Impact of Creative Industry Expansion on Indonesia's Macroeconomic Conditions

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ABSTRACT: *The purposes of this article are to investigate the existence of intra creative industry trade and its impact on macroeconomic indicator: value added, employment and inflations (pricing). The literature of international economics defines that intra industry trade is simultaneous exports and imports of product within particular industry. The level of intra industry trade (IIT) is generally measured by the so-called Grubel and Lloyd index. Using simple IIT indexes, the calculations indicate that design and art industry have relatively high level of intra industry trade. Base on standard panel regression analyses that control for any heterogeneity in industry level and variation of time-varying variables, intra industry trade level (proxied by IIT index) has positive and significant impact on value added of creative industry. This paper confirms relevant theoretical hypothesis as international trade promote the economic growth. Otherwise, some economic indicators like employment dan pricing have significant association with share of export on total production.*

Keywords: *intra industry trade, creative industry, value added, price-cost margin*

I. INTRODUCTION

Intra-industry trade is one of the important features in the realm of modern international trade economics. Several studies show that the role of intra-industry trade is increasing along with the dynamics that occur in the global business arena. Comprehensively, Widodo (2009) evaluates the development or trend of intra-industry trade in several developed countries in Asia such as Japan, Korea, China and five ASEAN countries including Indonesia. Comparative advantage that rests on the relative ownership of abundant natural resources is no longer relevant. The facts show that developed countries such as Japan and several other newly industrialized countries such as South Korea, Taiwan and Singapore are not known as countries with abundant natural resources. However, these countries develop because of their high power of innovation and creativity so that they are able to produce products and services that can compete internationally. Chang's study (1998) shows the magnitude of the influence of institutions or institutions on the development of Asian countries. In other words, creativity and governance factors have replaced comparative advantage as an important element in determining the direction of global trade. Natural resources do not automatically cause a country to win the competition in the modern era.

Awareness of the importance of creativity in the economy has become a global issue. Van der Pol (2014) analyzes that creative industries, especially culture-based industries, have an important role not only for the economy but also have an impact on social aspects as a whole. A recent study conducted in England showed that the creative industry made a significant contribution to employment, gross value added (GVA) and service exports (Department for Culture Media and Spot, 2015). The contribution of creative industries to employment and economic growth in Australia is also being comprehensively studied (Australian Government, 2015). In essence, the creative economy sector increasingly has a very important portion in the development of the

modern economy in all its aspects.

The government's attention to the development of the economy and creative industries is certainly very relevant if it is associated with the trend of shifting the paradigm of economic development from an agricultural, industrial, information economy to a creative economy (Indonesia Design Power Working Group, 2008). In this regard, the Ministry of Trade of the Republic of Indonesia (2009) conducted intensive studies on the mapping and potential of the creative industries following an initial study on the mapping of the creative industries in Indonesia several years earlier (Ministry of Trade of the Republic of Indonesia, 2007). In this case the Indonesian government will certainly not waste the opportunity to take part in the development of contemporary issues, including the development of the creative economy industry.

So far, the study of the creative industries is mostly in the form of identification of economic sectors that can be classified into creative industry clusters. Meanwhile, studies on trade patterns in the creative industries and their impact on macroeconomic objectives such as increasing output, absorbing labor and price efficiency have relatively not been carried out. This is considering that the standardization of the identified sectors in this sector has not yet reached finalization. As a result, the quantitative objective data needed to evaluate the performance of the creative economy sector is still not sufficient enough to be done using a standard econometric approach. The creative industry mapping study by the Indonesian Ministry of Trade (2009) actually touched on the development of international trade in the creative industries from 2002 to 2008. However, this study has not touched on the impact of trade on other economic indicators. To fill the gaps in the study of creative industries from a macro perspective, this paper will specifically identify patterns of intra-creative industry trade in Indonesia and the influence of trade in the creative industry sub-sector in question on increasing output (added value), employment and economic efficiency. The results of the econometric study in this study indicate that there is a significant relationship between the intra-industry trade index and the added value of this sector. Furthermore, this study shows that the share of creative industry exports has a significant relationship with employment, added value and price efficiency. This empirical evidence further strengthens the signal of the importance of developing the creative economy sector in the future.

II.   REVIEW OF LITERATURE

The new trade theory no longer places the relative advantage of ownership of abundant production factors (endowment factor) as the only determinant of cross-border trade (Adams, 1985). The theory of trade based on relative differences in the ownership of factors of production cannot explain the phenomenon of cross-border trade with relatively the same ownership of factors of production, namely trade between industrial countries for commodities in the same industrial group (intra-industry). As a classic example, why do the US and Japan, as the world's economic superpowers, export and (at the same time) import motorized vehicles? The new trade theory describes a number of alternative determinants of trade such as monopolistic market structures (Lancaster, 1980), product differentiation (Helpman, 1981) and increased economies of scale (Krugman, 1985). One consequence of the new theory is that trade will not hurt the owners of scarce factors because their basis is not factor differences. Within the framework of the new trade theory, all trading parties (including the owners of factors of production) will equally benefit (Krugman, 1981).

Along with the proliferation of new trade theory literature, research on the topic of intra-industry trade has also been carried out in several countries. Empirical studies range from the issue of measuring the intensity of intra-industry trade (Grubel and Lloyd 1971) to the determinants of intra-industry trade. In general, the determinants of cross-country trade are divided into two groups, namely country-specific (Greenaway, R.Hine and C.Milner, 1994) and industry-specific (Greenaway, R.Hine and C.Milner, 1995). Differences between countries include differences in per-capita income, geographical distance between trading partners and other macro indicators such as the amount of investment between countries. Meanwhile, industry specification factors include market structure, degree of product differentiation, capital intensity and technical efficiency measures of an industry. The analytical framework of Grubel and Lloyd (1971) and Greenaway et.al (1994, 1995) has become a kind of advanced research prototype in the realm of empirical studies of intra-industry trade to date. Several studies such as in Indonesia (Widarjono, 2008), Portugal (Leitão and Faustino, 2008),

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Pakistan (Shahbaz and Leitão, 2010) and several other countries show more or less uniform results. First, the intensity of intra-industry trade tends to increase over time. Second, the trading patterns that occur are determined by relevant determinants. There are two general types of intra-industry trade patterns, namely vertical patterns (VIIT) and horizontal patterns (HIIT). The pattern of vertical intra-industry trade is determined more by economic variations between countries, while the horizontal pattern is determined by factors of industrial structure and product differentiation.

Much research has been conducted on the determinants of intra-industry trade, but relatively few empirical studies have been conducted on how the intensity of intra-industry trade affects economic performance. The effect of trade on economic indicators is still analyzed using conventional theoretical frameworks such as testing the export led growth hypothesis or vice versa (Ullah, et al. 2009, Ray 2011). The effect of trade on price efficiency (using the price cost margin indicator), has also been mentioned in Bowen et. al (2001) but still does not specifically analyze the effect of creative industry trade on industry performance.

The results showed that the volume of intra-industry trade was getting stronger both between developed and developing countries. Ownership of abundant natural resources is no longer a major factor because without the support of innovative, creative and competitive human resource capabilities, ownership of natural factors alone will not have many benefits. A research gap that has not been carried out relatively often is to examine the impact of trade in creative industries on key economic indicators such as added value, employment and price efficiency. In other words, the main contribution of this paper is that it is an initial study that specifically evaluates the impact of intra-industry trade on national economic conditions using macroeconomic data.

III.   METHODS

The data used in this study came from two sources, namely creative industry data from the mapping results of the Ministry of Trade of the Republic of Indonesia in 2007 – 2013 and data from the Central Bureau of Statistics (BPS) survey on Large and Medium Scale Industries in the period 2007 – 2013. The mapping of creative industry data carried out by the Ministry of Trade of the Republic of Indonesia is basically very adequate, especially in relation to export and import developments (export data is attached). However, for the purposes of analysis in this paper, data at the industrial level such as technical efficiency, factor capacity utilization and labor expenditure were not fully available in previous studies. For this reason, this research also uses industrial data from BPS as a complementary analysis. BPS industry identification with the ISIC system does not specifically group creative industry sub-sectors in the same folder so that not all creative industry sub-sectors are included as a sample. Deficiencies in the first data source are expected to be covered by the advantages of other data sources.

The analytical method used in this paper consists of three stages. First, calculate the pattern of intra-creative industry trade with the commonly used index, namely the Grubel & Lloyd (GL) index or the Intra Industry Trade (IIT) index. The said index can be written as follows:

$$IIT = 1 - \frac{|X_i - M_i|}{(X_i + M_i)} \qquad (1)$$

In this case Xi is the export value of a particular industry and Mi is the import value of the industry concerned. This index will have a value of 1 if the type of trade that occurs in the industry investigated is all intra-industry and has a value of 0 if the industry being evaluated has an inter-industry type. In empirical studies, IIT usually varies between 0 and 1 so that what can be analyzed is whether a trade in a particular industry is close to the intra- or inter-industry type. Second, to determine the impact of trade on several key indicators such as output, employment and efficiency, a regression analysis approach will be used. The classic problem with using standard regression analysis is the potential for endogeneity due to omitted relevant variables (Gujarati 2003) and non-spherical obstructions which cause bias in the results of hypothesis testing (Thomas 1997). To overcome these two problems, estimation is carried out using the Generalized Least Square (GLS) approach and includes industry-specific indicators that represent the presence of other factors outside the model. An important variable in this analysis is the IIT or proxy trading indicator used.

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$$y_{it} = \alpha + \beta_i IIT_{it} + \boldsymbol{\delta}_i \boldsymbol{X}_{it} + \gamma_i IND_i + e \quad (2)$$

In this case y is the indicator analyzed including value added (value added, labor absorption and price efficiency), IIT is the intra-industry index, X is the variable vector that influences the dependent variable. Meanwhile IND is an industry-specific variable that describes variations between industries. To overcome the endogeneity problem due to the neglect of important variables that are time variant, this study uses a panel regression approach by controlling for time variations. This approach is known as the fixed effect with time control. Given the availability of data and consideration of model specifications, intra-industry indicators in several estimation models use the share of creative industry exports. As in Bowen et. al (2001), industrial performance indicators in this study will use the Price Cost Margin (PCM) approach, with the following standard formulation:

$$\frac{pQ - \sum_{j=1}^{n} c_j q_j}{pQ} = -\frac{1}{\epsilon} \sum_{j=1}^{n} \tau^2 \omega_j \qquad (3)$$

The variable p is the price level, Q is output and c is marginal cost. Meanwhile the parameter ϵ is the elasticity of demand, τ is the market share and ω shows the parameter conjectural variation. Calculation of price difference and marginal cost in empirical studies is not obtained directly. To calculate the PCM indicator, this study uses the ratio of output values to input values. With this ratio, mathematically the quantity of output can be eliminated in the equation so as to obtain a consistent value. Thus, equation 3 above can be modified as follows:

$$\frac{pQ - \sum_{j=1}^{n} c_j q_j}{pQ} = \quad (4)$$

Output value and input value are expressed in monetary units. Given the same units, the PCM indicator does not have units. The value of the PCM indicator will range from 0 to 1, provided that the closer to 1, the more allocatively inefficient the industry concerned is because it charges a higher price level than the average cost. In the concept of microeconomic theory and industrial organization, the PCM value gets closer to 1 if the industrial structure is closer to monopoly performance. Conversely, if the PCM value gets closer to 0 then the structure of the industry being analyzed will get closer to perfect competition performance. The basic assumption in this PCM model is that the industry works in a condition of constant return to scale. Thus, the marginal cost (MC) is assumed to be the same as the average cost (AC). Third, is to recognize the effect of intra-industry trade on the national economy in general. The approach taken is a literature review with reference to the results of the creative industry mapping research that has previously been carried out. This qualitative analysis includes a review of sectoral contributions to national production and the share of trade and labor in this sector in the national economy. This approach aims to complement the results of previous studies that already exist.

IV.   RESULT AND DISCUSSION

The results of calculating creative intra-industry trade patterns in Indonesia using the IIT index (Equation 1) can be presented in Table 1. Out of 14 creative industry sub-sectors as a result of the mapping of the Ministry of Trade of the Republic of Indonesia, only 10 sub-sectors can be analyzed given the availability of trade data for each each selected sector. First, over the past few years, the IIT index has generally tended to be stable. This shows that changes in the map of intra-industry trade in the creative sector have not changed much. Second, the industry that has the most prominent intra-creative trade value is the art and design goods industry. These two industries have the greatest intensity of intra-industry trade. These results indicate that the level of trade competition for the two industries is relatively higher compared to other creative industries. Third, there are two industries where the intensity of intra-industry trade is not too high, namely the film industry and the fashion industry. This means that the type of trade in these two industries is dominated by one-way trade (as net-exporters or as net-importers). The most striking result that deserves closer attention is that there has been a considerable development in the development of intra-industry trade for the publishing

and music industries. If in 2007 the IIT index of the two industries was still below 0.2, then in 2013 both of them shot up quite high. The music industry increased to 0.55 in 2013, while the publishing industry increased to 0.37 in 2013. This signal indicates that both industries have become more open in their intensity of competition with other countries. The results of the calculation of the IIT index for Indonesia's creative industries can be seen more fully in the following table (Table 1). Table 1 presents the results of calculating the IIT index from 2007 to 2013 for the ten creative industries analyzed.

The calculation results show that among the 10 creative industry sectors analyzed, three industrial sectors namely art, design and interactive games have a relatively high index. These results indicate that these three industrial sectors have a type of intra-industry trade in the sense that the amounts of exports and imports are relatively balanced. Meanwhile, the film and fashion industries have a relatively low index. If explored more deeply, it can be seen that in terms of the film industry, Indonesia is still relatively a net importer. It is understandable that national films have so far not been able to become hosts in their own country, although it must be admitted that the development of national films has been better compared to the previous decades. In contrast, the type of trade in the fashion industry is that Indonesia plays a more role as a net exporter. In general, it can be evaluated that the pattern of intra-industry trade is relatively stable during the study period. The average IIT index for ten creative economy sectors can be seen in the far right column. Even though there were some fluctuations in value in several periods, in general the art and design goods industry has the most prominent IIT intensity.

Table 1. Indonesian Creative Industry IIT Index

Industry	2007	2008	2009	2010	2011	2012	2013	Mean
Architecture	0,20455	0,48077	0,10938	0,03822	0,17647	0,12069	0,10628	0,17662
Design	0,87589	0,87730	0,92433	0,93838	0,82421	0,94254	0,83184	0,88779
Fashion	0,04378	0,03653	0,03412	0,03773	0,04185	0,05555	0,06429	0,04484
Film	0,03855	0,07160	0,09265	0,03763	0,02585	0,01138	0,01515	0,04183
Craft	0,17974	0,18082	0,18044	0,23025	0,19174	0,19619	0,18601	0,19217
Music	0,16122	0,11695	0,35262	0,64009	0,49387	0,79285	0,55367	0,44447
Arts	0,87727	0,92142	0,80128	0,93570	0,89765	0,98232	0,89995	0,90223
Publishing	0,16939	0,36079	0,20647	0,08305	0,10546	0,32109	0,37854	0,23211
Advertising	0,61672	0,76615	0,63263	0,50400	0,77457	0,68060	0,67666	0,66447
Game	0,70699	0,84148	0,92687	0,84390	0,94937	0,99531	0,71718	0,85444

Based on the results of the intra-industry index calculation that has been carried out, then the impact of IIT intensity on production added value is estimated. The estimation results can be seen in Table 2.

Table 2. Impact of IIT on Value Added (Model A)

	(1)	(2)
IIT	2183,16***	2095,48***
	(2,87)	(2,70)
FIRM	-0,0169264***	-0,0165727***
	(-2,75)	(-2,93)
LABOR	0,0218731***	0,0217376***
	(9,11)	(9,74)
CONS	1211,954***	99,74267
	(4,81)	(0,16)
TIME	no	yes
INDUSTRY	no	no
R-Square	0,9782	0,9792

F-stats	934,69	460,12
Obs.	98	98

The results of the regression test in Table 2 confirm the plot in Figure 2, namely that there is a significant positive relationship between IIT and the added value indicator. The addition of the time element increases the magnitude of the coefficient of determination, but reduces the magnitude of the IIT coefficient. This indication shows that when the time variable is controlled, the standard OLS estimate gives biased results. The test results in Table 2 do not fully control all relevant variables. That is, it is possible that the results of this estimate will change significantly if other variables are included. Another variable included in this model is the variation between industries represented by industry specific indicators. The complete model calculation results can be seen in Table 3 as follows:

Table 3. Impact of IIT on Value Added (Model B)

	(1)	(2)
IIT	2870,73**	2064,15*
	(2,19)	(1,90)
FIRM	-0,0052606	-0,003922
	(-0,66)	(-0,49)
LABOR	0,0056546	0,0049485
	(1.14)	(0,84)
CONS	2733,993***	2290,599***
	(7,90)	(5,26)
TIME	no	yes
INDUSTRY	yes	yes
R-Square	0,9958	0,9966
F-stats	842,02	587,05
Obs.	98	98

The results of the study show that the significance of the coefficient of the IIT variable decreases when controlling for variations between industries as confirmed in Table 3 column (1). Likewise with other independent variables that are explicitly included in the model, namely the number of companies (FIRM) and workforce (LABOR). Both the variable number of companies (FIRM) and the labor variable (LABOR) are proven to be insignificant. The significance of these two variables is due to the large impact of variations between industries associated with the number of companies and workers.

Furthermore, estimation is carried out by controlling for variations between time as well as variations between industries (Table 3, column (2)). The calculation results show that the significance level of IIT decreases and the magnitude of the coefficient also decreases. This indicates that neglecting controls for time and industry variations will result in overestimating estimates. However, the coefficient of interest, namely IIT, is still significant at the 10 percent level. Thus it can be said that the positive determination of the IIT index on added value is robust considering the consistency of the results from several alternative models that have been used. The presence of other variables that determine added value is represented by the significance of the constant (CONS) and controls for time variation (TIME) and industry (IND). Considering that the purpose of this paper is not to analyze the factors that affect added value, the complete presence of variables that affect the dependent variable is not so important to review. The calculation results consistently show that the IIT variable has a positive impact on the added value of creative industry production.

A mapping study conducted by the Ministry of Trade of the Republic of Indonesia (2009) shows that the net-trade contribution of the creative industry sector to national net-trade is relatively large on average (26.12 percent). With the contribution of the creative industry sector which on average reaches 8 percent of the total

Gross Domestic Product (GDP), the position of this sector (especially in terms of trade) in the national macroeconomic map is very important. The results of the study show that trade expansion has a positive contribution to increasing added value, employment and price efficiency. Considering the growing role of the creative industry sector in national production, dynamics in this sector will certainly make an important contribution to macroeconomic objectives such as production growth (or added value), reducing unemployment and price stability. A study by the Ministry of Trade of the Republic of Indonesia (2009) also noted that the national creative industry sector's work participation rate reached an average of 7.74 percent.

The positive contribution of the creative industry sector to macroeconomic objectives is not only limited to output and unemployment indicators. The role of this sector in price stability can be traced through the effects of trade on price efficiency. In the long term, the price level will naturally reach a level of efficiency (the gap between price and cost is getting smaller). Considering the results of research showing the significance of the trade correlation on price efficiency, the contribution of the creative industry sector to price stability should also be quite important.

V.   CONCLUSION

The results of the study show that several creative industry sub-sectors such as art, fashion and design have a fairly high level of intra-industry trade. This high level of intra-industry trade is basically consistent with the global trend which shows the increasing importance of the role of intra-industry trade across developed countries as well as between developing countries. Research also shows that creative industry trade has a significant impact on increasing added value, employment and price efficiency. Given the relatively large contribution of the creative industry to the national economy, the role of this sector for macroeconomic objectives (namely growth, unemployment and inflation) is of course very important.

The research results carry important policy implications. Along with the demands of international trade competition to consistently reduce trade barriers, the creative industry sector provides good prospects for the long-term economy. Unlike other sectors that rely on conventional inputs (such as capital and number of workers), this industry has a specific uniqueness because it is based on human creativity. The opening of trade faucets that allow the flow of trade between similar products and services (intra-industry trade) actually has the potential to have a positive impact on the economy in three macro indicators: output, employment and prices. In other words, this sector can be seen as the sector that is most ready to fight in the era of global competition. For this reason, the government's attention to the development of this sector needs to be continuously increased. Economic history has proven that South Korea through the creative industry sector has become one of the world's economic powers that is starting to be reckoned with. Samsung's success in shifting Sony-Ericson and Nokia can be used as a small note to remind the greatness of the role of the creative industry. Not only that, in the modern automotive industry, Korean cars have begun to align with old players made in Japan and Europe.

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