

**DIRECT INVESTMENT, GDP AND CONSUMPTION WITH
GRAPHING ANALISYS**

Rizal Rahmawan, SE.,MM.
Lecture STIE Tunas Nusantara

Teguh Sugiarto
Lecture Universitas Budi Luhur and AAJ Jayabaya
DKI Jakarta, Indonesia

ABSTRACT

Purposive – this research aims to look at how the results of the analysis with statistical methods descriptive graphs and tables on the way in analyzing economic variable consumption, GDP and direct investment in indonesia.

Method/Analysis – data analysis method used by the author is a descriptive statistical methods by means of graphs and tables.

Data – the author uses data period 1967-2014. The variables used in this study, namely the economic variables of indonesia which consists of direct GDP, consumption, investment.

Finding – Analysis chart very useful and can be applied in the analysis of financial, business and economic.

Novelty – Research using statistical methods descriptive way of charts and tables, is the first research model with a variable in the samples was direct investment, consumption and GDP. The author assumes these three variables have a dependence and interrelated between each other.

Keywords : Graphs, tables, consumption, GDP, direct investment.

1. INTRODUCTION

In Wainer Velleman, (2001); Wilkinson, (1994), (2001); Yu & Behrens, (1995); Yu & Stockford, (2003) said that very graphic techniques was instrumental in see and do an analysis in the form of a data modeling in the form of statistics. When we will do a graphical design, will be able to support the results of the analysis that we use and we show, as also explained in the by Colet & Aaronson, (1995), that graph models can easily to use, providing a strong analysis and is flexible. Dynamic graphical models was no exception as well as a more modern interactive, many developed widely in a variety of analysis tools software such as SPSS, Matlab and DataDesk or ViSta In Young Valero-Mora & friendly, (2006). In

International Journal Of Core Engineering & Management (IJCEM)
Volume 3, Issue 4, July 2016

Ledesma Molina & Young, (2005) describes one way of dynamic and interactive graphics that we can use by using a model that is structured, in doing the visualization which is a bit more complex with the use of such language XLispStat or statistical system ViSta that much-discussed in the research study. In this research a little different, the author presents data analysis using Eviews computer programs, where the software guided towards the analysis of some characteristics of the metrics that are not familiar, associated with the development of a tool-assisted with the analysis of the chart. In this study the author would later split into 5 sections, including section 1 Introduction, section 2 describes the fleeting use of graphs and tables, the third part is the research methods, part 4 research results and section 5 conclusions from research.

2. BRIEF HISTORY GRAPHING

In the regression analysis a multivariate analysis of its nature, it can be said an interesting challenge for a lot of the author. On the one hand, many thinkers generally do not have a strong recollection in statistics or mathematics, and they usually have a more enthusiastic attitude towards these subjects. On the other hand, the purpose of some of the techniques of multivariate analysis of factors, such as cluster analysis, or very closely with the concepts they learned as a student of psychology; As a result, they were able to appreciate the utility of this technique very quickly. For example, they are familiar with the theory of factorial personality and intelligence, and they easily grasp the concept of grouping individuals in different groups correspond to the symptoms, characteristics or traits. The authors suggest that programs on multivariate statistical methods for Psychology student this knowledge Review first and then introduce the aspect of statistics or math later to students motivated. Interactive and dynamic graphics is an excellent tool to introduce the multivariate data analysis (Cook, 2009) to allow students to apply this technique entirely or partially in the way of graphics and interactive, providing insight into the procedures that do not stem from the Formula.

Dynamic graphics, computer graphics-based statistics are changing in response to direct user manipulation or analysis of data action/other events, such as the change of plot-related another window (Theus and Urbanek, 2009; Young, Valero-Mora, and Friendly, 2006). Because they are difficult to describe in words, this work includes some video showing dynamic graphics in action. The video shows how interactive graphics enable students to visualize multivariate data and then do a very natural activity for them. Because math is involved at a minimum, students can start to play with the data immediately, identifying outliers and specific observations they want to know about, or a grouping of groups of observations with similar profiles across the variables. After their experience of carrying out hand-by this activity is very easy to introduce mathematical concepts behind graphic. Then, the discussion about the difference between the results obtained to interact with graphics and formal mathematical methods can provide a deeper insight into the algorithms, their limitations and how to troubleshoot problems that may arise during the analytical analysis. Last but not least, such as the interpretation of the output of the multivariate techniques sometimes rather complicated, interactive graphics can also help by providing concise with different parts of the output.

This study aims to demonstrate how interactive and dynamic Statistical graphics can be used for multivariate statistical analysis for economic students. Note that, although in the study using Eviews, the same activity can be done with other statistical software. EViews is multivariate visualization and data

International Journal Of Core Engineering & Management (IJCEM)
Volume 3, Issue 4, July 2016

analysis software Authors actively contributed in terms of construction and maintenance; The author also uses the Statistical course in Eviews author. This is the main reason why the author using Eviews in this paper. However, the author will emphasize activities and not the author's own software. This paper is structured as follows: first, the author will explain multivariate data analysis the author; Second, the author will introduce three activities to illustrate the use of interactive graphics.

3. RESEARCH METHODS

Data and Time Research

In this study using indonesia's economic variables of which direct investment, consumption and GDP. Annual data variables in use by this author between the period 1967-2014, the data can be a writer by way of donwload from the world bank website. Data prior to analysis with tool-assisted statistics first in sports by the author. The authors conducted research at the time of the February 2016.

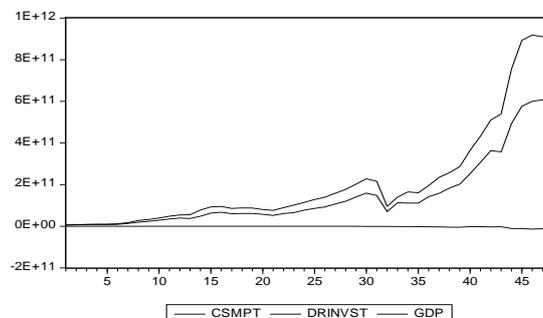
Technique Analysis of Research Data

Data analysis techniques used in this research refers to research titles already deduce, namely (1) to see how the description of the variables examined using analysis graph (2) to see whether or not there is a relationship between variables in the research by using the analysis charts. Based on the purpose of the research, then the data analysis technique used in the study include descriptive data analysis techniques with descriptive statistical methods performed by way of graphics and tables.

4. RESULT AND DISCUSSION

In the first analysis that is in use by the author is Graphing Multiple Series, where this analysis uses by way of illustration with an image, we can see the results as follows:

Figure 1 : Graphing Multiple Series Direct invesment, consumption and GDP



Source : Proceed by author

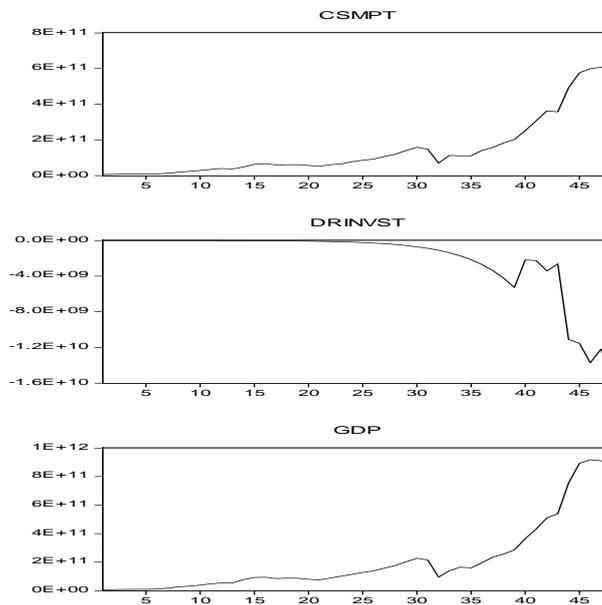
If we look at the picture above as a single series with the dialogue, Graph Options dialog has several

International Journal Of Core Engineering & Management (IJCEM)
Volume 3, Issue 4, July 2016

pages that specify various settings for the display of the chart. The author again to focus exclusively on Basic page type on direct investment and GDP variable.

The author considers the arrangements for each class in turn will differentiate the results of analysis. Image analysis using next graphics Multiple Series

Figure 2 : Image Graphing Multiple Series Direct invesment, consumption and GDP



Source : Proceed by author

From the picture graphics above we can see how the shapes of a few different lines in the graph, each corresponding to one of the series within the group. Display series in the same chart highlighting the most salient feature of the variable level data in analysis. The existence altitude and humility of observation indicates the number of direct investments, consumption and GDP of the country of Indonesia. The authors see that direct investment is the smallest component of consumption and on the component of GDP, although classified seems to grow as part of the overall aggregate figure. Further analysis using graph data.

Table 1 : Result test equality of means between series Direct invesment, consumption and GDP

Test for Equality of Means Between Series			
Method	df	Value	Probability
Anova F-test	(2, 141)	18.43075	0.0000
Welch F-test*	(2, 62.7145)	34.58606	0.0000

*Test allows for unequal cell variances

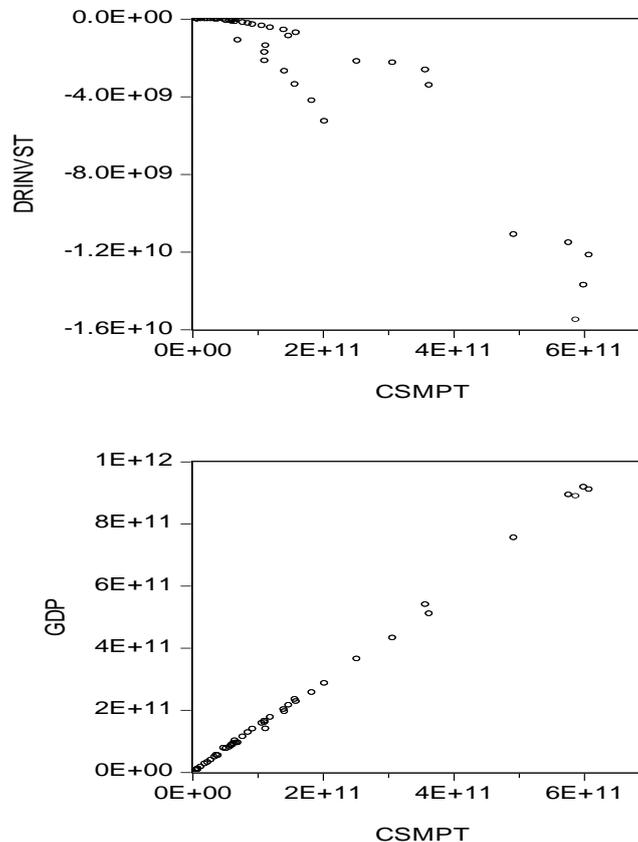
Test for Equality of Medians Between Series

Method	df	Value	Probability
Med. Chi-square	2	72.66667	0.0000
Adj. Med. Chi-square	2	68.72917	0.0000
Kruskal-Wallis	2	96.30539	0.0000
Kruskal-Wallis (tie-adj.)	2	96.30539	0.0000
van der Waerden	2	87.80999	0.0000

Source : Proceed by author

Average value of a probability in the produce on the table above are significant, with the value of the test for equality for the means and medians as displayed on the chart. Next by using graph model, by doing a plot data for a series against the data to another series.

Figure 3 : Image Graphing Model Direct invesment, consumption and GDP

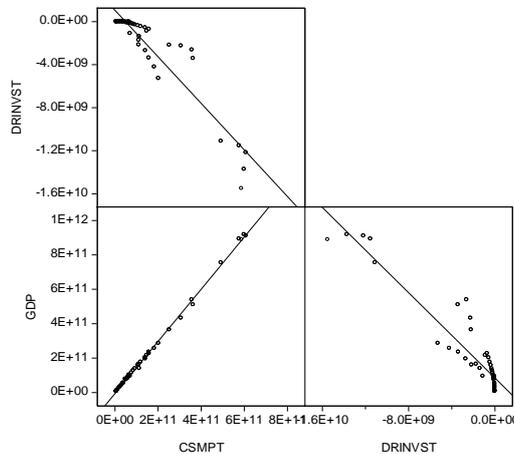


Source : Proceed by author

International Journal Of Core Engineering & Management (IJCEM)
Volume 3, Issue 4, July 2016

Look at the graphs for the spread of the XY Line, and XY Area chart in several groups on data in use contain between time series, there is no ambiguity about how to process using the data in groups and individually, but in this graph analysis there is the placement of the two axes along the horizontal and the vertical axis. If the data that you want to analyze more than two series, then we can use a couple of series to see the shape of a pair of data to its data. The last graph analysis in use by the author, that is with the model Fit lines.

Figure 4 : Graphs XY line Direct invesment, consumption and GDP



Source : Proceed by author

By adding two lines in the form of a regression equation, and especially concerned as to the time intervals for the duration of an eruption or an eruption that caused, as in described by Simonoff (1996). In the picture above look how the distribution of points on a line in the picture above. The author has not been able to conclude definitively how the conclusions of the variables in the analysis with the model of this graph.

5. CONCLUSION

If the search techniques analysis using charts, originally started with a model called with Eviews, where this model is considered best in analysis using graph. Of the studies that have been funded and do a collection of nature in General, then in model analysis of chart in use will look how the existence of several options for the model of analysis that we can use. In the paper the authors who have made previous research results can support by using the analysis method using graphs. And do the election against several types of graphs that are made, then we easily analyze and read the icons contained in analysis tools. A study done by the author, can be made as a bridge in analysis tools using graphs. The author argues using analysis this graph with the method could provide a phenomenon and the resulting conclusion is a bit different than other models of analysis tools.

International Journal Of Core Engineering & Management (IJCEM)
Volume 3, Issue 4, July 2016

REFERENCES

- Brown, Lawrence D., T. Tony Cai, and Anirban DasGupta (2001). "Interval Estimation for a Binomial Proportion," *Statistical Science*, 16(2), 101-117.
- Chambers, John M., William S. Cleveland, Beat Kleiner, and Paul A. Tukey (1983). *Graphical Methods for Data Analysis*, Murray Hill, NJ: Wadsworth & Brooks/Cole Publishing Company.
- Cleveland, William S. (1993). *Visualizing Data*, Summit, NJ: Hobart Press.
- Cleveland, William S. (1994). *The Elements of Graphing Data*, Summit, NJ: Hobart Press.
- Cook, D. (2009). "Incorporating Exploratory Methods using Dynamic Graphics into Multivariate Statistics Classes: Curriculum Development". In MC Shelley II, LD Yore, B Hand (eds.). *Quality Research in Literacy and Science Education: International Perspectives and Gold StKitards*, pp. 337-355. Dordrecht, Netherlands: Springer.
- Conover, W. J. (1980). *Practical Nonparametric Statistics*, 2nd edition, New York: John Wiley & Sons.
- Fan, J. and I. Gijbels (1996). *Local Polynomial Modelling and its Applications*, London: Chapman & Hall.
- Fan, J. and J. S. Marron (1994). "Fast Implementations of Nonparametric Curve Estimators," *Journal of Computational and Graphical Statistics*, 3, 35–56.
- Freedman, David and Persi Diaconis (1981). "On the Histogram as a Density Estimator: Theory," *Zeitschrift für Wahrscheinlichkeitstheorie und verwandte Gebiete*, 57, 453-476.
- Hyndman, R. J. and Fan, Y. (1996). "Sample Quantiles in Statistical Packages," *American Statistician*, 50(4), 361–365.
- Härdle, Wolfgang (1991). *Smoothing Techniques with Implementation in S*, New York: Springer Verlag.
- Johnson, R. A., and D. W. Wichern (1992). *Applied Multivariate Statistical Analysis, Third Edition*, Upper Saddle River, New Jersey: Prentice-Hall, Inc.
- Jones, M. C., M. Samiuddin, A. H. Al-Harbey, and T. A. H. Maatouk (1998). "The Edge Frequency Polygon," *Biometrika*, 85(1), 235-239
- Marron, J. S. and D. Nolan (1989). "Canonical Kernels for Density Estimation," *Statistics and Probability Letters*, 7, 191–195.
- McGill, R., J.W. Tukey, and W. Larsen (1978). "Variations of Boxplots," *The American Statistician*, 32(1), 12-16.
- Scott, David W. (1979). "On Optimal and Data-Based Histograms," *Biometrika*, 66(3), 605-610.
- Scott, David W. (1985a). "Frequency Polygons: Theory and Application," *Journal of the American Statistical Association*, 80(390), 348-354.
- Scott, David W. (1985b). "Average Shifted Histograms: Effective Nonparametric Density Estimators

International Journal Of Core Engineering & Management (IJCEM)
Volume 3, Issue 4, July 2016

- in Several Dimensions,” *The Annals of Statistics*, 13(3), 1024-1040.
- Silverman, B. W. (1986). *Density Estimation for Statistics and Data Analysis*, London: Chapman & Hall.
 - Simonoff, Jeffrey S. (1996). *Smoothing Methods in Statistics*, New York: Springer-Verlag.
 - Simonoff, Jeffrey S. and Frederic Udina (1997). “Measuring the Stability of Histogram Appearance When the Anchor Position is Changed,” *Computational Statistics & Data Analysis*, 23, 335-353.
 - Stock, James H. and Mark W. Watson (2007). *Introduction to Econometrics*, Boston: Pearson Education, Inc.
 - Wilson, Edwin B. (1972). “Probably Inference, the Law of Succession, and Statistical Inference,” *Journal of the American Statistical Association*, 22(158), 209-212.
 - Colet, E., & Aaronson, D. (1995) Visualization of multivariate data: Human- factors considerations. *Behavior Research Methods, Instruments, & Computers*, 27, 257–263
 - Crocker, L., & Algina, J. (1986). *Introduction to classical and modern test theory*. Orlando: Holt, Rinehart and Winston.
 - Gifi, A. (1990). *Nonlinear Multivariate Analysis*. NY: John Wiley & Sons Ltd. Ledesma, R. D. (2008). Introducción al Bootstrap. Desarrollo de un ejemplo acompañado de software de aplicación [Introduction to the Bootstrap. An example with computer software application]. *Tutorials in Quantitative Methods for Psychology*, 4, 51-60.
 - Ledesma, R. D., & Valero-Mora, P. M. (2007). Determining the number of factors to retain in EFA: An easy-to-use computer program for carrying out Parallel Analysis. *Practical Assessment Research & Evaluation*, 12. Retrieved April 18, 2009, from <http://pareonline.net/getvn.asp?v=12&n=2>
 - Ledesma, R. D., Valero-Mora, P., & Young, F. (2002). Análisis de Homogeneidad en ViSta “The Visual Statistics System” [Homogeneity Analysis in ViSta “The Visual Statistics System”]. *Metodología de las Ciencias del Comportamiento*, 4, 1, 139-149.
 - Ledesma, R. D., Molina, J. G., & Young, F. W. (2005). Enhancing dynamic graphical analysis with the Lisp-Stat language and the ViSta statistical program. *Behavior Research Methods*, 37, 684–690.
 - Molina, J. G., Ledesma, R. D., Valero-Mora, P. M., & Young, F. (2005). A video tour through ViSta 6.4, a visual statistical system based on Lisp-Stat. *Journal of Statistical Software*, 13, 8, 1–10.
 - Theus, M. and Urbanek, S. (2009). *Interactive Graphics for Data Analysis: Principles and Examples*. Boca Raton, FL: Chapman & Hall/CRC Computer Science & Data Analysis.
 - Wainer, H., & Velleman, P. (2001). Statistical graphics: mapping the pathways of science. *Annual Review of Psychology*, 52, 305–35.
 - Wilkinson, L. (1994). Less is more: two- and three-dimensional graphics for data display. *Behavior Research Methods, Instruments, & Computers*, 26, 172-176.
 - Wilkinson, L. (2001). Presentation Graphics. In N. J. Smelser, & P. B. Baltes (Eds.), *International Encyclopedia of the Social and Behavioral Sciences*, (pp. 6369-6379). NY: Elsevier.
 - Young, F. W. (1996). ViSta: Developing Statistical Objects. The Visual Statistic project. Research Memorandum Number 1996-1. Chapel Hill, NC: Thurstone Psychometric Lab, UNC.

International Journal Of Core Engineering & Management (IJCEM)
Volume 3, Issue 4, July 2016

- Young, F. W. (2006). ViSta, the Visual Statistic System [Software]. Available from: <http://www.visualstats.org>
- Young, F. W., & Smith, J. (1991). Towards a structured data analysis environment. A cognition-based design.. In A. Buja & P. A. Tukey, P.A. (Eds.) *Computing and Graphics in Statistics*, 253-279. NY: Springer-Verlag.
- Young, F. W., Valero-Mora, P. M., & Friendly, M. (2006). *Visual statistic: Seeing data with dynamic interactive graphics*. Hoboken, NJ: John Wiley and Sons.
- Young, F. W., Valero-Mora, P., Faldowski, R., & Bann, C. (2003). Gossip: The Architecture of Spreadplots. *Journal of Computational and Graphical Statistics*, 12, 80–100.
- Yu, C. H., & Behrens, J. T (1995) Applications of multivariate visualization to behavioral sciences. *Behavior Research Methods, Instruments, & Computers*, 27, 264-271
- Yu, C. H., Osborn-Popp, S., DiGangi, S., & Jannasch-Pennell, A. (2007). Assessing unidimensionality: A comparison of Rasch Modeling, Parallel Analysis, and TETRAD. *Practical Assessment, Research and Evaluation*, 12, Retrieved April 19, 2009, from <http://pareonline.net/pdf/v12n14.pdf>
- Yu, C. H., & Stockford, S. (2003). Evaluating spatial- and temporal-oriented multi- dimensional visualization techniques for research and instruction. *Practical Assessment, Research & Evaluation*, 8. Retrieved April 19, 2009, from <http://pareonline.net/getvn.asp?v=8&n=17>
- Young, F. W., Valero-Mora, P. M., and Friendly, M. (2006). *Visual Statistics: Seeing Data with Dynamic Interactive Graphics*. NJ: Wiley & Sons.
- Zwick, W. R., & Velicer, W. F. (1986). Comparison of five rules for determining the number of components to retain. *Psychological Bulletin*, 99, 432-442.
- **Additional website :**

<http://economicwatcher.blogspot.co.id/2012/05/mengenal-grafik-candelstick-part-1.html>

<http://www.eviews.com/help/helpintro.html#page/content%2Fpreface.html%23>