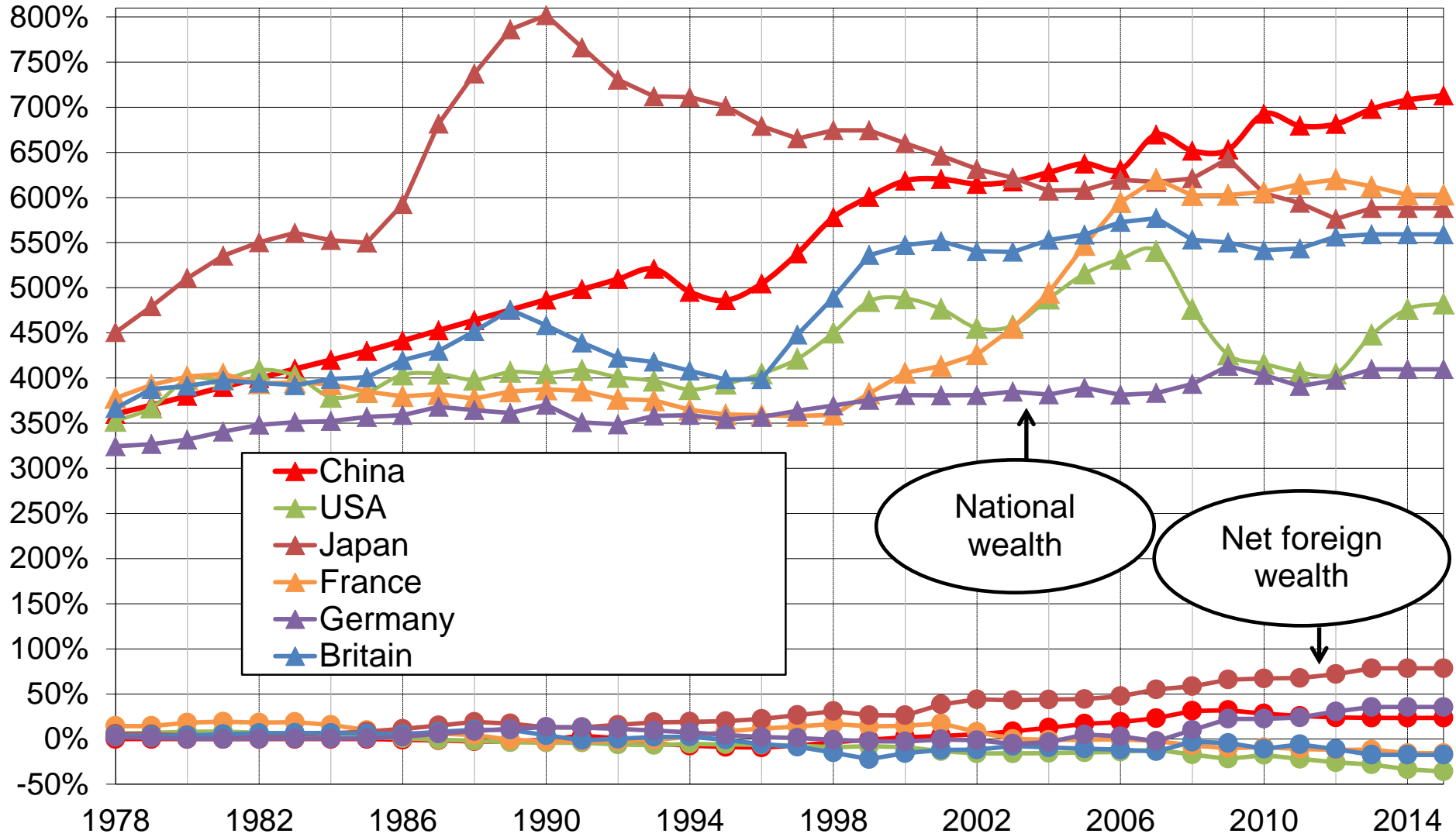
Figure 9a: The rise of financial intermediation: China vs rich countries
(total domestic financial liabilities, in % domestic capital)
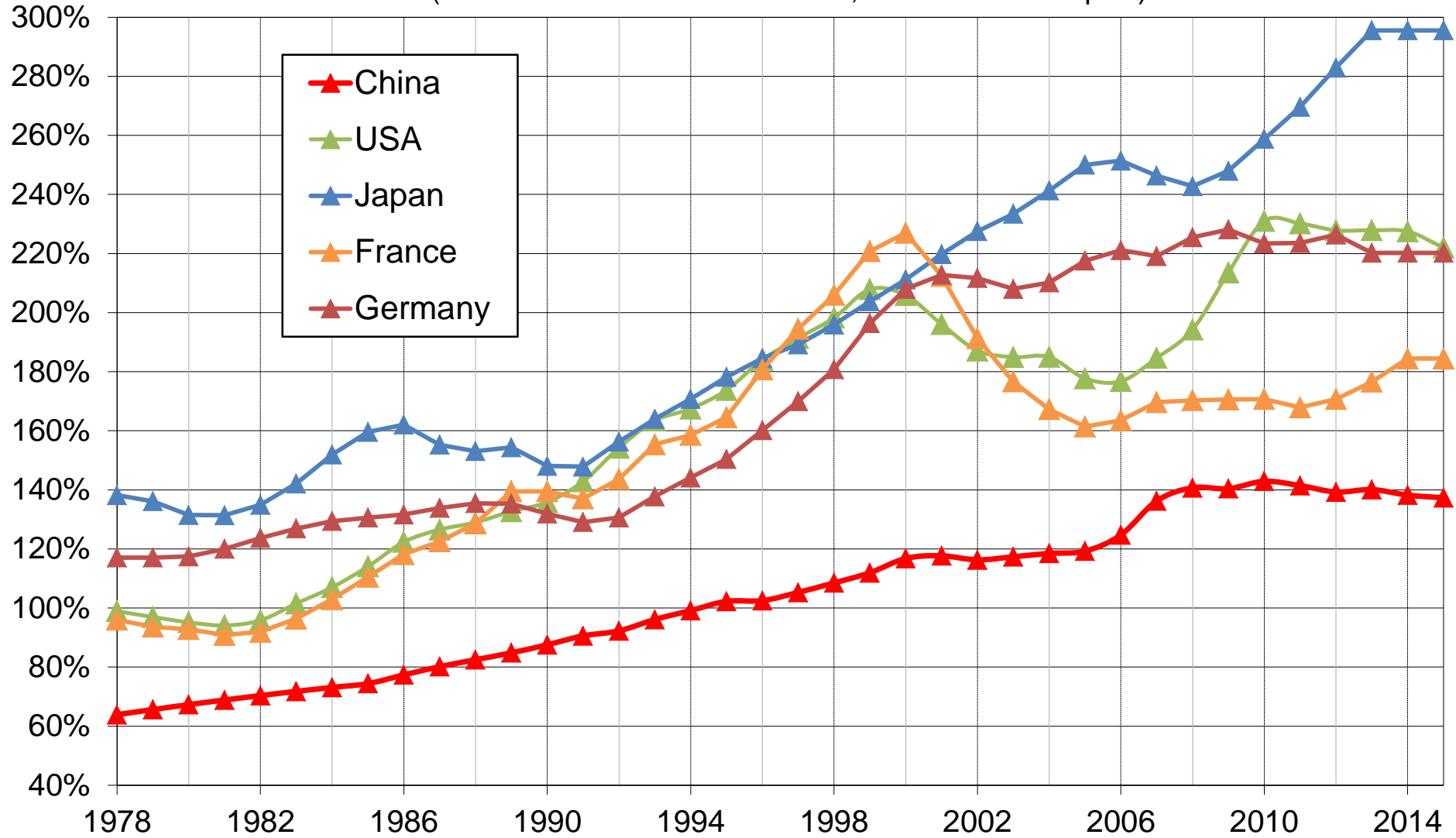
Figure 9b: The rise of foreign ownership: China vs rich countries
(foreign financial liabilities, in % total domestic financial liabilities)
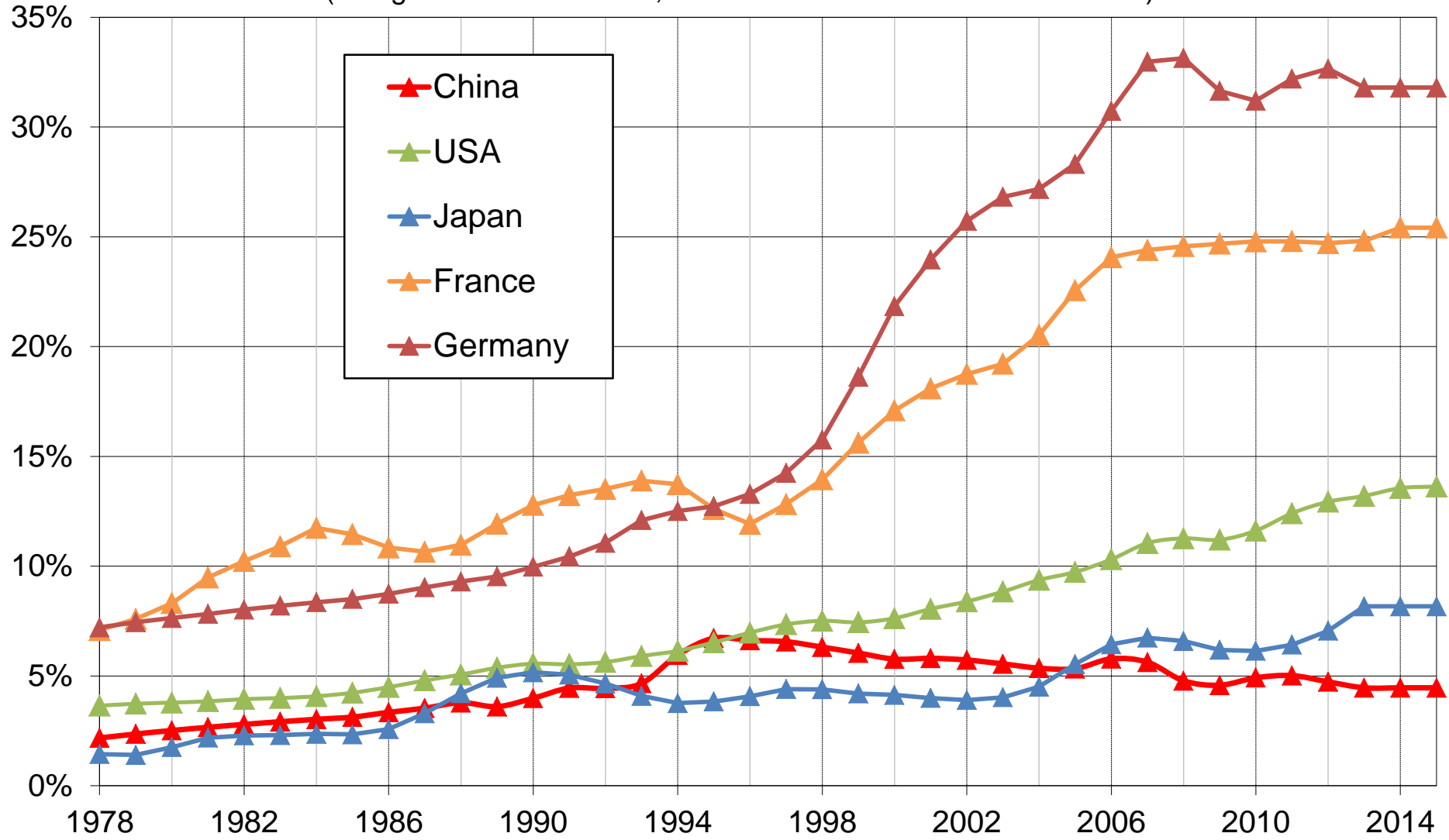
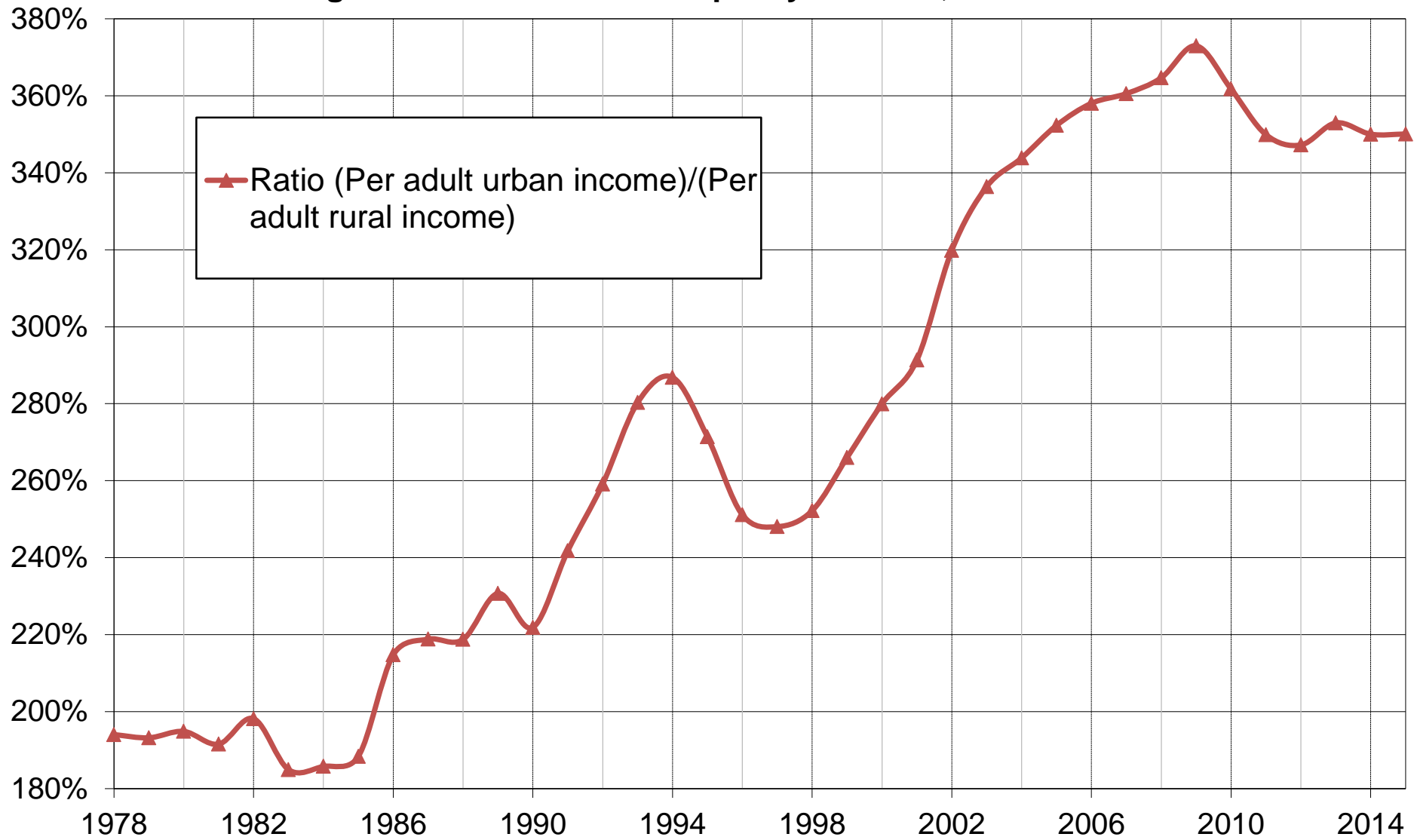**Figure 10. Income inequality in China, 1978-2015: corrected estimates**
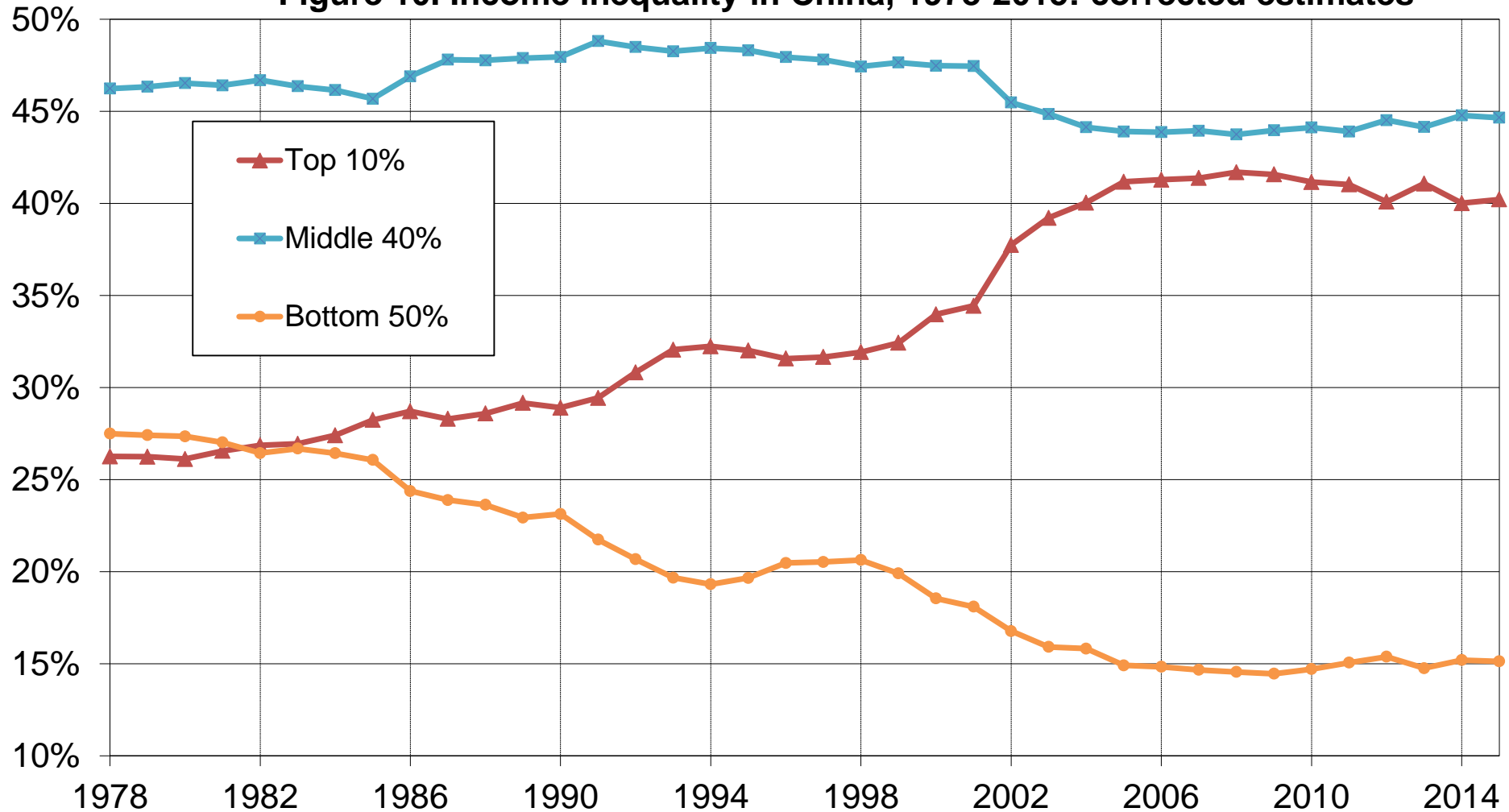
Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates (combining survey, fiscal, wealth and national accounts data).
Equal-split-adults series (income of married couples divided by two).

Figure 11. Income inequality in China: corrected vs raw estimates
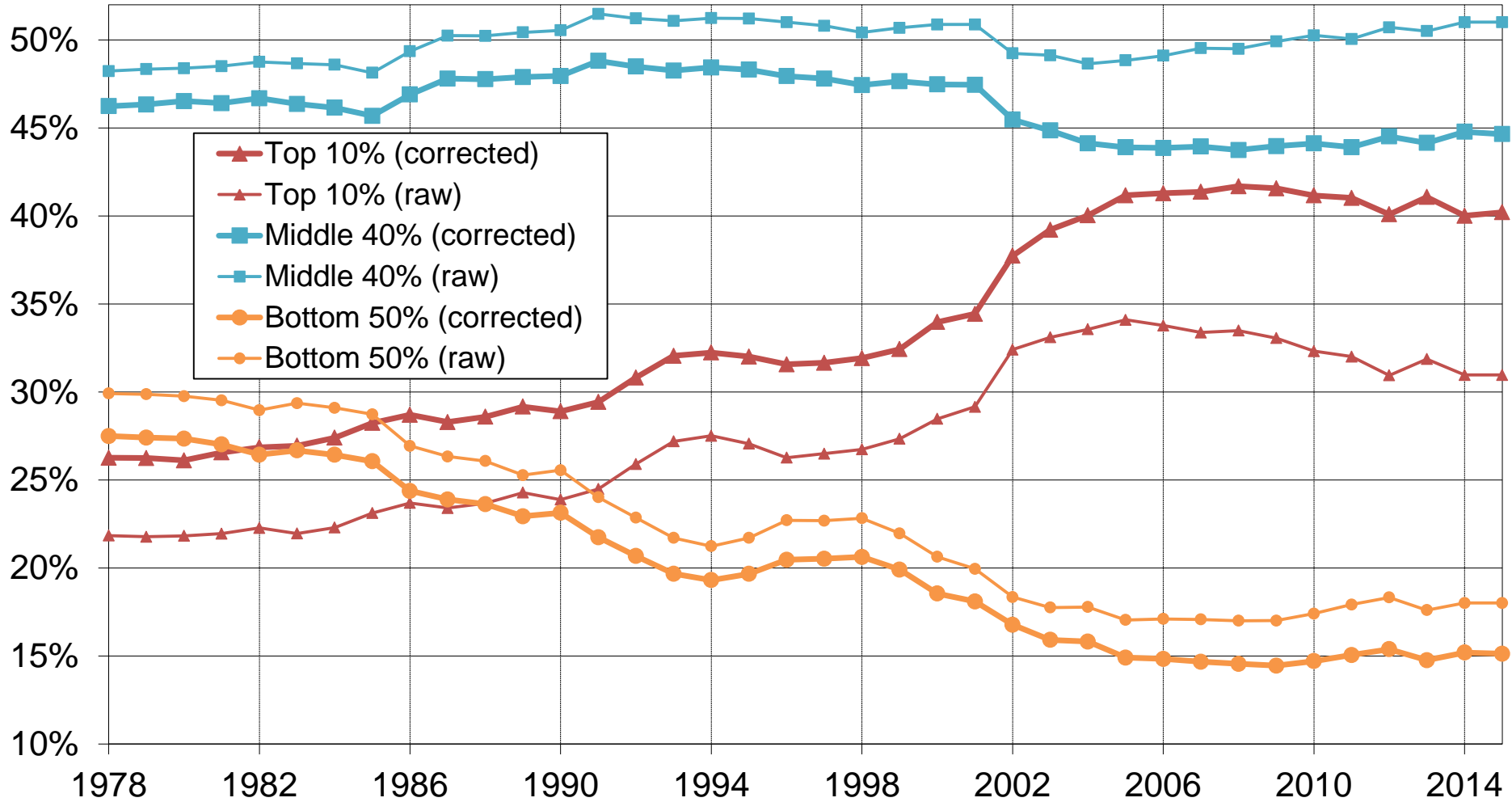
Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates combine survey, fiscal, wealth and national accounts data. Raw estimates rely only on self-reported survey data.
Equal-split-adults series (income of married couples divided by two).
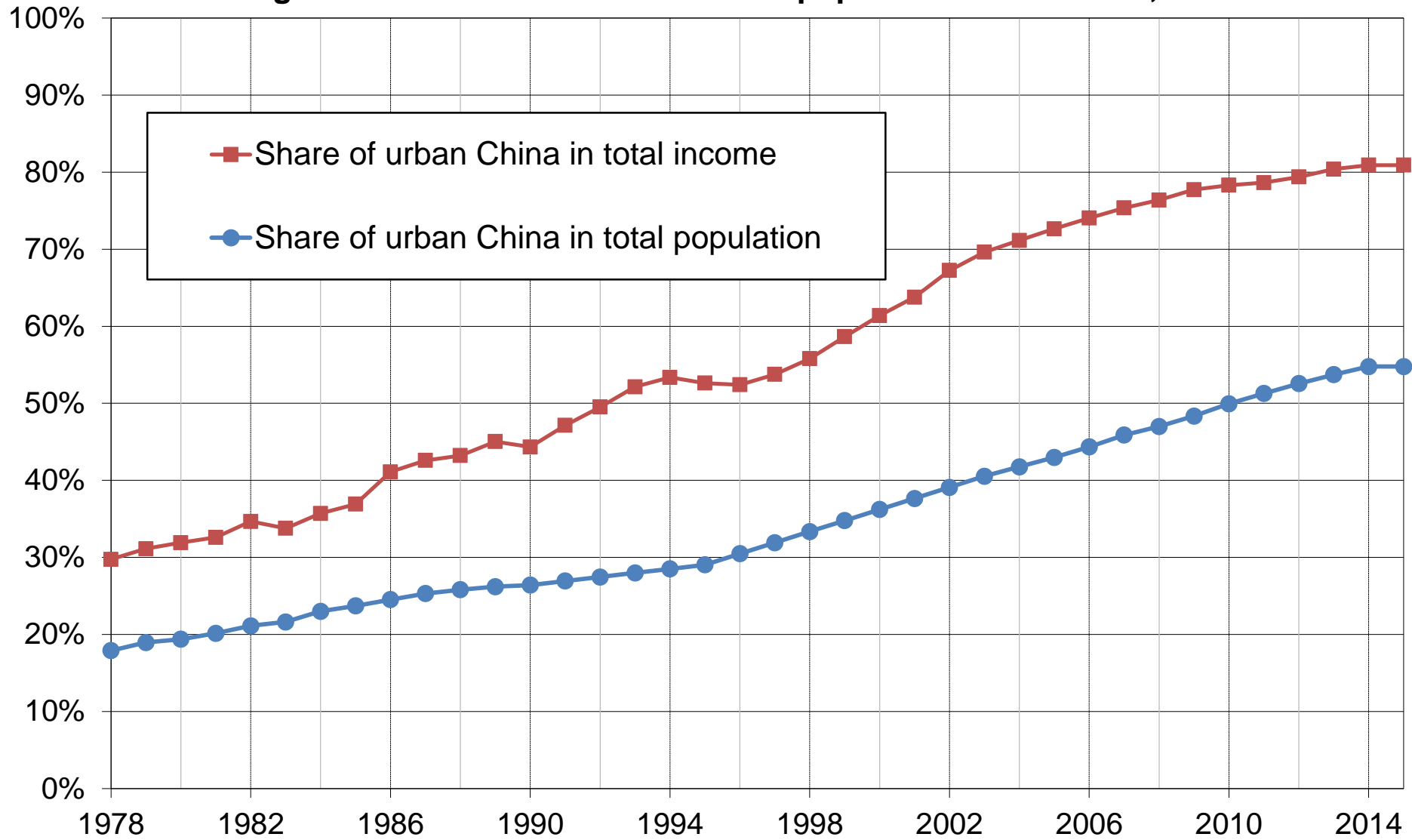
Figure 12. Top 1% income share in China : corrected vs raw estimates
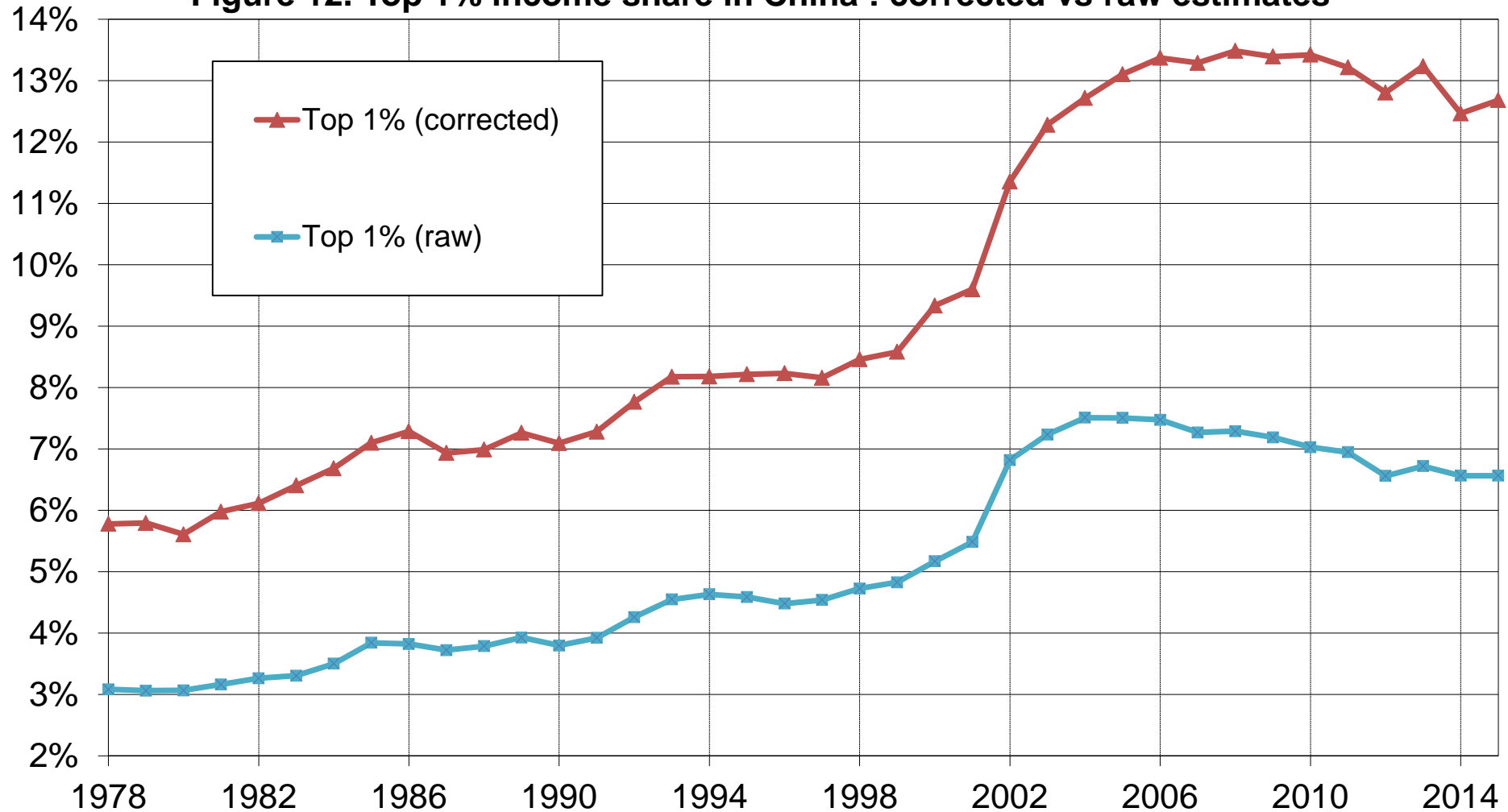
- ▲ Top 1% (corrected)
- ✕ Top 1% (raw)

Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates combine survey, fiscal, wealth and national accounts data. Raw estimates rely only on self-reported survey data.
Equal-split-adults series (income of married couples divided by two).

Figure 13: Population in urban and rural China, 1978-2015

Legend:
- Total population
- Total adult population
- Urban adult population
- Rural adult population
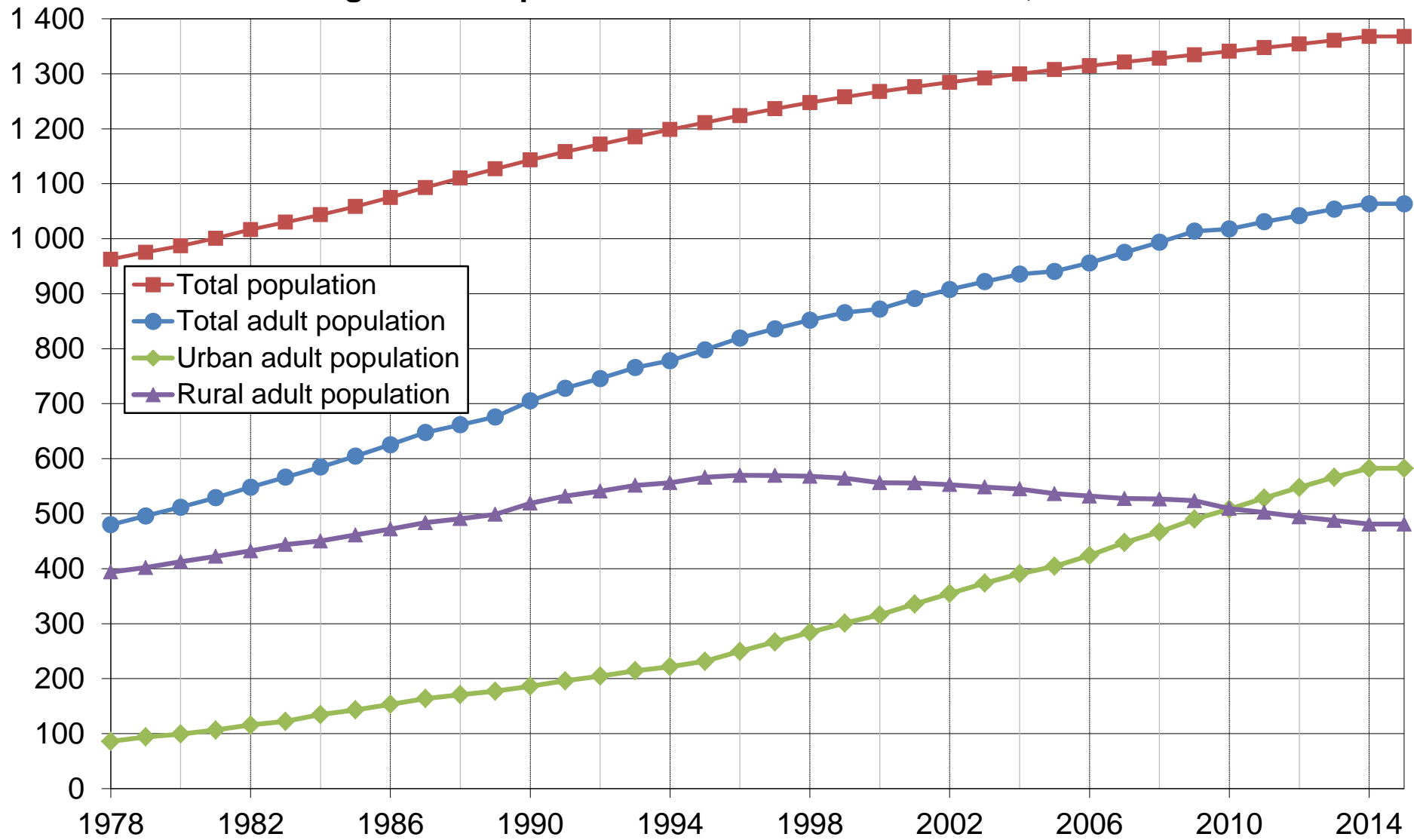
Figure 14: Rural-Urban Inequality in China, 1978-2015

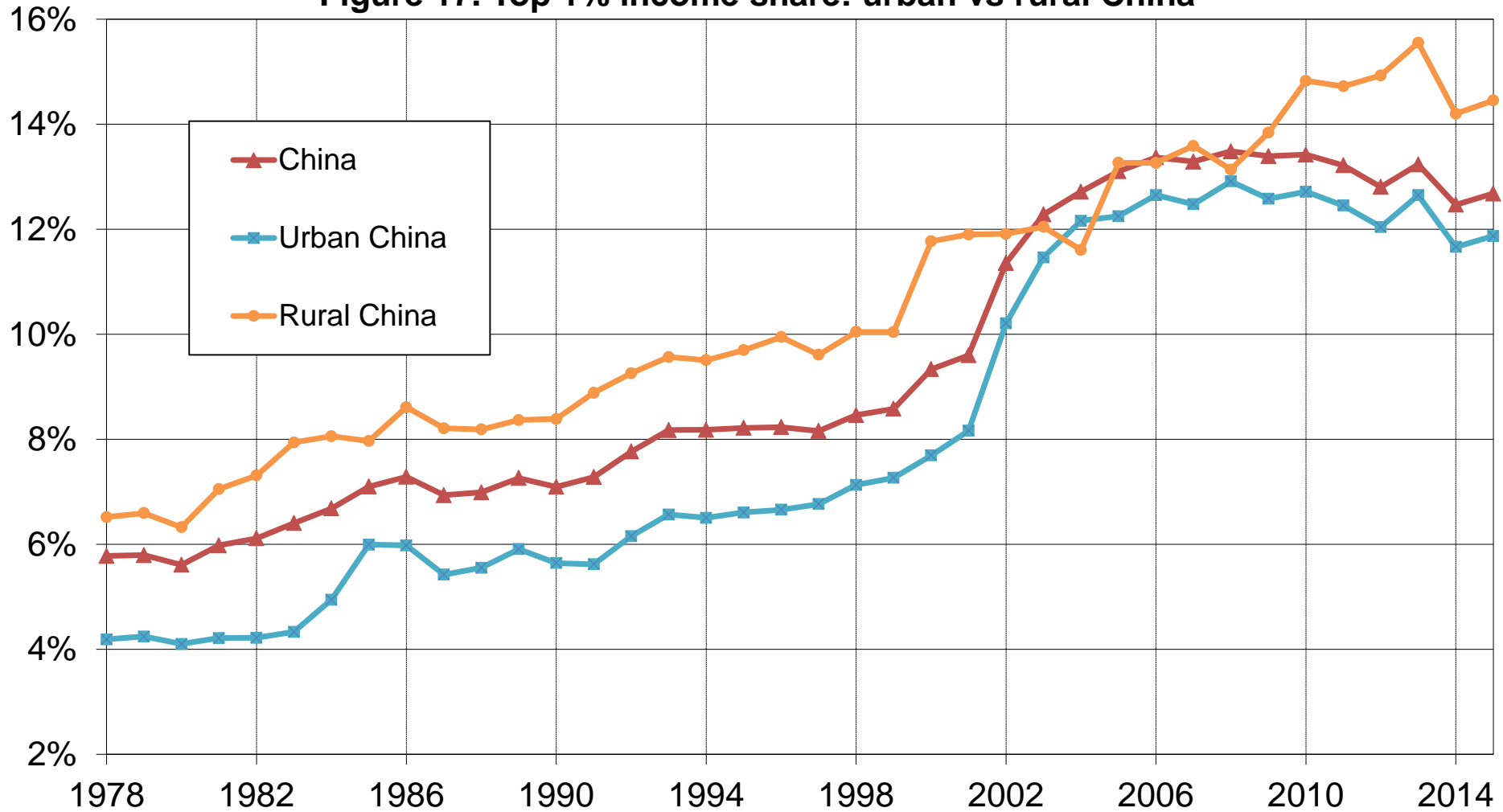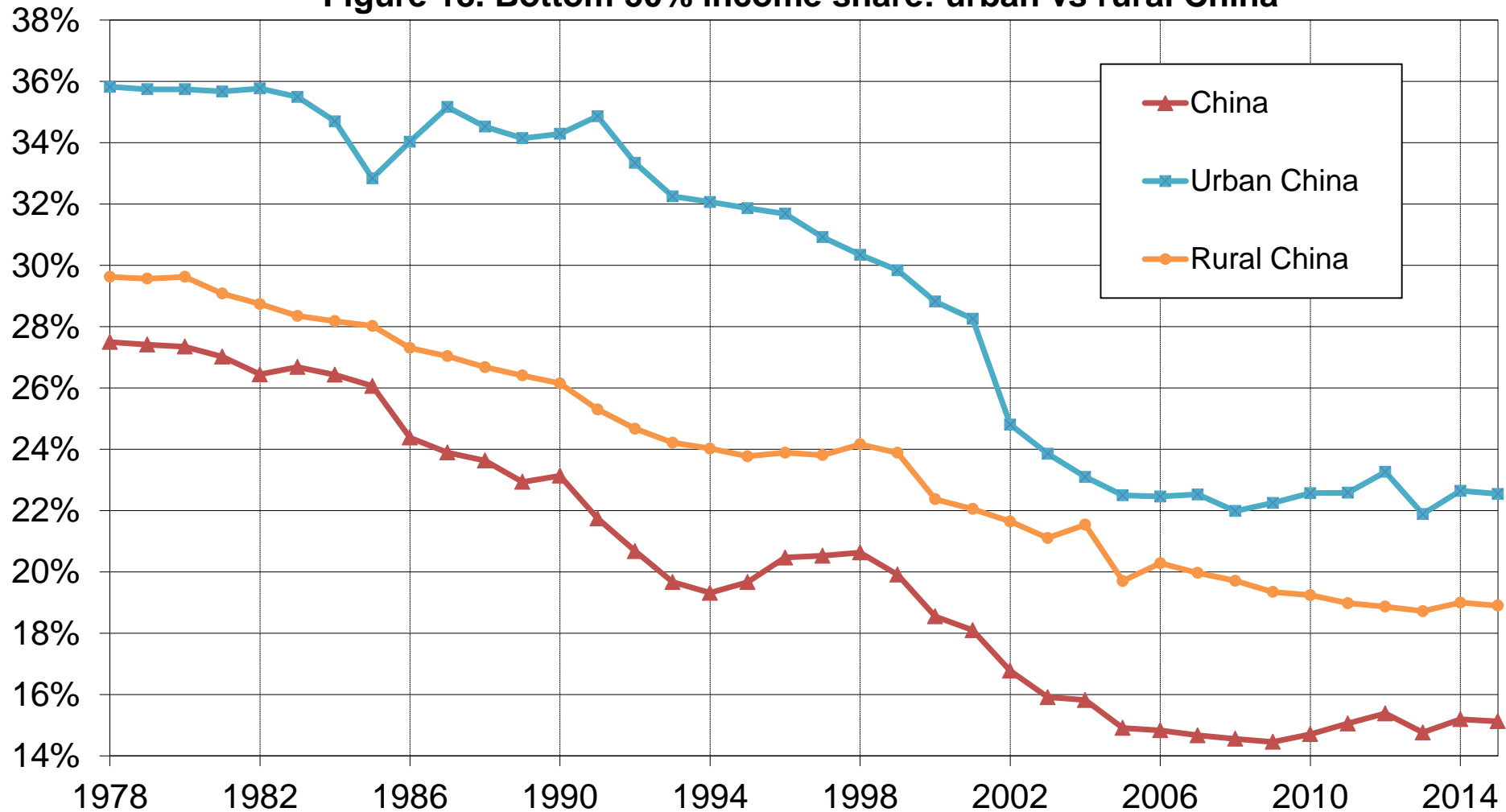Figure 15: Shares of urban China in population and income, 1978-2015

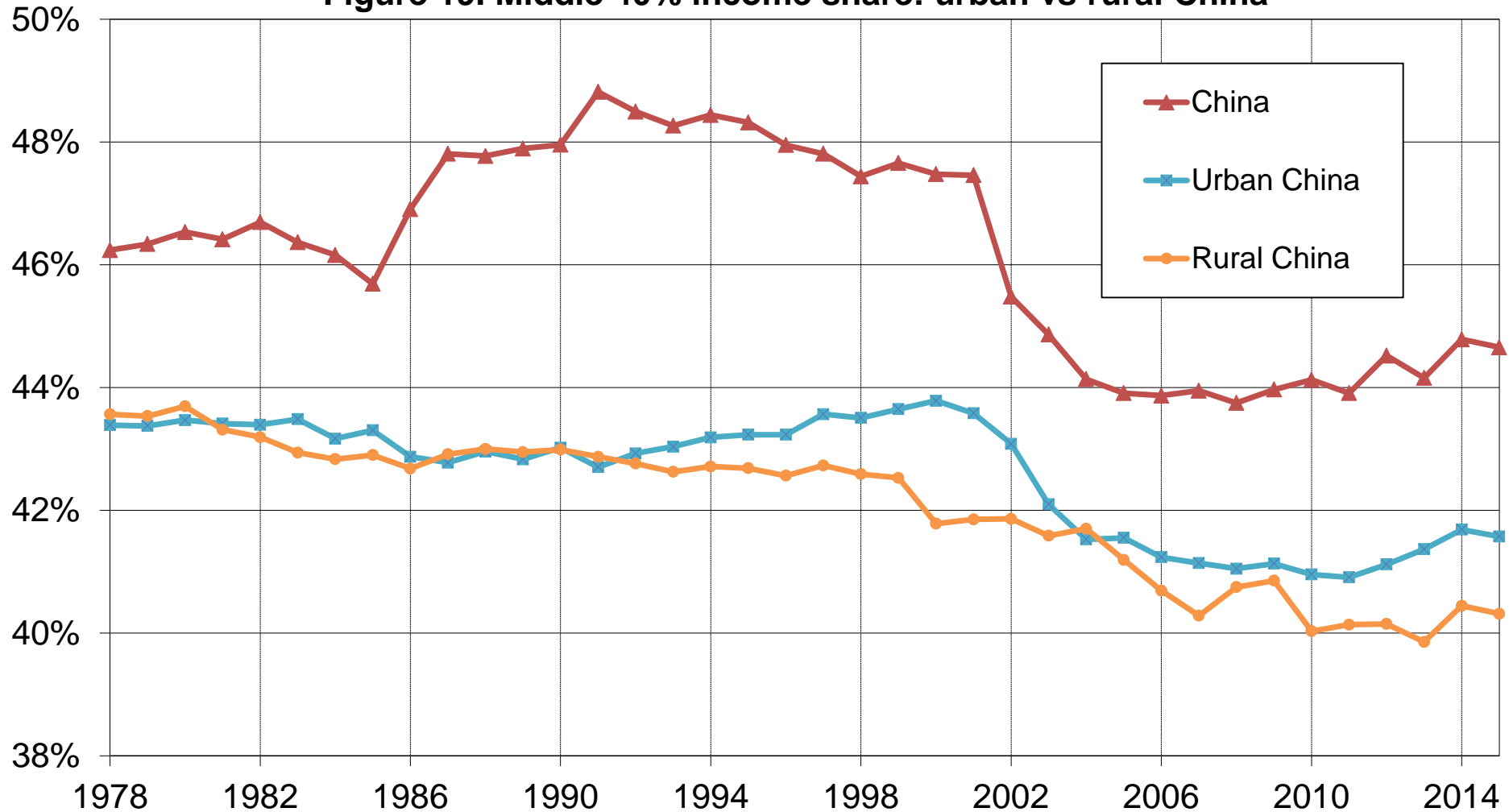# Figure 16. Top 10% income share: urban vs rural China
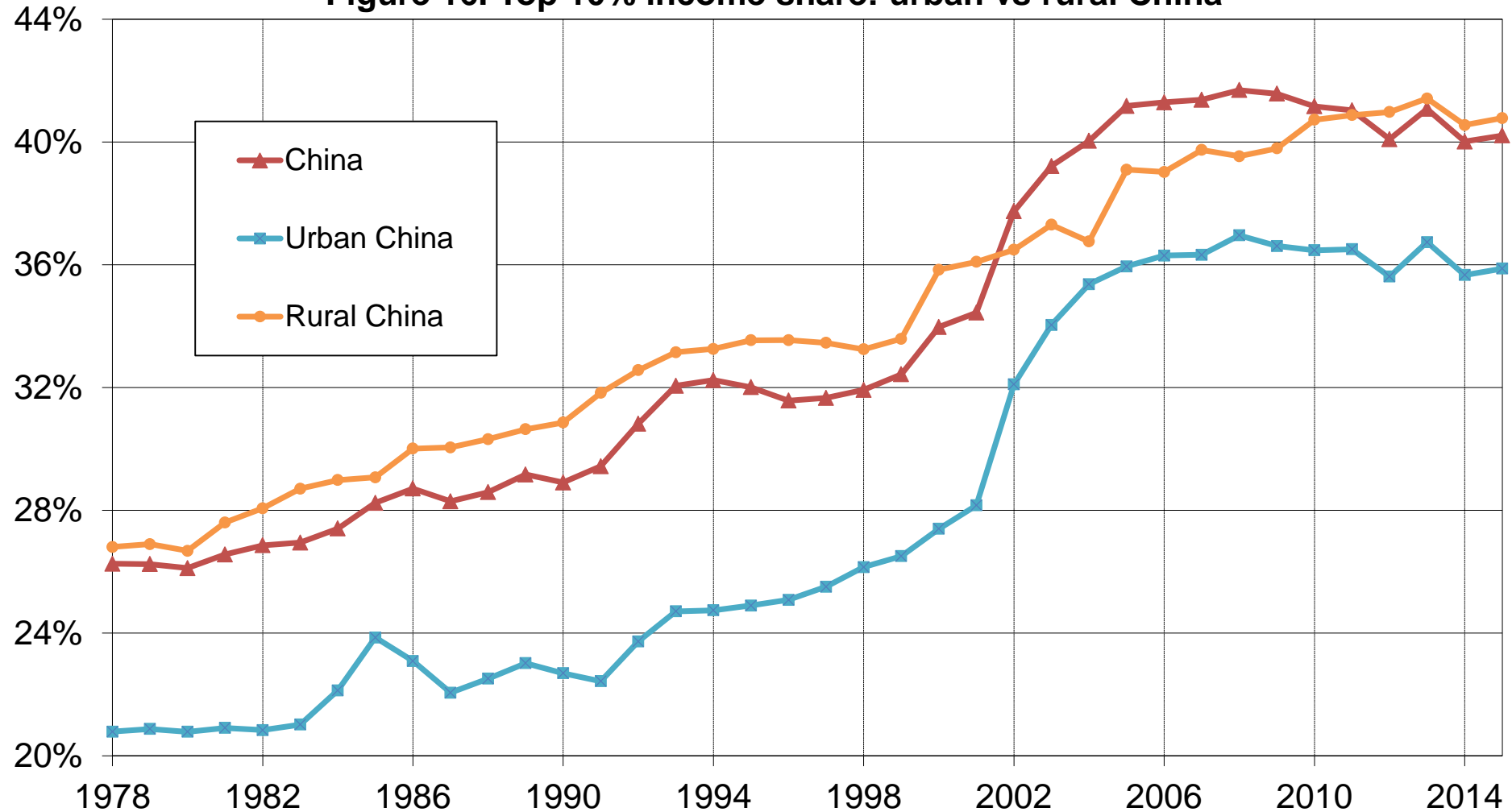
Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates (combining survey, fiscal, wealth and national accounts data).
Equal-split-adults series (income of married couples divided by two).

Figure 17. Top 1% income share: urban vs rural China
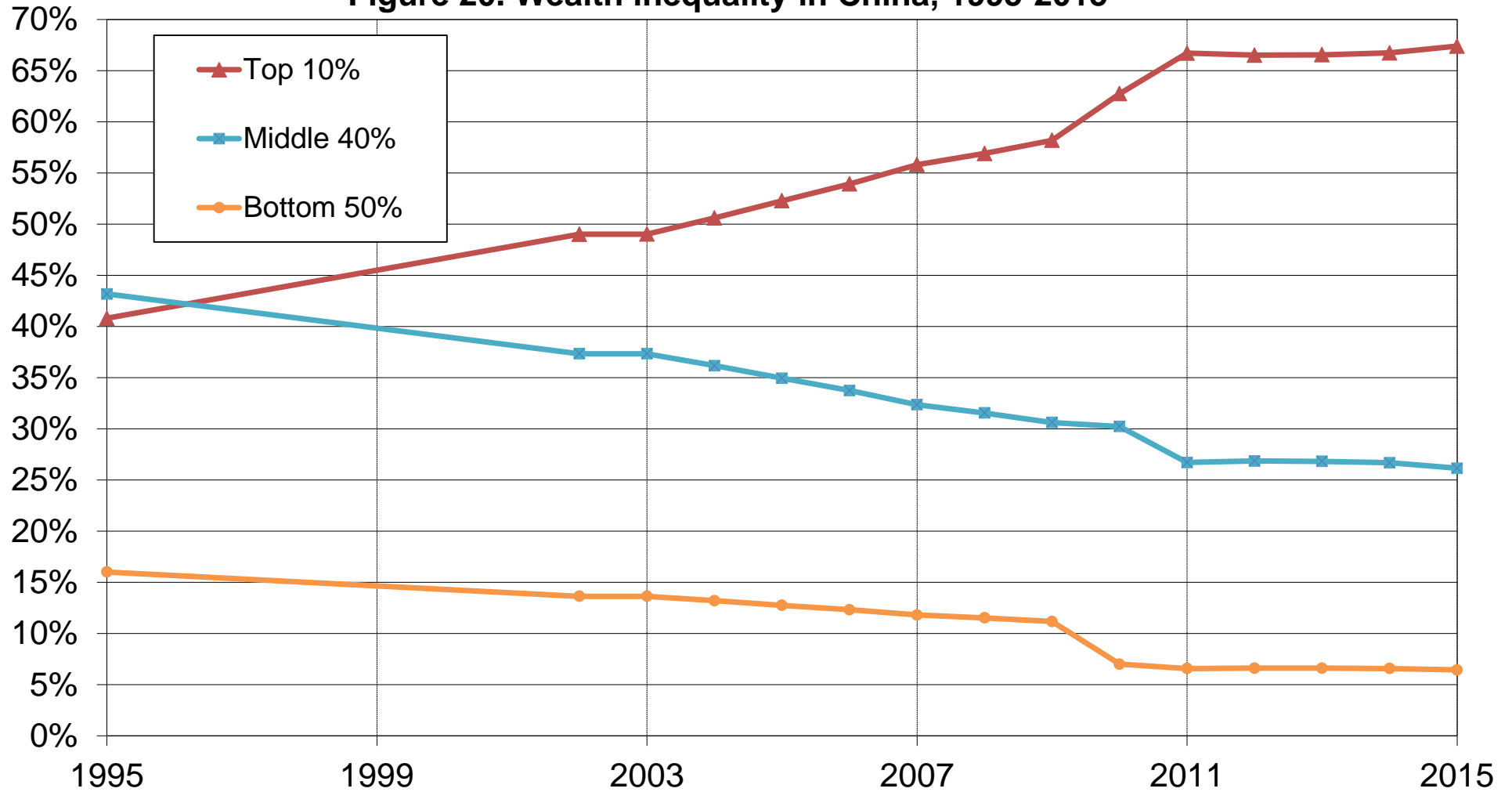
Legend:
- China
- Urban China
- Rural China

Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates (combining survey, fiscal, wealth and national accounts data).
Equal-split-adults series (income of married couples divided by two).

Figure 18. Bottom 50% income share: urban vs rural China

Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates (combining survey, fiscal, wealth and national accounts data).
Equal-split-adults series (income of married couples divided by two).

Figure 19. Middle 40% income share: urban vs rural China

Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates (combining survey, fiscal, wealth and national accounts data).
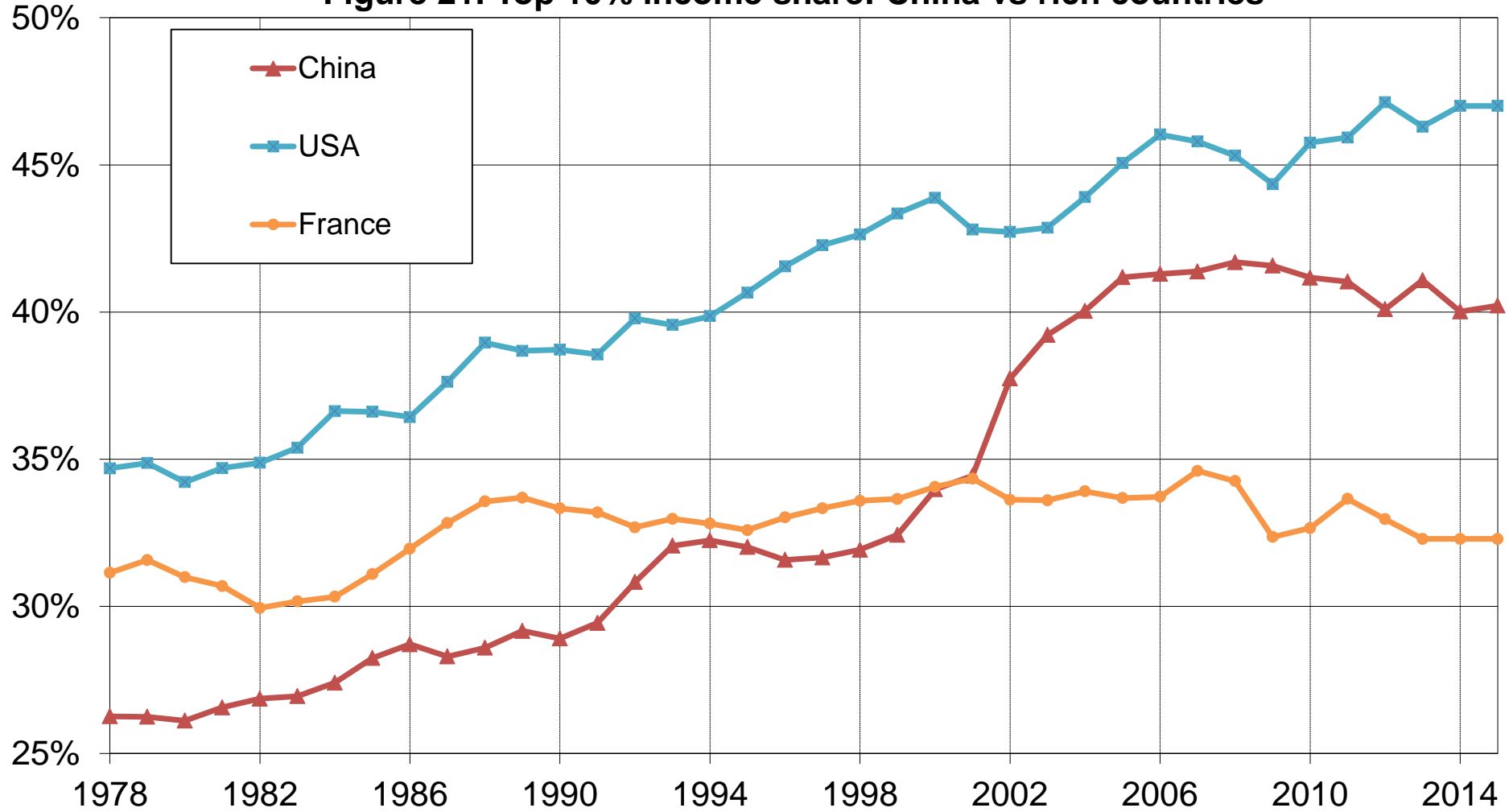Equal-split-adults series (income of married couples divided by two).

Figure 20. Wealth inequality in China, 1995-2015

Distribution of net personal wealth among adults.
Corrected estimates (combining survey data and wealth rankings).
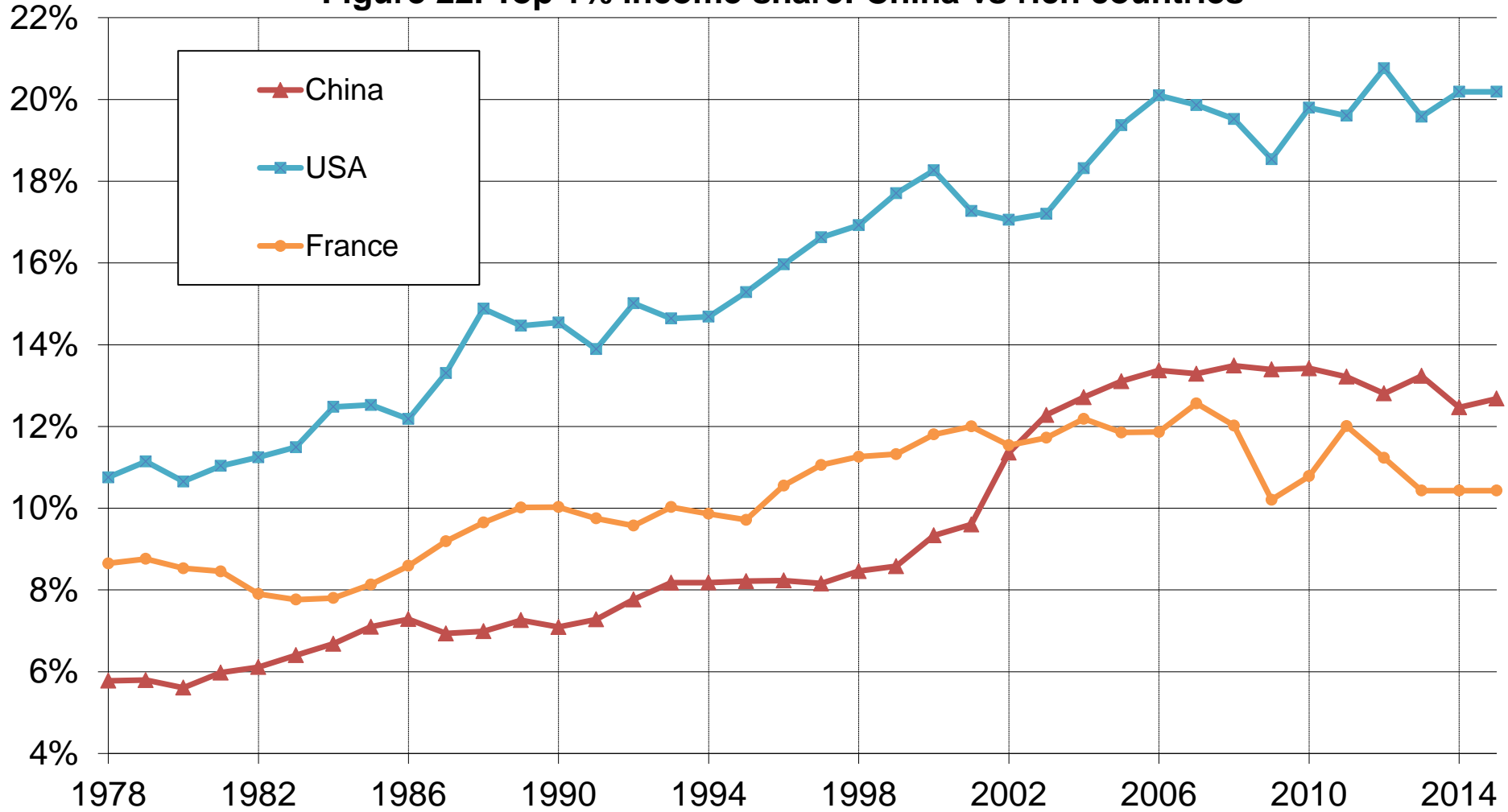Equal-split-adults series (wealth of married couples divided by two).

Figure 21. Top 10% income share: China vs rich countries

Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates (combining survey, fiscal, wealth and national accounts data).
Equal-split-adults series (income of married couples divided by two).

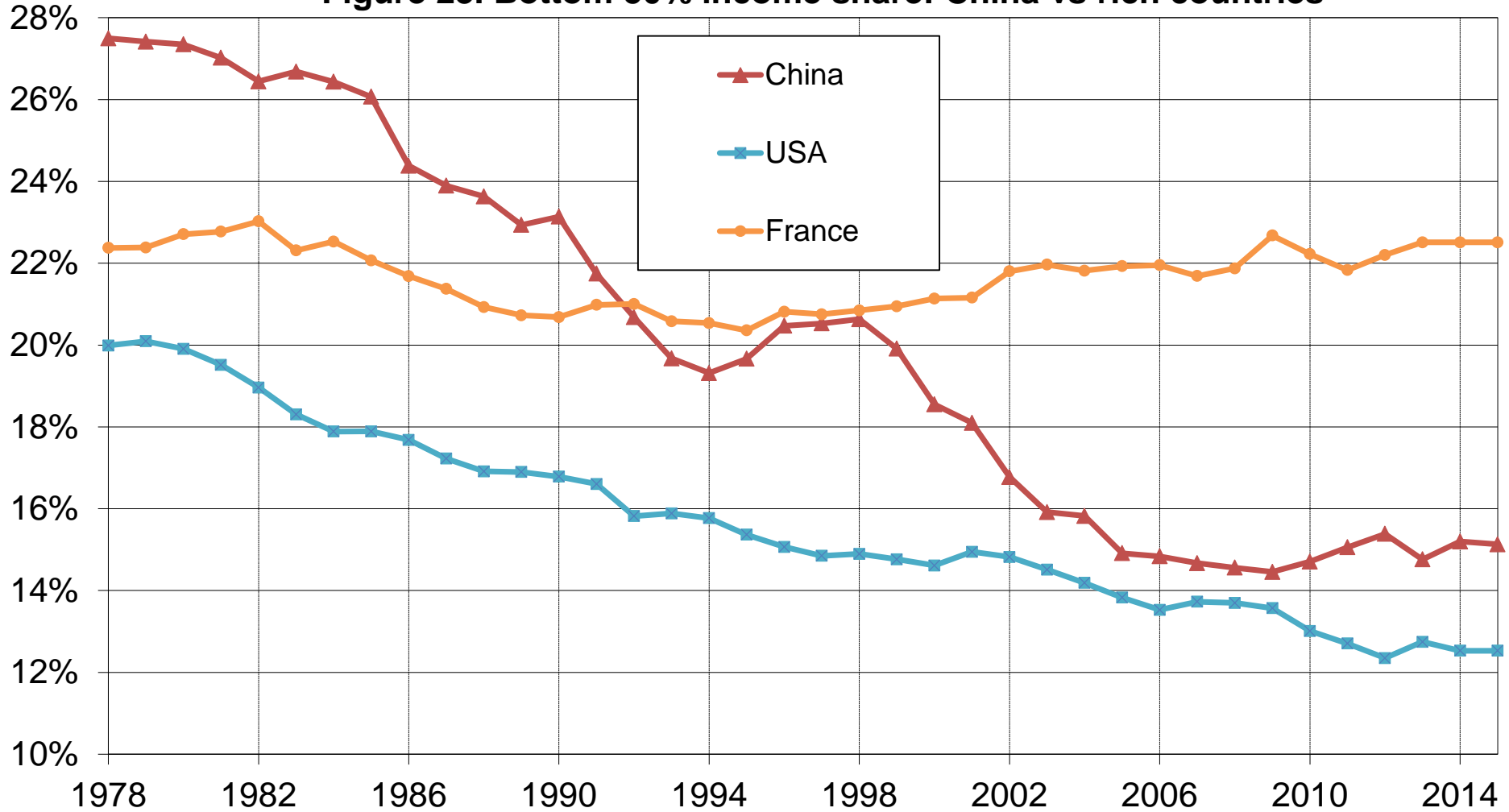# Figure 22. Top 1% income share: China vs rich countries

Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates (combining survey, fiscal, wealth and national accounts data).
Equal-split-adults series (income of married couples divided by two).

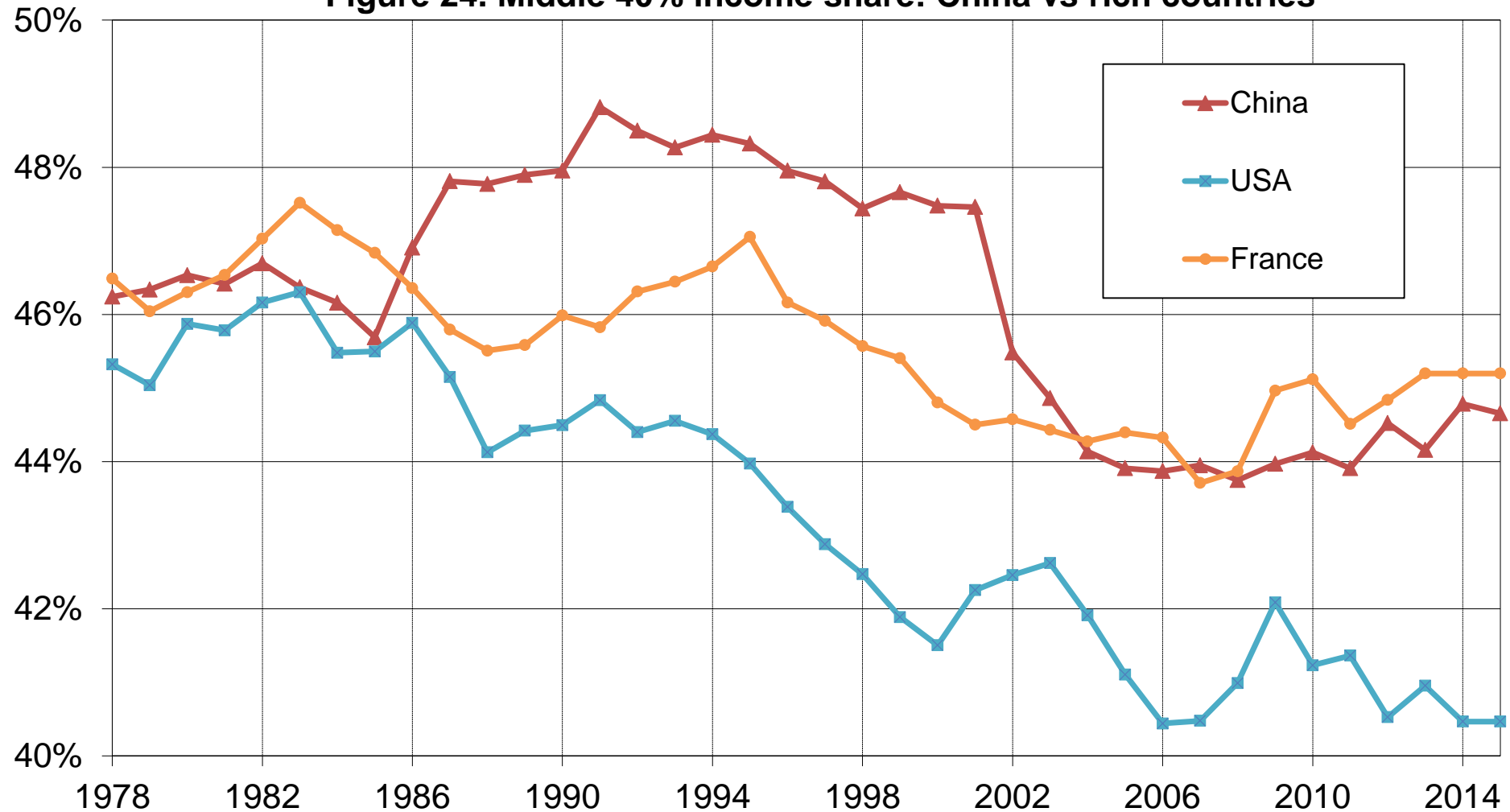# Figure 23. Bottom 50% income share: China vs rich countries

Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates (combining survey, fiscal, wealth and national accounts data).
Equal-split-adults series (income of married couples divided by two).

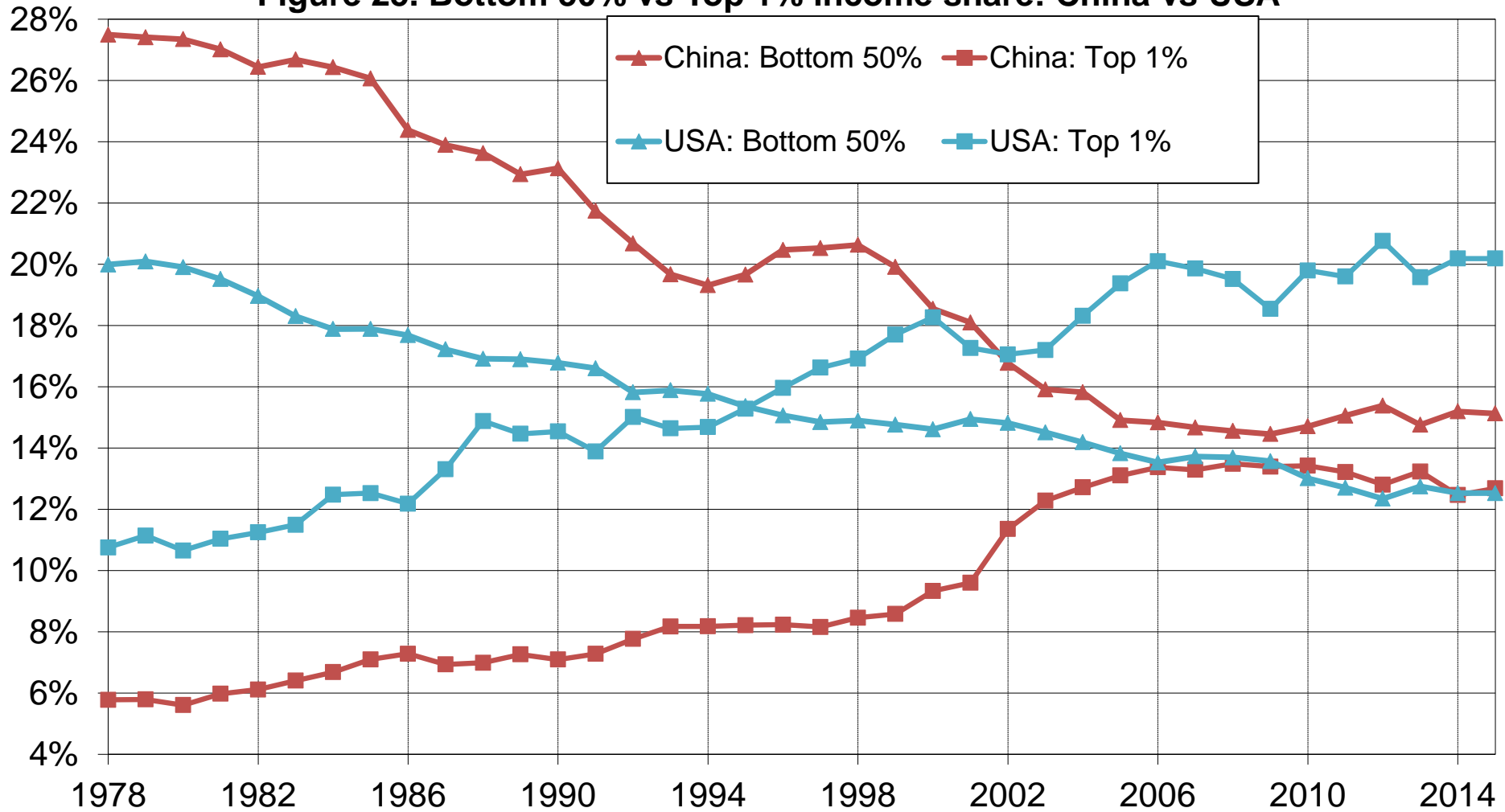# Figure 24. Middle 40% income share: China vs rich countries

Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates (combining survey, fiscal, wealth and national accounts data).
Equal-split-adults series (income of married couples divided by two).

Figure 25. Bottom 50% vs Top 1% income share: China vs USA

Legend:
- China: Bottom 50%
- China: Top 1%
- USA: Bottom 50%
- USA: Top 1%

Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates (combining survey, fiscal, wealth and national accounts data).
Equal-split-adults series (income of married couples divided by two).

Figure 26. Bottom 50% vs Top 1% income share: China vs France

Legend:
- China: Bottom 50%
- China: Top 1%
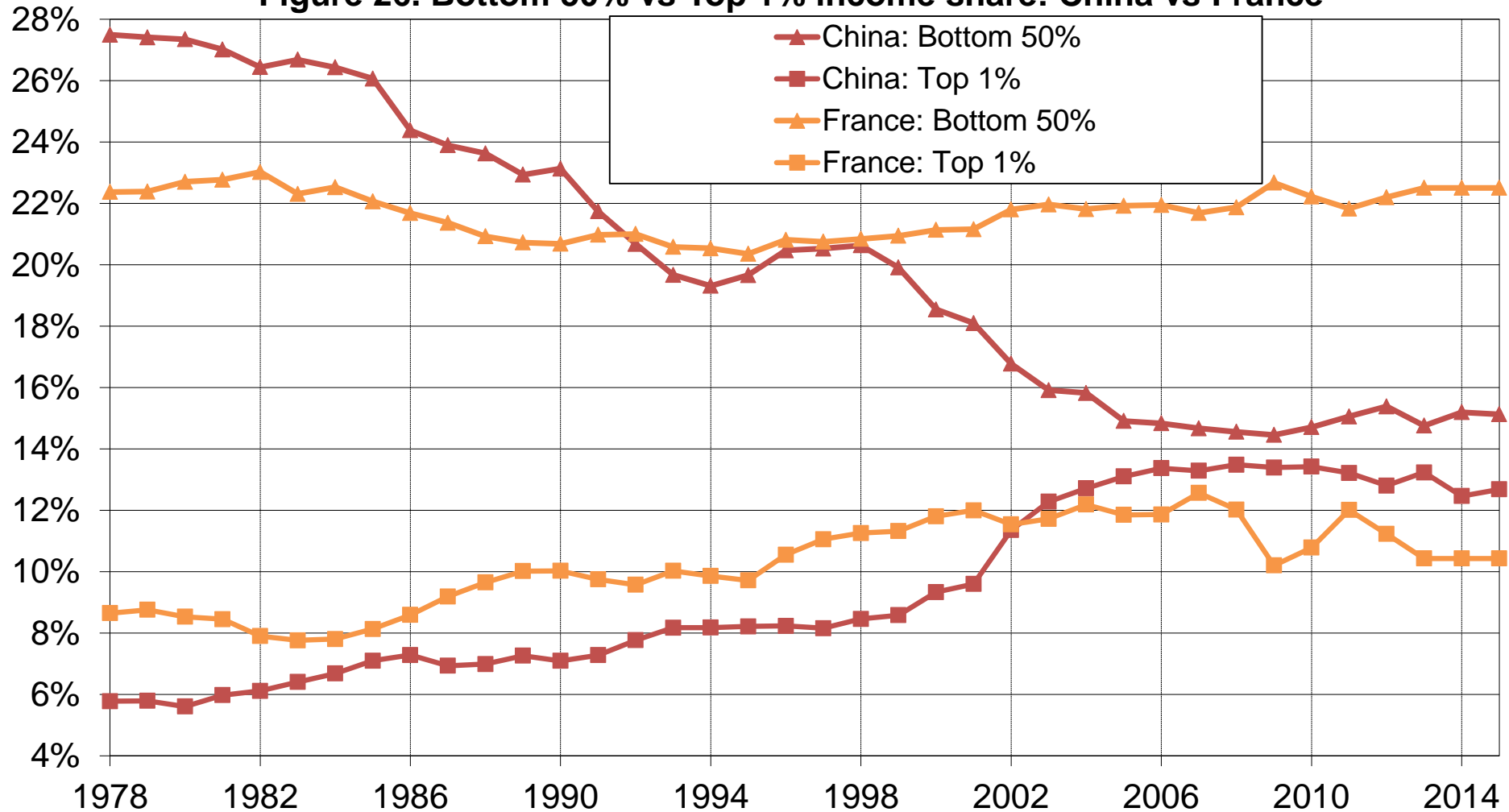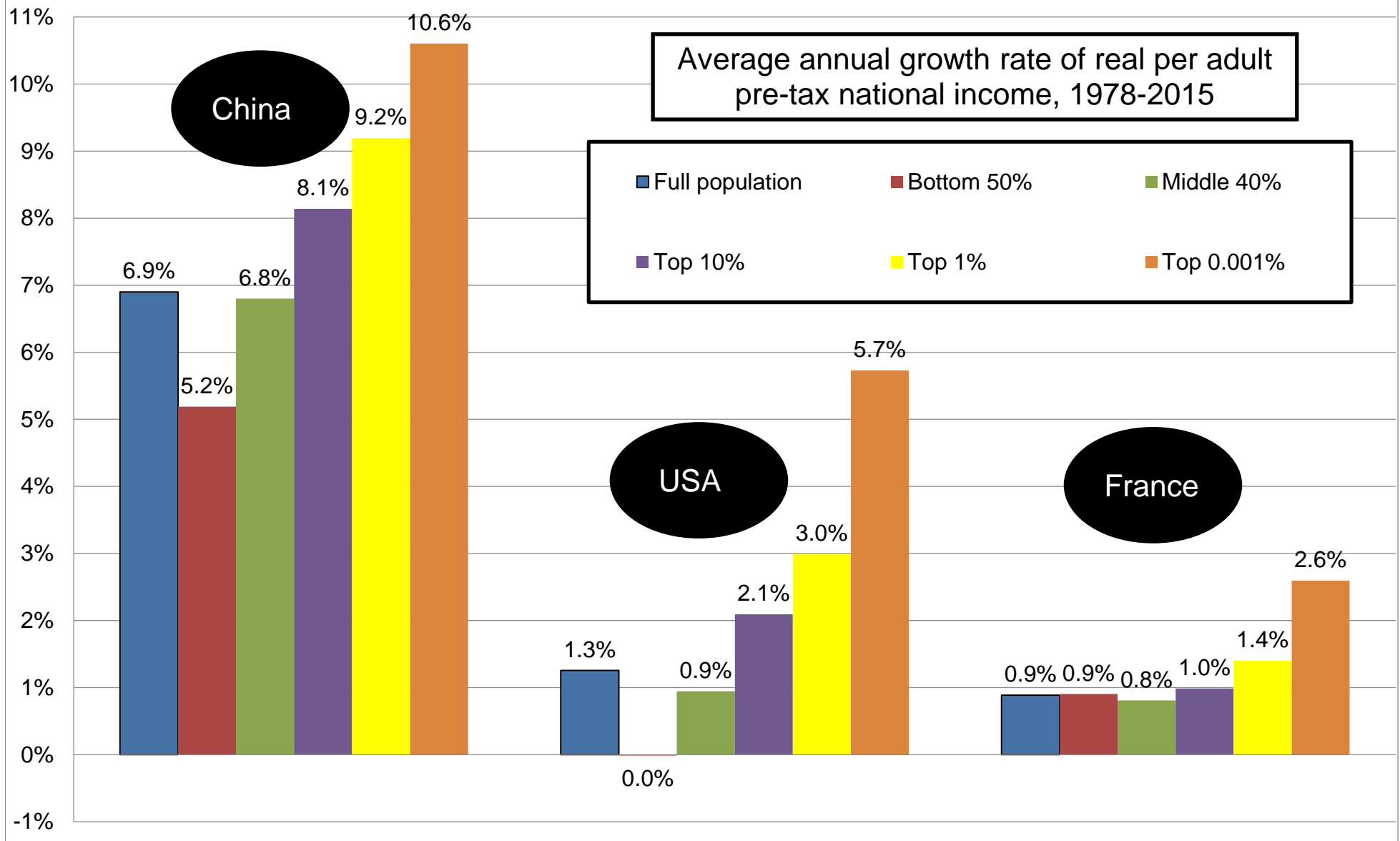- France: Bottom 50%
- France: Top 1%

Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates (combining survey, fiscal, wealth and national accounts data).
Equal-split-adults series (income of married couples divided by two).

Figure 27: Rising inequality and income growth: China vs others

Average annual growth rate of real per adult pre-tax national income, 1978-2015

Legend:
- Full population
- Bottom 50%
- Middle 40%
- Top 10%
- Top 1%
- Top 0.001%

China:
- Full population: 6.9%
- Bottom 50%: 5.2%
- Middle 40%: 6.8%
- Top 10%: 8.1%
- Top 1%: 9.2%
- Top 0.001%: 10.6%

USA:
- Full population: 1.3%
- Bottom 50%: 0.0%
- Middle 40%: 0.9%
- Top 10%: 2.1%
- Top 1%: 3.0%
- Top 0.001%: 5.7%

France:
- Full population: 0.9%
- Bottom 50%: 0.9%
- Middle 40%: 0.8%
- Top 10%: 1.0%
- Top 1%: 1.4%
- Top 0.001%: 2.6%

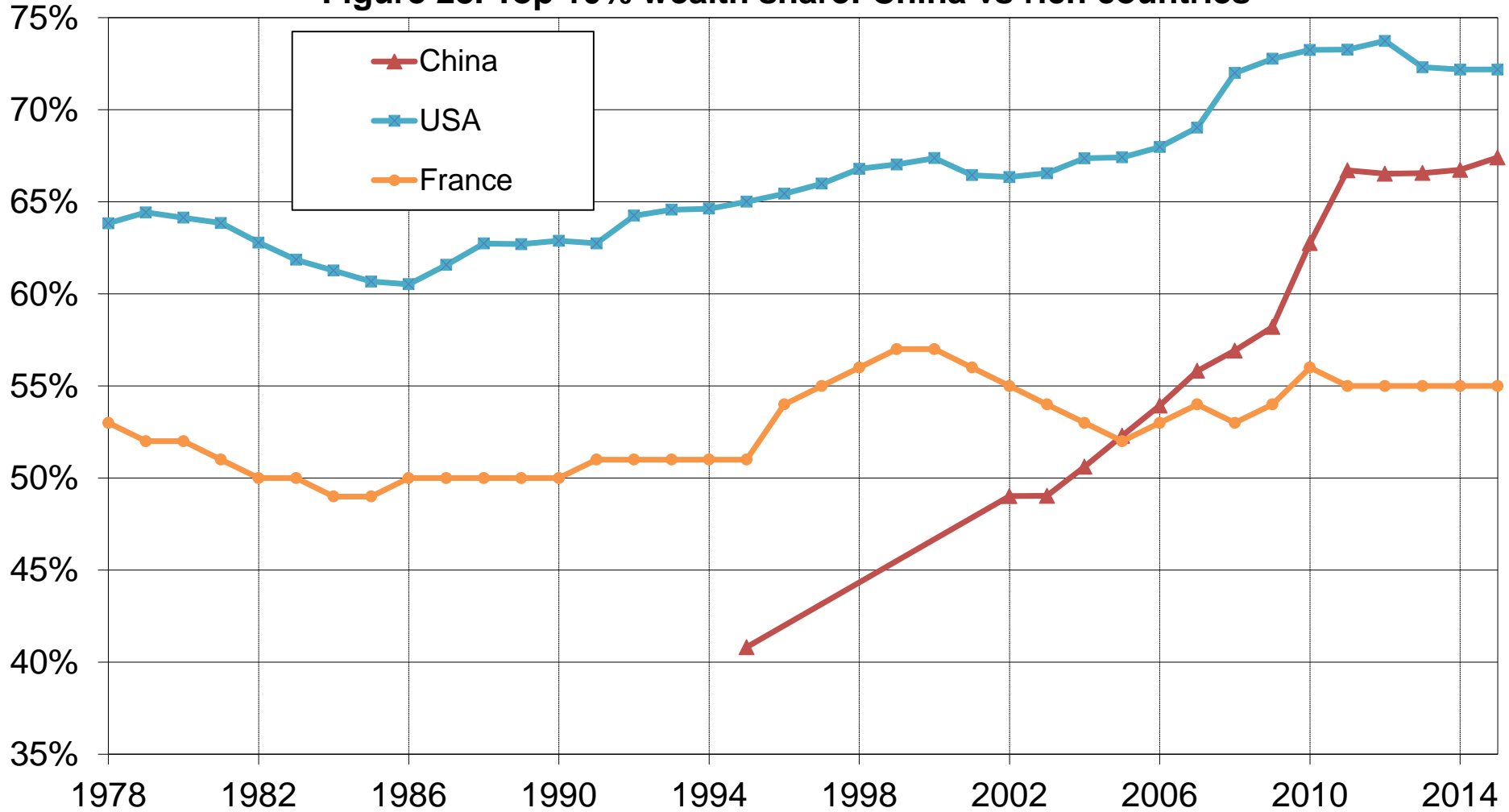**Figure 28. Top 10% wealth share: China vs rich countries**

Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among adults.
Corrected estimates (combining survey, fiscal, wealth and national accounts data).
Equal-split-adults series (income of married couples divided by two).

Table 1 : Income thresholds and income shares in China, 2015

Income group	Number of adults	Income threshold	Average income	Income share
Full Population	1 063 542 632	¥0	¥53 822	100.0%
Bottom 50%	531 771 316	¥0	¥16 285	15.1%
Middle 40%	425 417 053	¥32 667	¥60 085	44.7%
Top 10%	106 354 263	¥107 313	¥216 453	40.2%
incl. Top 1%	*10 635 426*	*¥334 058*	*¥682 581*	*12.7%*
incl. Top 0.1%	*1 063 543*	*¥1 098 936*	*¥2 234 735*	*4.2%*
incl. Top 0.01%	*106 354*	*¥3 695 376*	*¥6 906 598*	*1.3%*
incl. Top 0.001%	*10 635*	*¥12 096 175*	*¥17 717 517*	*0.3%*

Notes: This table reports statistics on the distribution of income in China in 2015. The unit is the adult individual (20-year-old and over; income of married couples is splitted into two). In 2015, 1 euro = 7.0 yuans (market exchange rate) or 4.6 yuans (purchasing power parity). Income corresponds to pre-tax national income. Fractiles are defined relative to the total number of adult individuals in the population. Corrected estimates (combining survey, fiscal, wealth and national accounts data). Source: Appendix B.

Table 2 : Wealth thresholds and wealth shares in China, 2015

Wealth group	Number of adults	Wealth threshold	Average wealth	Wealth share
Full Population	1 063 542 632	¥0	¥248 913	100.0%
Bottom 50%	531 771 316	¥0	¥32 067	6.4%
Middle 40%	425 417 053	¥75 042	¥162 727	26.2%
Top 10%	106 354 263	¥371 267	¥1 677 885	67.4%
incl. Top 1%	*10 635 426*	*¥2 632 486*	*¥7 375 024*	*29.6%*
incl. Top 0.1%	*1 063 543*	*¥7 057 948*	*¥40 782 160*	*16.4%*
incl. Top 0.01%	*106 354*	*¥59 855 594*	*¥273 236 875*	*11.0%*
incl. Top 0.001%	*10 635*	*¥411 430 409*	*¥1 434 192 166*	*5.8%*

Notes: This table reports statistics on the distribution of wealth in China in 2015. The unit is the adult individual (20-year-old and over; wealth of married couples is splitted into two). In 2015, 1 euro = 7.0 yuans (market exchange rate) or 4.6 yuans (purchasing power parity). Wealth corresponds to net personal wealth. Fractiles are defined relative to the total number of adult individuals in the population. Provisional estimates (survey based). Corrected estimates will combine wealth survey and billionaire lists. Source: Appendix B.

Table 3 : Income growth and inequality 1978-2015: China vs rich countries

Income group (distribution of per adult pre-tax national income)	China		USA		France	
	Average annual growth rate 1978-2015	Total cumulated growth 1978-2015	Average annual growth rate 1978-2015	Total cumulated growth 1978-2015	Average annual growth rate 1978-2015	Total cumulated growth 1978-2015
Full Population	**6.9%**	1081%	**1.3%**	59%	**0.9%**	39%
Bottom 50%	**5.2%**	550%	**0.0%**	-1%	**0.9%**	39%
Middle 40%	**6.8%**	1040%	**0.9%**	42%	**0.8%**	35%
Top 10%	**8.1%**	1709%	**2.1%**	115%	**1.0%**	44%
incl. Top 1%	*9.2%*	*2491%*	*3.0%*	*198%*	*1.4%*	*67%*
incl. Top 0.1%	*9.7%*	*2962%*	*4.0%*	*321%*	*1.7%*	*84%*
incl. Top 0.01%	*10.2%*	*3513%*	*4.7%*	*453%*	*1.8%*	*93%*
incl. Top 0.001%	*10.6%*	*4065%*	*5.7%*	*685%*	*2.6%*	*158%*

Notes: This table reports statistics on the distribution of income in China in 2015. The unit is the adult individual (20-year-old and over; income of married couples is splitted into two). In 2015, 1 euro = 7.0 yuans (market exchange rate) or 4.6 yuans (purchasing power parity). Income corresponds to pre-tax national income. Fractiles are defined relative to the total number of adult individuals in the population. Corrected estimates (combining survey, fiscal, wealth and national accounts data). Source: Appendix B.