Spatial Pattern of Leverage Regions

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Presidential Regulation number 96 year 2012 stated that allocation fund is weighted among others by Human Development Index (HDI), Gross Domestic Product (GDP), and Index of Physical Construction Cost (IKK). Law 33 year 2004 part 03 chapter 06 paragraph 32 article 03 allows certain regions not to receive allocation fund so that nation capital is separated from 497 regions. All data are available as public domain for the universe and sampling of regions is not neccessary. Weights affect allocation fund so that any relatively distant weight deserves attention. Actual GDP data can be used to reduce certain regional allocation fund more than application of weights. Similarly actual IKK data can be used to supplement certain regional allocation fund on top of usual application of weights. Affected regional allocation fund is hopefully based on actual bivarate data of HDI and GDP as well as HDI and IKK. Other weights can also be taken into account if necessary. The remaining 491 regions are subject to leverage regions [points] detection by median absolute deviation [MAD] of GDP. There are 28 leverage regions [points] of only big cities and districts surrounding a big city. Allocation fund is among other things supposed to raise HDI and these 28 highest GDP regions are expected to show high HDI. It turns out that three leverage regions of highest GDP have low HDI, these are Karawang, Indramayu, Malang. These three GDP leverage regions having low HDI however are geographically surrounded by some higher HDI of lower GDP regions. Next 34 highest IKK leverage regions are separated that is regions where it is expensive to build physical infra structure such as bridge, hospital, traditional low rise market, school, office, pedestrian road, play ground park. These 34 IKK leverage regions are mostly located in Papua and Western Papua of Papua Island. For visibility a bivariate minimum ellipse area is computed for 34 IKK leverage regions with regard to HDI. A bivariate minimum ellipse area is computed for 39 GDP leverage regions with regard to HDI. Further these IKK leverage regions are linearly correlated with HDI. The value of the linear correlation excluding Puncak Jaya district is -0,68. That is expensive regions are less developed in human measurement. Hopefully

additional allocation fund for IKK leverage regions can simultaneously help human development and physical infra structure development. Despite low HDI, allocation fund for GDP leverage regions does not need any change.

Keywords—allocation fund, median absolute deviation, leverage points, linear correlation

1. Introduction

There are 28 GDP leverage regions [points] of only big cities and districts surrounding a big city. For visibility Surabaya big city is excluded from Figure 1. Indramayu is highly visible on leftmost corner means low HDI.

2.1 GDP Results

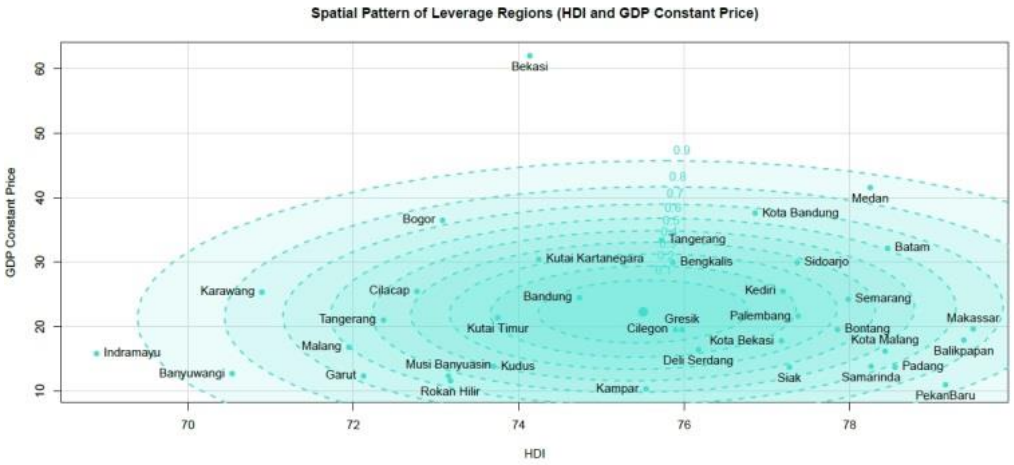

Figure 1. Spatial Pattern of Leverage Regions (HDI and GDP Constant Price)

Indramayu is a district surrounded by Cirebon, Majalengka, Subang, and Sumedang. Although Indramayu has the highest GDP, its HDI is low among those four neighboring regions. It shows that its GDP is not enough for funding better qualities of component of HDI such as education facilities and health facilities.

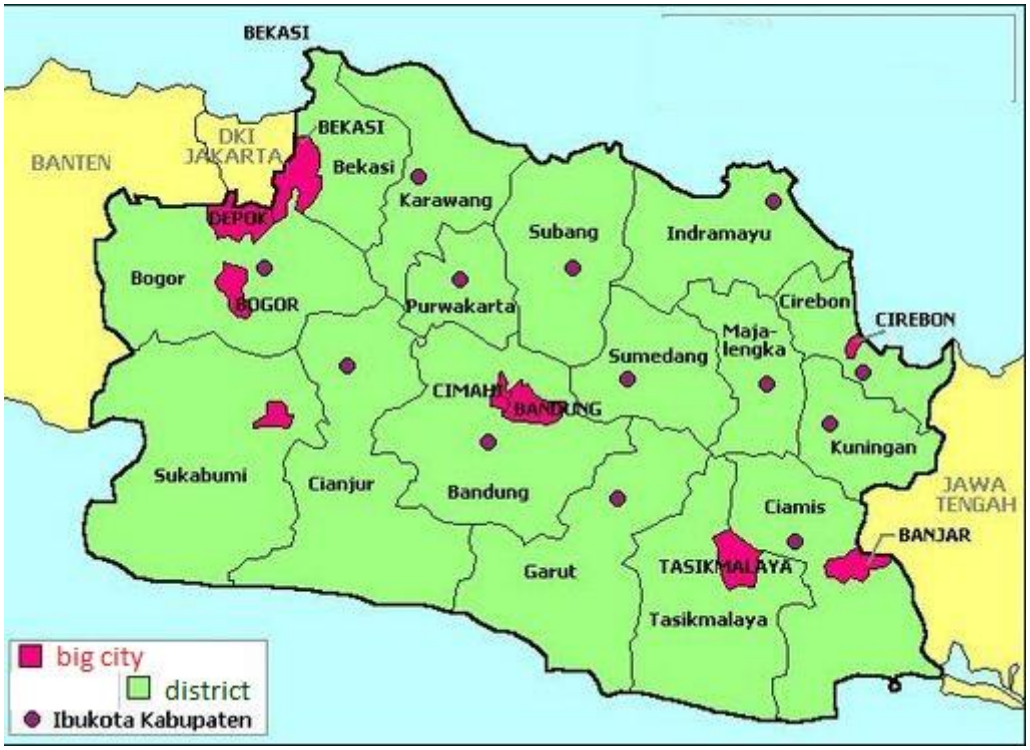

Figure 2. West Java Region

Indramayu is on the second place of pupil to teacher ratio among those five neighboring regions. Pupil to teacher ratio is number of pupils enrolled in primary school divided by number of primary school teachers. The expected ratio is 22 which show that a teacher should teach 22 pupils.

2.2 IKK Result

Median Absolute Deviation [MAD] is applied to find leverage regions in terms of IKK. Next 34 highest IKK leverage regions are separated, out of 463 regions, that is regions where it is expensive to build physical infra structure such as bridge, hospital, traditional low rise market, school, office, pedestrian road, play ground park. These 34 IKK leverage regions are mostly located in Papua and Western Papua of Papua Island. For visibility a bivariate minimum ellipse area is computed for 34 IKK leverage regions with regard to HDI. A bivariate minimum ellipse area is computed for 39 GDP leverage regions with regard to HDI.

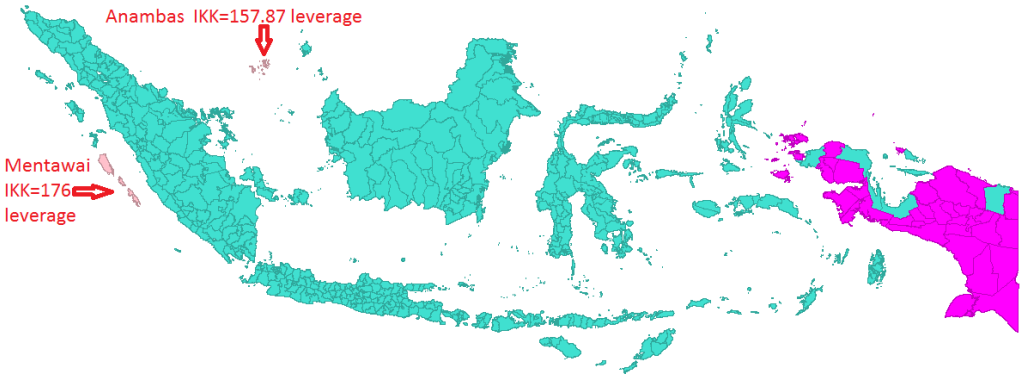

Figure 3. High IKK Regions

Further these IKK leverage regions are linearly correlated with HDI. The value of the linear correlation excluding Puncak Jaya district is -0,68. That is expensive regions are less developed in HDI measurement. Hopefully additional allocation fund for IKK leverage regions can simultaneously help human development and physical infra structure development.

3. Conclusion

Weights affect allocation fund so that any relatively distant region in terms ofweight deserves attention. Actual GDP data can be used to reduce certain regional allocation fund more than application of weights. Similarly actual IKK data can be used to supplement certain regional allocation fund on top of usual application of weights. Affected regional allocation fund is hopefully based on actual bivarate data of HDI and GDP as well as HDI and IKK. Other weights can also be taken into account if necessary.

Despite low HDI, allocation fund for GDP leverage regions does not need any change. GDP leverage regions are supposed to take care of low HDI on their own. IKK leverage regions need more allocation fund.

4. End Note

The author and co-authors declare there is not any potential conflict of interest with respect to the research, authorship, and/or publication of this article. The views expressed here are those of the individual author and co-authors and not necessarily those of STIS or its board, or officers, or staff.

5. References

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