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**Rethinking Poverty: Measure the Disutility and Poverty, not the Headcount**

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## **Rethinking Poverty: Measure the Disutility and Poverty, not the Headcount**

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### **Abstract**

This paper focusses on the welfare consequences of rural and urban poverty and inequality in a geo-political economy growth context for the populous states of India and the People's Republic of China (PRC), respectively the world's largest democratic and communist states. The latest available World Bank household survey consumption data is used to estimate the disutility of poverty and risk aversion, which are found to be the least for the PRC urban sector. Subsequent *ex-post* estimates of the Sen Measure of welfare show that growth has contributed around 95 per cent to welfare of the urban poor in the PRC whereas reducing urban inequality has contributed only 5 per cent. The estimates are very different for the more regionally diverse democratic strategies in India with welfare gains of the Indian rural poor being only one-third those for urban PRC, with the contributions from promoting growth and equality balanced at around 50 per cent each. The social welfare contract in the world's largest democracy has been less effective than for the central collective leadership of the PRC.

Looking forward, the estimated *ex-ante* poverty disutility reducing reaction functions surprisingly show the inequality elasticities dominating the growth elasticities for both urban and rural sectors of the PRC and (to a lesser extent) the Indian urban sector. With the exception of the Indian rural sector, policies aimed at reducing inequality in these two countries are estimated to be around 70 per cent more effective in alleviating disutility of the poor, than policies to increase growth. This means refocussing strategies from promoting urban based growth to reducing inequality has the potential to maximise welfare gains of the poor. The populist Indian government has only recently changed direction from poverty reduction to wealth creation based on growth driven by efficient urban private sector enterprises. The PRC is newly encouraging efficiency-based state capitalism and the discriminating *hukou* registration system continues urban bias inducing inequality, albeit in different forms. The prospect of this golden opportunity being realised appear to be fading for the largest democratic and communist nation states.

**Keywords:** poverty gap squared, inequality, disutility, welfare loss, urban, rural, India, PRC

**JEL Codes:** P25 (Urban, Rural and Regional economics), I32 (Measurement and Analysis of Poverty), P16 (Political Economy), O10 (General Economic Development)

## 1. Introduction

Borcan *et al.*'s (2018) wide-ranging study over the millennia 3500BCE to 2000CE concludes the presence of a state is a reliable historical predictor of social and economic development. This is primarily through coordination by the state which improves living standards, for example imposing the rule of law, maintaining social order and promoting fiscal capacity (including provision of public goods). The question naturally arises as to what types of state promote economic development? Despite a range of complex and detailed studies, there is no easy answer. Nonetheless, a recent contribution by Acemoglu *et al.* (2019) finds robust counter evidence that democracy positively affects real economic activity in the long run.

We concentrate our attention in this paper to the urban and rural sectors of the two most populous countries; India and the Peoples Republic of China (PRC) in a growth context, re-focussing from output and incomes to welfare effects of poverty and inequality. The analysis of performance is interesting, particularly in terms of the very different political economy states of India's "democratic liberalism" and the PRC's "collective leadership". Especially since these counterbalancing developing nations in the traditional Indo-China region have the largest currently operating democratic and centralised public sectors in the world.

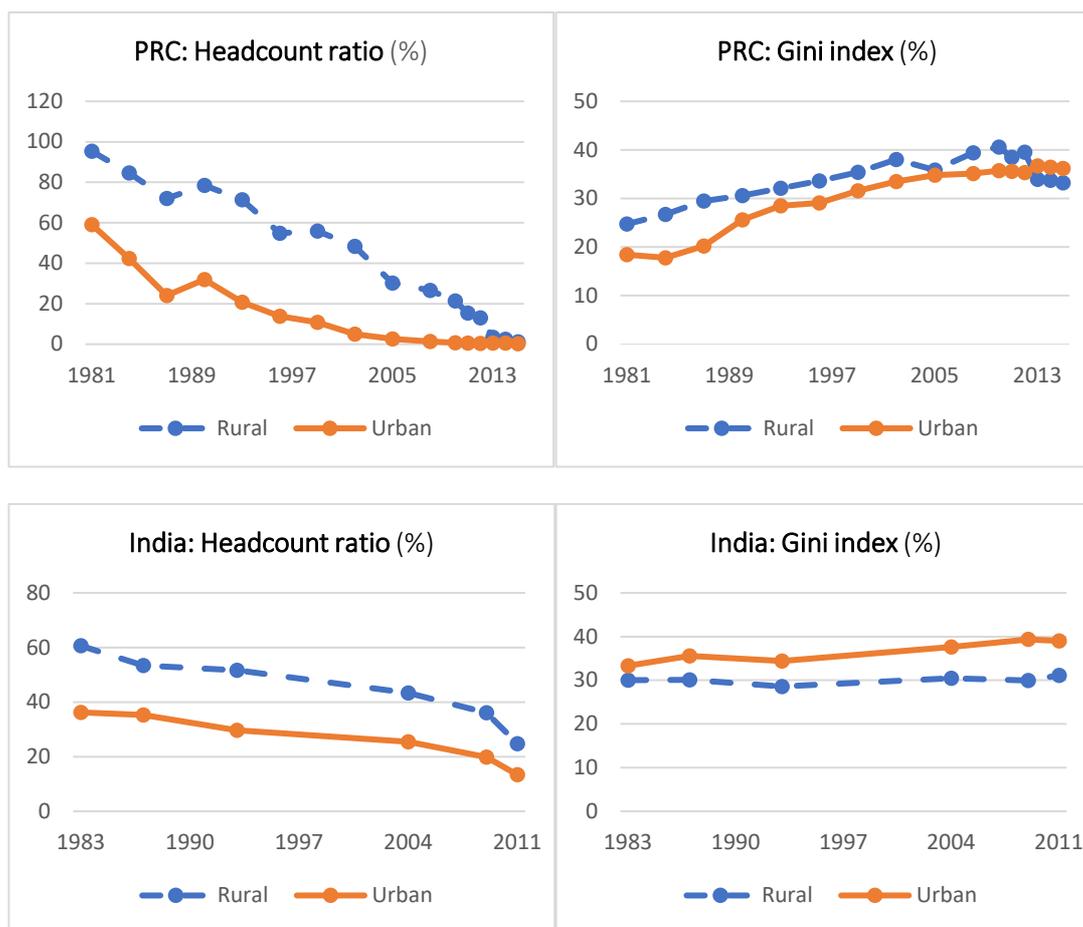
Whilst both the PRC and India adopted a Leninist based political economy in the mid-20<sup>th</sup> century their paths prior to this and since, have been diverse. Desai's insightful writings elaborate this theme arguing that throughout time, China has demonstrated a vision of being a stable, centrally run state, without lasting direct foreign influences. Nationalism in the mid-20<sup>th</sup> century was in fact a drive for reunification which encompassed recentralisation of authority. This dynamic culminated in the Chinese Communist Party taking control and establishing the PRC as a nation state. Time will tell how authority will continue to be exercised from the centre to the periphery in meeting competing demands. In contrast, India has a long history of partial foreign control over the populace comprising a complex array of cultures, languages and religions. It is not surprising that India has never experienced a whole-of-state authority (even with the British presence). The nationalistic drive leading to independence in the mid-20<sup>th</sup> century was accordingly based on British parliamentary democracy to achieve "unity in diversity". The tension continues between central consensual authorities whilst providing sufficient independence for diverse regions.

Despite these continuing differences, both countries have experienced high growth rates over the last three decades with poverty falling significantly. Yet this has not been matched by reduced inequality. Indeed, inequality has increased, or at best remained stagnant.<sup>1</sup> Figure 1 shows the PRC's successful substantial falls in headcount poverty since the early 1980s. These dramatic declines in poverty have been countered by increasing inequality, particularly for the urban sector where the Gini coefficient has overtaken the rural sector's measure. India's headcount poverty ratios have also experienced secular falls with the rural decline greater than for the urban sector. These trends are offset by static Gini measured inequality for the rural sector and marginally increasing inequality for the urban sector. Clearly the significant benefits of growth have percolated down to reduce poverty, although the effects to reduce inequality have largely been filtered. In fact, it appears the PRC has focussed initially more on trading-off faster reductions in poverty for rising urban and rural inequality. This compares with India's relatively slower reductions in poverty at a lower cost of inequality.

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<sup>1</sup> This applies globally with evidence showing declining inequality across developed and developing countries and inequality increasing within countries. *Vide* Ravallion's (2018) review.

**Figure 1: Headcount Ratio and Gini Coefficient for the PRC and India<sup>a</sup>**



Source: World Bank Development Research Group: PovcalNet, <http://iresearch.worldbank.org/PovcalNet/index.htm?0>

Note: <sup>a</sup> Headcount ratio is based on US\$1.90 per person per day poverty line in 2011 PPP terms.

There are many factors which contribute to these recent historical experiences. The interesting question remains; to what extent do these similarities and differences reflect the urban and rural preferences and priorities between governments and their citizens in these democratic and communist states? This paper addresses this important issue in terms of specifying possible loss functions which are estimated using World Bank household survey consumption expenditure data. A utility-based measure of poverty loss is theoretically and empirically analysed in the next section, followed by examination of estimated urban and rural *ex-post* welfare loss functions in section 3. Based on these results, section 4 looks forward by estimating *ex-ante* policy loss reaction functions and their consequences for potential policy guidance. Given this new evidence, prospects for these very different, important nation states are briefly discussed in the final section.

## 2. Poverty loss functions

The latest available World Bank sample survey consumption expenditure data (relative to the poverty line) is used here as the metric for poverty loss. The Foster-Greer-Thorbecke (FGT) general class of poverty functions:  $P_\alpha = \int_0^{c_p} \left(\frac{c_p - c}{c_p}\right)^\alpha f(c)dc$  for  $\alpha \geq 0$  is the cumulative distribution for household consumption expenditure,  $c$  being a non-negative random variable with density function  $f(c)$  and poverty line,  $c_p$ . It is well known this loss function defines  $P_0$  as the headcount proportion of households consuming (on or) below the poverty line,  $P_1$  as the

poverty gap being the opportunity cost of proportionate consumption foregone below the poverty line, and  $P_2$  poverty gap squared measure as the quadratic loss of the proportionate shortfalls in consumption.

Whilst the first two measures are widely used due to their simple and transparent concepts, we argue the less popular poverty gap squared measure is worth further consideration as a loss function, primarily because it incorporates well known microeconomic principles. To see this, consider the well-known Stone-Geary utility function expressed in proportionate disutility of poverty terms,  $v_2 = -\left(\frac{c_p - c}{c_p}\right)^2$  over the interval,  $0 \leq c \leq c_p$ . Consistent with von Neumann-Morgenstern expected utility theory, increasing marginal disutility for a household is given by  $\frac{\partial v_2}{\partial c} = \frac{2}{c_p} \left(\frac{c_p - c}{c_p}\right) > 0$  for  $c < c_p$ , so that household utility decreases (disutility increases) with lower consumption, and the convexity,  $\frac{\partial^2 v_2}{\partial c^2} = -\frac{2}{c_p^2} \left(\frac{c_p - c}{c_p}\right) < 0$  ensures increasing marginal household disutility. The FGT form of the poverty gap squared utility loss function,  $Y_2 = \int_0^{c_p} v_2 f(c) dc$  therefore includes the increasing disutility for households falling further below the poverty line.<sup>2</sup>

We acknowledge that utility defined in quadratic form has some shortcomings and other specifications can be proposed.<sup>3</sup> However, this measure already has currency in the study and practice of development economics as it is a well-known, readily available and frequently reported measure of poverty. We argue the theoretical utility interpretation makes it more relevant than the popular headcount ratio focussing on the numbers of poor consumers and the poverty gap measure of the consumption spending gap.

The estimates of the disutility and risk for the poverty gap squared loss function are included in Table 1 for the urban and rural sectors of the PRC and India. They are derived from the Lorenz curve for each country and sector, estimated using World Bank microeconomic household survey consumption expenditure data for the latest available survey years.<sup>4, 5</sup>

It can be easily seen that disutility from poverty is relatively small for the PRC with the urban sector 0.064 marginally lower than 0.082 for the rural sector. However, the disutility is much higher for India with the urban sector disutility of 0.559 averaging around eight times that for the PRC's sectors with the Indian rural sector of 1.371 over twice that.<sup>6</sup>

**Table 1: Poverty Gap Squared Loss<sup>a</sup>**

<sup>2</sup> Note that for the linear poverty gap measure,  $\partial v_1 / \partial c > 0$  with constant marginal disutility,  $\partial^2 v_1 / \partial c^2 = 0$  means that all households are affected equally, regardless of how far they fall below the poverty line.

<sup>3</sup> On a positive note, it is equivalent to expected utility and mean variance risk analysis (not requiring normality in the random household consumption variable), plus it is a universal *argmin* optimization procedure used in statistical, econometric and operations research.

<sup>4</sup> The latest available urban-rural data is the *China National Integrated Household Survey*, 2015 (around 160,000 households – grouped consumption expenditure data) and the *National Sample Survey* (68<sup>th</sup> Round) July, 2011-June, 2012 for India (464,960 persons – unit record consumption expenditure data).

<sup>5</sup> The Lorenz curve regression results are summarised in the appendix of this paper.

<sup>6</sup> The incidence of poverty is very different across these two countries and sectors when measured using the \$1.90 poverty line in 2011 PPP terms. For example, the headcount ratios of 0.3 and 1.2 per cent respectively for the urban and rural sectors of the PRC are well below the ratios of 14.8 and 25.2 per cent for the Indian urban and rural sectors. Whilst a higher poverty line would be more appropriate for the PRC, it is held the same here, as for India in order to facilitate comparisons across the two countries. This will be addressed in section 4.

|       |       | Disutility<br>of poverty<br>$\Upsilon_2$ | Risk premium index <sup>b</sup> , $\sigma$ |                                   | Elasticity of<br>intertemporal<br>substitution <sup>c</sup> , $\phi$ |
|-------|-------|--|--|-----------------------------------|--|
|       |       |  | 9 <sup>th</sup> poverty<br>decile          | 7 <sup>th</sup> poverty<br>decile |  |
| PRC   | Urban | 0.064                                    | 0.317                                      | 0.950                             | 0.316  |
|       | Rural | 0.082                                    | 0.551                                      | 1.653                             | 0.181  |
| India | Urban | 0.559                                    | 0.540                                      | 1.620                             | 0.185  |
|       | Rural | 1.371                                    | 0.507                                      | 1.521                             | 0.197  |

Source: The values are calculated from the estimated parameterized Lorenz curves using PovcalNet: the on-line tool for poverty measurement developed by the Development Research Group of the World Bank, <http://iresearch.worldbank.org/PovcalNet/index.htm?0>.

Notes: <sup>a</sup> The measures are based on US\$1.90 per person per day poverty line in 2011 PPP terms.

<sup>b</sup> The index is relative to the poverty line,  $c_p$ .

<sup>c</sup> The elasticity of intertemporal substitution is calculated at the poverty line,  $c_p$ .

The estimated Arrow-Pratt risk premium indices,  $\sigma$  are all positive indicating poor households are risk averse (consistent with the convexity of the disutility function). The premium is lower for the PRC urban sector experiencing low poverty levels. Otherwise the indices have comparable values with the rural sector in India marginally lower. Importantly the risk premiums in Table 1 increase substantially as households' fall further into poverty, for example from 10 per cent to 30 per cent below the poverty line.

Poverty has further consequences for future consumption indicated by the elasticity of intertemporal substitution,  $\phi$  in the Ramsey benchmark growth model.<sup>7</sup> The estimate in Table 1 is relatively higher for the urban sector of the PRC, meaning lower present consumption adds to savings and therefore future consumption. This optimum intertemporal consumption allocation implies higher growth in urban consumption for the PRC. The other sectors have lower but similar, elasticities. These lower elasticities indicate the poor in India and the PRC rural sector are forced to consume more now, which results in slower growth in future consumption. Whilst this forced current consumption reduces current disutility, the ensuing lower savings lessens future consumption, thus reducing total intertemporal utility. This labelling in the growth literature as smoothing consumption over time is damning obscuration from the reality of it describing an intertemporal poverty trap.

We will now consider the welfare effects of growth and expand our focus on disutility-based poverty loss to include urban and rural inequality.

### 3. Inequality and welfare loss

Growth is incorporated in terms of increasing average consumption,  $\bar{c}$ . Since this change in  $\bar{c}$  is equi-proportionate, it leaves the Lorenz curve (and inequality) unchanged. Inequality continues to be measured by the Gini coefficient, calculated from the Lorenz curve.<sup>8</sup> It can be

<sup>7</sup> The Hamiltonian solution of the standard Ramsey model gives the optimum time path of consumption which minimises poor household intertemporal disutility,  $(dc/dt)/c = \phi(r - \rho)$  where  $(r - \rho)$  is the differential between the real interest rate,  $r$  and the household's discount rate,  $\rho$  and  $\phi$  is the elasticity of intertemporal substitution. A lower value of  $\phi$  indicates poor households' need to consume more now (at the expense of saving) and therefore forego increases in future consumption, such that growth,  $(dc/dt)/c$  will be less than optimum.

<sup>8</sup>  $L[F(c)] = \frac{1}{\bar{c}} \int_0^{\bar{c}} xf(x)dx$  for cumulative distribution function  $F(c)$ .

easily seen it is a loss function specified as in absolute deviations:  $g_p = \frac{1}{2c} \int_0^n \int_0^n f(x)f(y)|x - y|dxdy$  for density function  $f(c)$ .<sup>9</sup> The sensitivity of these measures to the disutility of poverty loss,  $v_2$  can be considered separately in geometric mean form where  $\beta_1$  and  $\gamma_1$  are elasticities:

$$\ln \bar{c} = \beta_0 - \beta_1 \int_0^{c_p} \ln v_2 f(c)dc$$

$$\ln g_p = \gamma_0 - \gamma_1 \int_0^{c_p} \ln v_2 f(c)dc$$

Note these loss functions are expressed as *ex post* rather than *ex ante*.<sup>10</sup> They can be interpreted as poverty losses, relative to observed economic growth and inequality characteristics, rather than *ex ante* policy reaction functions used by the authorities (which will be considered in the next section).

Welfare implications can be explored using Sen's (1973) welfare function  $W_{Sen} = \bar{c}(1 - g_p)$ , extended to have variable elasticity of substitution:

$$\ln W_{Sen} = - \left[ \beta_1 + \left( \frac{\gamma_1}{1-\gamma_1} \right) \right] \int_0^{c_p} \ln v_2 f(c)dc.$$

The estimated welfare elasticity responses for poor households consuming below the poverty line are shown in Table 2, along with the relative contributions of mean consumption growth and inequality to welfare.<sup>11</sup>

All estimates are inelastic with the urban PRC sector having the highest overall welfare elasticity of 0.98 which is close to unitary, and three-fold higher than the PRC rural sector's elasticity of 0.34. The Indian urban total elasticity of 0.21 is the lowest and reverses the PRC result by being less than the rural sector elasticity of 0.33.

The relative growth and inequality contributions in Table 2 indicate the PRC authority's strategy has been to focus almost entirely (95 per cent) on urban growth with virtually no attempts to reduce urban inequality (5 per cent). This relative emphasis also applies to the rural sector, but to a slightly lesser extent, with a rural growth contribution of nearly 85 per cent. The focus for India has also been on growth in the urban sector (70 per cent), but less than for the PRC. Interestingly the rural sector contributions for India are closer with growth (56 per cent) versus inequality (44 per cent).

**Table 2: Welfare Responses of Poor Households<sup>a</sup>**

<sup>9</sup> We acknowledge there are many concepts and measures of inequality including the dimensions of freedom of choice, access to services and social inclusion. However, the Gini index is widely understood and used, plus it can simply be incorporated into our analytic focus on poverty, growth and inequality.

<sup>10</sup> *Vide* Deaton (1997).

<sup>11</sup> The poverty measure specified in the loss function does matter. For example, if the headcount ratio is used as the measure of rural poverty in India then the mean consumption growth with loss elasticity of 0.36 is over 30 per cent less than the Gini inequality loss elasticity of 0.55. The elasticities for the poverty gap measure show somewhat indifference between the two since the Gini loss elasticity of 0.23 is close to the mean consumption loss elasticity of 0.25. For the poverty gap squared measure, the loss reverses with the mean consumption loss elasticity of 0.19 being nearly 30 per cent higher than the Gini loss of 0.15.

|       |       | Growth elasticity<br>$\beta_1$ | Inequality elasticity<br>$\gamma_1/(1 - \gamma_1)$ | $W_{sen}$ total elasticity | Contribution to $W_{sen}$ total elasticity (%) |           |
|-------|-------|--------------------------------|--|----------------------------|--|-----------|
|       |       |                                |  |                            | $\bar{c}$                                      | $1 - g_p$ |
| PRC   | Urban | 0.93                           | 0.05   | 0.98                       | 95.2   | 4.8       |
|       | Rural | 0.28                           | 0.06   | 0.34                       | 83.6   | 16.4      |
| India | Urban | 0.15                           | 0.06   | 0.21                       | 69.6   | 30.4      |
|       | Rural | 0.19                           | 0.15   | 0.33                       | 56.1   | 43.9      |

Source: The elasticities are estimated from the parameterized Lorenz curves using PovcalNet: the on-line tool for poverty measurement developed by the Development Research Group of the World Bank, <http://iresearch.worldbank.org/PovcalNet/index.htm?0>

Notes: <sup>a</sup> The measures are based on US\$1.90 per person per day poverty line in 2011 PPP terms.

The estimated welfare responses in Table 2 indicate the PRC has been clearly prioritising growth to reduce poverty, in particular favouring the urban sector. There is virtually no evidence of attention to reducing inequality for both sectors. India, whilst favouring growth in the urban sector, has had a more balanced strategy to also prioritise reductions in inequality, with particular emphasis on the rural sector. This complements the Table 1 estimates showing households in the PRC urban sector having less disutility and risk aversion from poverty and higher growth in consumption. In contrast, the Table 1 higher disutility estimates for the poor in India, particularly in the rural sector, are compounded by higher risk aversion and consequent lower growth in consumption.

These *ex-post* estimates are interesting, particularly when placed in the context of India being a developing country with the worlds' largest democracy characterised as placing more interest in spatially spreading the benefits of growth in lowering poverty and inequality across the nation. This compares with the largest centrally controlled economy of the PRC with a more targeted and highly effective growth strategy to reduce poverty, focussing on the urban sector, with little apparent attention to spreading the benefits in terms of lowering inequality.

There is a rich and comprehensive body of economic research on the dynamic experience of rural-to-urban migration and urbanization in the PRC.<sup>12</sup> Rather than re-considering this, we take a geo-political economy perspective in the form of urban bias theory wherein the authorities give priority to the urban sector including fiscal preference in health, housing and education. It is argued by Wallace (2014) the social contract is based on the authorities providing special advantages to urbanites in order to maintain their cooperation and support. The urban capital formation and ensuing service provision promotes productivity growth, leading to vast internal rural-to-urban migration and rapidly growing cities. This describes the PRC urbanisation experience with dynamically growing cities, mostly without slums. However, urban migrant workers' experience severe hardship and the process is driven by the discriminatory *hukou* urban registration requirement and lack of private rural property ownership because of the collective rural tenure system.

The social contracts by the many layers of the Indian government is mostly decentralised via state programs (with federal support) covering urban and rural sectors. The "cooperative federalism" has until recently, been implemented via the Planning Commission, a top down institution which formalised national planning priorities. Whilst this institution has been sensitive to the needs of the citizens of India it has a legacy which originated in the less dynamic

<sup>12</sup> Vide Jayanthakumaran *et al.* (2019).

and efficient command economy era of India.<sup>13</sup> The poverty reduction and development programs have accordingly been nationally uncoordinated, wasteful and lacking effectiveness. This is persuasively argued by Kapur's (2020) focus on poor microeconomic performance, particularly for continual, state based delivery in activities constrained by societal hierarchy and status.

We now look to the future in the form of possible *ex-ante* policy reaction functions to provide guidance to the authorities of potential redirection of priorities.

#### 4. *Ex-ante* policy loss reaction functions

The *ex-ante* policy loss reaction function has the potential to indicate how best to jointly promote growth in average consumption,  $\bar{c}$  and reduce inequality,  $g_p$  in order to reduce the disutility of poverty. It can be simply specified for the poverty gap squared measure of disutility as:  $Y_2 = \int_0^{c_p} v_2^2 f(c)dc = -\bar{c}^{-1/\beta_1} \cdot L[F(c)]^{1/\gamma_1}$  such that  $\frac{dY_2}{Y_2} = \frac{-1}{\beta_1} \frac{\partial \bar{c}}{\bar{c}} + \frac{-1}{\gamma_1} \frac{\partial L[F(c)]}{L[F(c)]}$ . The loss response function can therefore be specified as:

$$\ln Y_2 = - \left[ \frac{1}{\beta_1} \ln \bar{c} + \left( \frac{1}{\gamma_1} - 1 \right) (1 - g_p) \right].$$

Estimated elasticities for growth and inequality are shown in Table 3 for poverty lines of \$5.50 and \$3.20 respectively for the urban and rural sectors of the PRC, and remaining at \$1.90 for both Indian sectors. The headcount ratios for the higher poverty lines confirm they are more appropriate for the stages of development experienced by the respective sectors.<sup>14</sup>

**Table 3: Potential *Ex Ante* Reactions of Authorities to Poverty**

|       |       | US\$ PPP<br>per person<br>per day | Headcount<br>ratio<br>% | Growth<br>Elasticity,<br>$1/\beta_1$ | Inequality<br>elasticity<br>$(1/\gamma_1) - 1$ | Total<br>disutility, $Y_2$<br>elasticity | Contribution to total<br>utility, $Y_2$ (%)<br>$\bar{c}$ $1 - g_p$ |      |
|-------|-------|-----------------------------------|-------------------------|--------------------------------------|--|--|--|------|
| PRC   | Urban | \$5.50                            | 12.8                    | 4.30                                 | 11.45  | 15.75                                    | 27.3   | 72.7 |
|       | Rural | \$3.20                            | 11.0                    | 5.95                                 | 12.41  | 18.36                                    | 32.4   | 67.6 |
| India | Urban | \$1.90                            | 14.5                    | 6.79                                 | 15.51  | 22.30                                    | 30.4   | 69.6 |
|       | Rural | \$1.90                            | 25.5                    | 5.37                                 | 6.85   | 12.22                                    | 43.9   | 56.1 |

Source: The elasticities are estimated from the parameterized Lorenz curves using PovcalNet: the on-line tool for poverty measurement developed by the Development Research Group of the World Bank, <http://iresearch.worldbank.org/PovcalNet/index.htm?0>

All estimated *ex-ante* policy reactions in Table 3 show highly elastic responses of the disutility of poverty. In particular, the inequality elasticities of disutility the range from around 18 to 22 for the PRC rural sector and to the Indian urban sector. The contribution of equality to lessening total disutility averages about 70 per cent. The lower disutility of just over 12 for rural India reflect the success of the balanced focus of the Indian authorities on promoting growth and reducing inequality in the rural sector.

<sup>13</sup> The Planning Commission was decommissioned in 2015.

<sup>14</sup> These per person per day poverty lines are also calculated in 2011 PPP terms. It may be more appropriate to use the \$1.45 poverty line for rural India when making comparisons with the other sectors - we will however comply with the world authorities preferred lower bound poverty line of \$1.90.

This surprising new *ex-ante* evidence demonstrates that realigning priorities from promoting future urban growth to reducing urban and rural inequality can lead to substantial future reductions in total disutility due to poverty. With the exception of the Indian rural sector, the general rule of thumb is that policies which reduce inequality have the potential to be around 70 per cent more effective in alleviating disutility of the poor, than policies promoting growth.

## 5. Consequences and prospects

The selection and specification of loss functions by the authorities are important because *de facto*, they should reflect the preferences of the state. For example, developed countries are mostly characterised as having, for example, minimum wages and means tested social security networks which reveal the governments' concern for minimum levels of poverty. These institutions plus for example, progressive personal income taxes, show that inequality is also a priority. For a liberal democracy, the loss functions used by the elected authorities would be expected to reflect the citizens' preferences (at least in the mid to longer term) whereas an autocratic government's loss functions may or may not reflect, within limits, the wishes of the populace.<sup>15</sup>

As mentioned previously, the politically decentralised and diverse state of India has a history of inefficiency in poverty reduction programs.<sup>16</sup> It is interesting the latest Economic Survey of the Indian government, 2019-20 focusses on wealth creation through efficiency-based growth of private sector enterprises. This aligns with India's more recent experience of urban growth displacing rural growth as the largest contributor to reducing poverty. As structural transformation progresses, the more traditional approach of directly using poverty targeting policies, particularly in the rural sector, is giving way to the idea that urban productivity-based growth will reduce urban poverty and spill-over to the rural sector. Whilst this is not unexpected, it is surprising there is no attention at all in the latest economic survey of programs to directly reducing poverty or inequality.<sup>17</sup> Rather, the redirected focus on urban growth by the ruling populist Bharatiya Janata Party, at the start of a new political election cycle, mirrors the PRC's demonstrated success in promoting growth via prioritising the urban sector. Moving from state ownership to competitive efficiency strategies is a positive move, although it runs the risk of not realising the estimated potential gains in reducing urban inequality, as demonstrated in Table 3.

There are also major policy redirections occurring in the PRC's predominantly performance-based, pragmatic policies to achieve multiple objectives.<sup>18</sup> The recent government work report and meetings of the National People's Congress (NPC) in 2019 put forward an "employment first" priority and argue the need to strike a balance between competing priorities.<sup>19</sup> This is interesting, particularly when placed in context with the redirection of the collective mission to promote pooling of public and private, economic and social resources in the form of a new state capitalism. Markets are to play the key role in allocating resources at the direction of state-

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<sup>15</sup> The explicit and implicit loss functions used by researchers in theoretical and empirical work are also important because they affect the methodology, reported results and subsequent conclusions, which provide information and advice to policy makers.

<sup>16</sup> The schemes are state specific, mostly with state funding and some federal support.

<sup>17</sup> The closest mention is a proposed minimum wage scheme. The survey is a major redirection of the previous 2018 survey coinciding with the resounding re-election of the Bharatiya Janata Party.

<sup>18</sup> Details about PRC's planners' loss functions are generally not available although it is known the People's Bank of China formalises monetary policy using sophisticated time varying, state-dependent reaction functions.

<sup>19</sup> The State Council sets goals consistent with the five-year plan at the end of each year and the NPC subsequently reviews, modifies and ratifies them early the following year.

owned enterprises collaborating with private companies. This requires state enterprises to become more efficient in order to facilitate innovative and entrepreneurial risk sharing partnerships with private enterprises, which in turn, need to have better state connections which align with the priorities of the state.

It is unclear as to the extent these major policy redirections flag potential changes in the PRC policies affecting urban-rural balance priorities, in particular, urban bias. Recommended changes by the World Bank and State Council of the PRC report (2014) have activated reforms to the *hukou* residency system and rural land ownership. The urban bias thesis predicts advantaged urbanites, with improving well-being, will be encouraged to renege on the cooperative social contract with the authorities. What has been happening with the calls for democracy in Hong Kong comes to mind, as does the thesis prediction of the uncompromising official reaction. It is questionable whether these new policies are dismantling the two-tier urban system of haves and have-nots. Reports highlight the new strategy to increase *hukou* residential rights are only to second tier cities which have less infrastructure, services and associate preferential benefits, which do not reduce inequality. Continuing rent-seeking behaviour of urban growth by the authorities appears to disregard the potential of the elasticity estimates in Table 3 to reduce inequality for both the urban and rural sectors. The opportunity cost of continuing priority to promote growth through urban bias policies is high given the demonstrated effective determination of the PRC authorities' in achieving their policy goals.

The developed countries studies by Mian, Straub and Sufi (2020) show that growth policies increase inequality and Theodossiou *et al.* (2020) find that higher inequality increases social, political and economic alienation and reduces citizens' electoral participation, which further increases inequality. We acknowledge that policies focussing on increasing supply side human and physical capital, infrastructure, technology and innovation and therefore incomes and demand over the longer term promote growth. This focus on increasing gross incomes is well known, however, these elasticity estimates show the need for inequality focused rural and urban policies to strategically switch demand and supply in the short to medium term. Achieving this requires lifting net incomes by utilizing, for example, appropriate conditional electronic credit transfers and tax policies.

Who should be targeted in reducing poverty? Our elasticity estimates show successful reductions in the distress of the poor are best utilised by helping the very poor. Ravallion (2018) argues for reducing the number of poor towards the bottom of the distribution rather than lifting the worst-off. The countering argument is to raise the floor according to the Rawlsian *max-min* social welfare measure encapsulated by the United Nations SDG "leave no one behind". We do not argue for a pantisocracy, but rather, it would be extremely rewarding for the human condition of millions of destitute people in these two important nations if the utility loss functions of the very poor, regard less of who and where they are, were better reflected in the values, preferences and priorities of their respective state authorities and fellow citizens. The prospects of this golden opportunity being realized appear to be fading for both the world's largest democratic and communist nation states.

## Appendix

The general quadratic specification of the Lorenz curve,  $L(p)$ :

$$ap^2 + bpL + cL^2 + dp + eL + f = 0$$

is found to generally give the best fit to the World Bank household consumption expenditure data. For the  $L(p)$  curve to pass through the points (0,0) and (1,1) requires  $f = 0$  and  $e = -(a + b + c + d)$ . Applying these restrictions and standardizing on  $L$  with  $c = 1$  gives the Villasenor and Arnold (1989) specification:

$$L(1 - L) = a(p^2 - L) + bL(p - 1) + d(p - L).$$

This transformation of the variables is linear in the parameters  $a$ ,  $b$  and  $d$  and so OLS estimation is applicable. The regression results (with specified poverty lines for robustness checks) are reported in the table below. All estimates are significant at the one per cent level and the coefficients of determination are very high. The monotonically increasing,  $d \geq 0$  and ellipse convexity,  $b^2 - 4a < 0$  conditions hold for each regression.

**General Quadratic Lorenz Curve – OLS Estimates**

|              |       | Poverty line | $\hat{a}$ | $\hat{b}$ | $\hat{d}$ | $R^2$ |
|--------------|-------|--------------|-----------|-----------|-----------|-------|
| <b>PRC</b>   | Urban | \$1.90       | 0.925***  | -1.164*** | 0.197***  | 0.999 |
|              |       | \$5.50       | 0.925***  | -1.164*** | 0.197***  | 0.999 |
|              | Rural | \$1.90       | 0.877***  | -1.247*** | 0.228***  | 0.999 |
|              |       | \$3.20       | 0.877***  | -1.248*** | 0.228***  | 0.999 |
| <b>India</b> | Urban | \$1.90       | 0.723***  | -0.872*** | 0.297***  | 0.999 |
|              | Rural | \$1.90       | 0.766***  | -1.324*** | 0.236***  | 0.999 |

Source: The parameterized Lorenz curves is estimated using PovcalNet: the on-line tool for poverty measurement developed by the Development Research Group of the World Bank, <http://iresearch.worldbank.org/PovcalNet/index.htm?0>.

Note: \*\*\* Significant at the one per cent level.

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