CHAPTER 8
MAJOR FINDINGS, CONCLUSIONS, AND POLICY IMPLICATION

This thesis has focused on the economic analysis of the nature and extent of impact of urban agglomeration on urban economic growth and income distribution through measurements of poverty, inequality and inclusiveness. Urban agglomeration is defined as geographic concentration of urban population and related economic activities. In the context of urban agglomeration by population size, the plausible economic determinants of urban agglomerations are estimated. On the other hand, related economic activities are measured in terms of the productivity of urban registered manufacturing sector activities by distinguishing at the aggregate and disaggregate levels (e.g., firm level). Urban economic growth is measured by growth rates of national level urban GDP/urban district domestic product and economic determinants of urban economic growth are estimated. Impact of urban agglomeration on urban economic growth is estimated in both short run and long run perspective. In addition, distributional aspects of urban economic growth are measured by relevant poverty and inequality indices; and impact of urban economic growth (or population agglomeration) on poverty and inequality are estimated. Finally, urban inclusive growth is measured by key economic variables between 2004-05 to 2009-10. Notably, this is one of the much discussed (or highlighted) issues in recent development policies in India (or other developing countries, such as China). The entire study mainly focuses on 59 large Indian cities as representative of entire urban India, and covers the study period from 1999-2000 to 2009-2010. The main findings, conclusions and policy implications of this thesis are summarized below.

8.1 Major findings of the study

8.1.1 Description of India’s urbanization, urban growth and urban equity

Description of India’s urbanization and related processes (i.e., urban economic growth, urban poverty, and urban inequality) and various urban development policies and programmes by the Government of India in various Five Year Plan Periods show the following:
(a) Increasing trend of India’s urbanization and increasing growth rate of city population over the decades. India’s urban population is mainly concentrated in and around class I cities.

(b) Increasing trend of number of new urban agglomerations (UAs)/ towns and an expansion of boundaries of existing urban centres (i.e., out growths) over the decades.

(c) An increasing trend of share of urban NDP in national level NDP over the different periods of time. In urban NDP, service sector has the highest contribution than other two sectors (i.e., industry and agriculture sector). In the growing growth rate of urban service sector mostly contributed by the financing, insurance, real estate, and business service. On the other hand, the declining share of urban industrial sector mainly comes from the declining contribution from urban manufacturing sector.

(d) Growth rate of urban GDP (or urban per capita income) in real prices is much higher than the growth rate of national level GDP (or per capita national income). Overall urban economic growth has been high and higher as compare to national level economic growth over the different periods of time.

(e) The relative share of consumption expenditure of the bottom and top 30 percent urban population group has almost remain same during the period of 1973-2000. Overall, estimates show that in the process of increasing urban economic growth the level of poverty has declined and inequality has increased. Mega city districts show the lowest level of urban poverty than other cities. The ‘Marginalized group’ has the lowest extent of urban inequality and highest level of urban poverty compared to other two groups (i.e., ‘Others’ and ‘Total group’).

(f) The different urban development policies and programmes (e.g., JNNURM) undertaken in various Plan Periods have designed to promote urban agglomeration, urban economic growth, and urban equity trough high urban infrastructural development.
8.1.2 Urban agglomeration and growth: Firm level analysis
Urban registered manufacturing firms in Indian industry operate under decreasing returns to scale in production. The results imply that negative agglomeration effects on level of output per worker in urban organized manufacturing industries in India. Economies of scale for all urban firms together, range between -0.492 and -0.612 for all India level, 0.007 and -1.305 for 26 state level, and 0.0105 and -2.034 for 52 large city levels. Industries specific analysis show that economies of scale lie between -0.056 and -1.001 for all India level, -0.152 and -1.273 for 52 large city levels and 0.764 to -1.506 for different city specific largest industries level. The results indicate that more disaggregated (i.e., by districts and industry wise) level analysis show the greater magnitudes of scale economies than aggregate (i.e., by all India urban and all industry together) level analysis.

8.1.3 Large urban agglomerations and urban economic growth: Evidence and implication
Estimated determinants of urban agglomeration (measured by city population or growth rate of city population) show
(a) Market size control variables, location advantage (dummy cities located on the banks of a river), degree of state trade openness, per capita income of a state, percentage of state urban population, percentage of worker engaged in non-agricultural activity of a state, state capital dummy, and city wise sanctioned cost under JNNURM positively and significantly affect the large city urban agglomeration.
(b) Distance from the bigger cities, state government expenditure on transport, city vehicle density, size of the state, city population coverage per primary school, and city road length per thousand populations negatively and significantly affect population agglomeration of the large cities.

Estimated economic determinants of urban economic growth (measured by growth rate of district domestic product) show that distance from one city to another city have a statistically significant effect on urban economic growth. In particular, while a city is located away from a large city (or state capital city), within 40 kms (or 200 kms) but closer to a large market, it has potential for higher economic growth. In contrast, when distance is long enough, more than 110 kms from a large city (or 700 kms from the state capital city), the city experiences little market potential and poor economic growth. This results support the “ω2”-shaped non-linear correlation
predicted by the CP model of NEG theory between the geographical distance to a large city and urban economic growth.

Finally, the estimated results show that urban agglomeration which is considered endogenously (or exogenously) to our basic recursive econometrics model has a positive and significant effect on urban economic growth.

8.1.4 Large urban agglomerations and urban economic growth: Further evidence and implications

Estimates from the results from the panel (static and dynamic) regression models show that urban agglomeration has a strong, significant, and positive effect on urban economic growth in the long run and find that non-linear relationship between urban agglomeration and urban economic growth. The results support for the “Williamson hypothesis” which predicts that large agglomeration contribute positively to economic growth in the early stage of development when transport and communication infrastructure is inadequate; but in the later stage of development when infrastructure improves, large agglomerations contribute negatively to economic growth (as in Brülhart and Sbergami, 2009; Henderson, 2003). In case of India, the results show that urban agglomeration boosts GDP growth (proxied by urban economic growth) only up to a certain level of economic development at the estimated critical level of per-capita city income of around Rs. 37049, at constant (1999-2000) prices. In addition, we find that human capital accumulation is found to have a positive effect on urban economic growth in the long run.

8.1.5 Distributive effect of large urban agglomeration and urban economic growth

Cities with lower mean levels of per capita expenditure have higher headcount poverty rates and the mega cities unambiguously show lower poverty rate. Across different sizes of cities, the aggregate level analysis shows 19 percent positive correlation between logarithm of city population and city inequality, and 32 percent negative correlation between city poverty head count ratio and logarithm of city population. The decomposition of Gini index by the six Indian geographical urban zones shows that within group inequality contributes higher than between group inequality to total inequality. In addition, the decomposition of FGT index (for alpha =0) by these six zones show that more than 28 (or 23) per cent of total poverty is attributable to the population group that live in Northern zone (or West zone).
Estimated determinants of urban poverty (measured by poverty head count ratio) and urban inequality (measured by Gini coefficient) show:

(a) Large city population agglomeration, growth rate of city output, upper primary gross enrollment ratio and city poverty rate have a strong positive effect on city inequality. On the other hand, large city population growth rate (capture over concentration) and extent of city inequality have a positive effect on city poverty rate.

(b) Per capita city output and primary gross enrollment ratio have a strong (or robust) negative effect on city inequality. Conversely, level and growth rate of city output, large city population agglomeration, and upper primary gross enrollment ratio have significant negative effect on city poverty rate.

8.1.6 Distributive effects of urban inclusive growth

Inclusive growth of a city, as measured by the composite inclusive index (CII) based on ‘Borda ranking’ shows that the bigger cities (as per population size) have a lower level of inclusive growth. In particular, the aggregate level analysis shows a positive correlation between the value of CII and logarithm of large city population. The positive and statistically significant higher values of correlation coefficients (Spearman) between the rank of the cities as per CII and rank of poverty gap ratio (or squared poverty gap ratio, or number of male unemployed person, or number of self employed female, or number of casual female worker, or growth of DDP, or upper primary gross enrollment ratio, or standard of living index) indicates that ranking of cities as per these variables are closer to the rank of cities as per the value of CII.

Estimated determinants of CAGR of urban poverty (measured by growth rate of poverty head count ratio), urban inequality (measured by growth rate of growth rate Gini coefficient), and urban economic growth (measured by growth rate of DDP and MPCE) are summarized as follows:

(a) Estimated regression results show that initial urban poverty, growth rate of MPCE, and growth rate of per capita DDP have a negative and statistically significant effect on growth rate urban poverty. On the other hand, initial value of city composite inclusive index (which shows the lower city inclusive growth for higher value) has a significant positive effect on growth rate of urban poverty.

(b) Growth rate of MPCE (or initial extent of inequality) has a positive (or negative) effect on growth rate of city inequality.
(c) Finally, initial level of urban poverty and growth rate of city inclusive index (which shows the lower level of inclusiveness for higher growth) have a significant and negative effect on growth of DDP. On the other hand, initial value of city inclusive index (or growth rate of urban inequality) has a negative (or positive) effect on growth rate of MPCE.

The methodology used in this thesis is distinguishable from the existing studies in the following ways. First, this study uses a different form of Cobb-Douglas production function by considering the assumptions of NEG models (i.e., an increasing labour force in a large agglomeration leads to higher production of city output) for measuring economies of scale for urban registered manufacturing firms. Second, recursive econometric model and panel data model are used to establish the linear and nonlinear relationship between urban agglomeration and urban economic growth. Third, decomposition of Gini coefficient and link between poverty and inequality by emphasizing on the share of inequality components (i.e., between and within group inequalities) in total poverty are the new in this study. Fourth, application of ‘Borda ranking’ for complex and multidimensional measurement of urban inclusive growth is one of the main features of this thesis.

Finding of this thesis are distinguishable from the past Indian studies are the following ways. First, all economic determinants of urban agglomeration and urban economic growth are based on the recently developed NEG models. Second, findings are robust and positive link between urban agglomeration (controlled exogenously and endogenously) and urban economic growth in short run and long run. Third, measurement of the level of poverty and extent of inequality across different (as per the size of population) cities (or urban zones) and urban populations of different castes are contributory for analysis of city level inclusive growth in India. Estimation results on the importance of inclusiveness on urban economic growth and equity provide newer results in Indian urban economics.
8.2 Conclusions

Based on the analysis and major findings, the study arrives at the following major conclusions:

- India has experienced an increasing trend of urbanization (i.e., increasing trend of share of urban population, expansion of geographical boundaries of existing urban centres, and emergence of new cities) and urban economic growth in India. For instance, urban population as a percent of national population has increased from 19.91 per cent in 1971 to 31.16 per cent in 2011. However, India’s urbanization is mainly concentrated in class I cities as evidenced by the fact these cities accommodated about 68.7 per cent of total urban population in 2001. The number of new towns increased from 5161 in 2001 to 7935 in 2011; this increase is mainly due to increase in the number of Census towns. On the other hand, the share of urban NDP in the national NDP increased from 37.65 per cent in 1970-71 to 52.02 per cent by 2004-05. A major share of urban GDP comes from mainly service sector than industrial or agriculture sector.

- Along with urban economic growth, urban India has experienced an increasing trend in urban inequality and a declining trend in urban poverty. For example, all India urban inequality as measured by Gini index marginally increased from 0.38 in 2004-05 to 0.39 in 2009-10. On the other hand, all India urban poverty, as measured by poverty head count ratio, declined from 26 per cent in 2004-05 to 21 per cent in 2009-10. Most importantly, as of 2009-10, the mega city districts have the lowest level of urban poverty compared to other cities, i.e., about 5 percent. In particular poverty rate of ‘Marginalized group’ is higher than ‘other groups’, while this group contributes the lowest extent of inequality.

- The estimated OLS regression results on the firm level agglomeration conclude that Indian urban registered manufacturing firms operate under decreasing returns to scale and are not influenced by urban agglomeration economies.

- Factors (such as degree of state trade openness, distance from one city to another bigger city, state government expenditure on transport, etc) considered in NEG models are much more successful than the factors considered in traditional urban
economics model (such as geographic location, i.e., dummy cities located on banks of river, port city dummy, city temperature differences, etc) for explaining India’s urban agglomeration process. In addition, government policies (e.g., JNNURM) have also significantly impact on population agglomeration. Thus, India’s agglomeration economies are policy-induced as well as market-determined.

- India’s urban system follows the “ω2”-shaped non-linear correlation between the geographical proximity to a large city and urban economic growth.

- Urban agglomerations (controlled endogenously or exogenously) have a positive and statistically significant effect on urban economic growth in the short run. It establishes that urban agglomeration has a positive and statistically significant effect on urban economic growth in the long run by validating the “Williamson hypothesis” that agglomeration increases economic growth only up to certain level of economic development. The critical level per-capita city income is estimated at about Rs. 37049 per-capita at 1999-2000 constant prices. In addition, the results conclude that human capital accumulation promotes urban economic growth.

- Cities with lower mean levels of per capita expenditure have higher headcount poverty rates and that mega cities unambiguously show lower poverty rate. ‘Marginalized group’ shows the lower level of extent of inequality and higher level of poverty than ‘other group’. The decomposition of Gini index concludes that within group inequality contributes more than between group inequality to total urban inequality and North Zone contributes highest poverty level to total urban poverty. Finally, higher city economic growth and large city population agglomeration are associated with reduction in city poverty as also increase in inequality between cities.

- Bigger cities (as per population size) show lower level of inclusive growth. Higher urban economic growth is generally associated with an increase in growth rate of urban inequality, a reduction in growth rate of urban poverty, and a lower level of overall inclusive growth of the city, i.e., that urban economic growth is not inclusive.
The major new conclusions of this thesis are: First, large urban agglomeration leads to higher urban economic growth. Second, NEG models are much more successful in explaining India’s large agglomeration. Third, higher urban economic growth is associated with an increase in urban inequality and decreasing in urban poverty. Fourth, higher urban economic growth is not inclusive.

8.3 Policy implication (or recommendation)

Major policy implications from the findings and conclusions of this study are as follows

- The study shows that large urban agglomeration has a strong positive effect on urban economic growth in both short run and long run. This result supports for the logic behind the recent urban development programme of the government, for example, the Jawaharlal Nehru National Urban Renewal Mission for the promotion of large urban agglomerations in India. However, our results indicate that as large agglomeration can’t promote urban GDP endlessly. Thus, appropriate policies for promotion of small city urban agglomeration may be considered.

- The empirical analysis involving linking of urban inequality with poverty imply that redistributive policies would be more effective for quick poverty alleviation along with boosting the economy by increasing per capita urban GDP. The decomposition results on total urban poverty and inequality are very useful to formulate appropriate policies for poverty reduction across different cities (or urban zones).

- The study finds that an increasing trend of GDP and inequality in urban India. In this perspective, it would be very appropriate to compare it with the "East Asian miracle" which is all about the remarkable success achieved by the economies of the eight East Asian countries (i.e., Hong Kong, Indonesia, Japan, the Republic of Korea, Malaysia, Singapore, Taiwan (China), and Thailand). One of the most important factors behind this success was that the benefits of higher economic growth were spread widely among the population. The government policies that promoted greater degree of equality were accompanied by years of higher economic growth. Though the "East Asian miracle" is all about national economic growth, its experiences are important for strong government policies to combat the
higher level of inequality in urban India as it contributes a larger fraction to national GDP. For instance, education is one the main factor behind higher urban economic growth in long run. Thus, promotion of human capital accumulation may be to be given priority in government policies for urban development in India.

- Urban registered manufacturing firms are found to be operated with lower productivity because of higher wages, higher rents and inadequacy of social overhead capital in urban area. Though, the National licensing policy, which, since 1977, prohibited setting up of new medium or large scale industries in the Standard Urban Areas of the metropolitan cities in India, a more location specific and industry level government policy (such as industrial subsidies), is essential to exploit the advantages of agglomeration in terms of higher productivity of retaining existing industry (or firm) in urban areas (or city centre) and its potential to create more job opportunities for urban labour force.

- There is a clear further need for appropriate growth strategies (e.g., more job creation, reduction of urban poverty and inequality, greater access of education and equal provision of basic services for the city dwellers) for inclusive urban growth particularly by giving weightage to the size of cities, as large cities are now showing lower level of inclusive growth. In addition, policies of protective discrimination are required as a greater proportion of urban poor belongs to lower castes (SC, ST, and OBC).

- The centre and state Government need to design specific formats to generate (or improve) the urban data bases on major urban growth variables (such as, income, infrastructure, business, finance, education, etc.) for better management of urban India. Further, collection of information on the basic socio-economic status and development trend of various cities is essential to enable the various government departments to formulate appropriate urban development strategies at sub national levels. This would help to raise the standard of urban management and for monitoring the implementation of various urban policies.
8.4 Scope for future research

1. The use of new data sets for further support and generate new evidence for the major theoretical hypothesis tested empirically in this study. A longer panel data set will be more appropriate to test for the relationship between urban agglomeration and urban economic growth (i.e., “Williamson hypothesis”) and to obtain the results.

2. NEG models are static models that do not deal with growth but with allocation of economic activity only. Further work is needed to extend the NEG models to explain the impact of urban agglomeration on economic growth, emergence of new cities, and assessment of India's city size distribution.

3. The estimation of poverty at the city level by using small area estimation technique and use of different econometrics specification by considering different time period for measuring economies of scale for urban firms.

4. Application of different methodologies and inclusion of other important variables (such as, infrastructure) to measure urban inclusive growth.

5. Study the linkages among globalization, international trade, and urban economic growth for drawing up appropriate policy implication for urban India.

For all the above extensions, however, the present thesis will serve as a useful benchmark study on urban India.