

Economic Integration in West Sumatera, Indonesia

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Abstract

The purpose of this study is to investigate the degree of economic integration in West Sumatera province, Indonesia. A survey was conducted to collect the data on interregional trade of primary commodities between regions at the level of wholesalers. Sample primary commodities include rice, chicken eggs, and fish. To calculate the economic integration index, a modified Cheung formula was used and adjusted to take into account the characteristics of interregional trade in West Sumatera. The results show that the economic integration index for West Sumatera is in general low, implying that the regions are not well integrated economically. However, some regions have sufficiently high integration indexes, simply because of their contiguous borders and direct road transportation routes.

Keywords: *Interregional Trade, Economic Integration, Primary Commodities.*

INTRODUCTION

Many recent studies on regional economic integration have been conducted, covering various issues such as the relationship between industrialization and regional economic integration (Rekiso, 2017), regional integration and capital mobility (Atik, 2014), regional integration and capital mobility (Kumar, Sen, & Srivastava, 2014; Wang, 2016), openness and economic integration (Sadyrtdinov & Rodnyansky, 2014), competitiveness and economic interregional trade (Ghemawat, Llano, & Requena, 2010), energy and interregional trade (Zhao, Xu, Malik, Song, & Wang, 2018), and R & D and economic integration (Cuervo-Cazurra & Un, 2007). Some studies consider economic integration as the endogenous variable, while others treat it as the exogenous variable. However, very little attention has been paid to the relationship between interregional trade and economic integration in the context of small regions within a subnational region (e.g. province) characterized by interregional trading in homogenous commodities, mainly primary and agricultural commodities.

A growing body of literature focuses generally on the effect of economic integration in the context of economic cooperation among a

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group of countries, such as the ASEAN Economic Community (AEC), on the macroeconomic indicator of member countries. The general goal is to get rid of barriers to trade and to achieve freer flows of goods, capital, and labor. Economic integration is therefore meant to achieve one economic community for the benefit of all member countries. However, in the subnational context, what is usually considered as barriers are the lack of infrastructure, impeding regional government policies, and the absence of comparative advantages. Limited data availability is also problematic in investigating the real determinants of regional integration.

The objective of this article is twofold. First, it evaluates how within-province interregional trade in primary commodities has evolved in West Sumatra Province. Second, it investigates whether an economic integration between regions in West Sumatra Province has developed. In answering those questions, this article aims to provide an empirical contribution to regional economics and provide a guidepost for policy makers, especially to a regional government, concerning the promotion of within-province interregional trade.

The remainder of this article is organized as follows: Section 2 presents a relevant literature review. Section 3 presents methodology. Section 4 presents overview of interregional trade in primary commodities in West Sumatera. Section 5 presents the results and discussion. Finally, Section 6 presents the conclusions and policy implications.

LITERATURE REVIEW

Spatial interaction theory is generally used to predict and model the flow of commodities between regions. Trade flows as part of spatial interaction can be explained in the context of spatial interaction theory (Brocker, 1989). The purpose of spatial interaction theory is to explain and estimate the flow of interregional spatial interactions, e.g. trade (Alward, Olson, & Lindall, 1998), (Schwarm, Jackson, & Okuyama, 2006), and (Sargento, 2009). Spatial interaction theory has also been applied, for example by (Guldman, 1999) to study the flow of commodities, telecommunication and population mobility (migration). Trade between regions plays an important role in maintaining productivity and stimulating the economy of a region. A region tends to grow and prosper faster by more actively trading with other regions. Active trading regions usually experience a surplus in their trade balance, while less active regions experience tend to have a deficit in their trade account (Amstrong & Taylor, 2000). The types of goods that are produced and traded by a region are very much related to the advantages possessed by the region, both absolute advantages and comparative advantages. In general, developing regions have both absolute and comparative advantages in producing primary commodities. This is so because developing regions, especially in Indonesia, generally have an agrarian economic structure, where

agriculture is a dominant sector in the economy and the majority of the population also make a living through agriculture.

Empirically, Newton gravity model is usually used to analyze spatial interaction and to explain the economic relationship between a pair of geographic units with or without the word "gravity". The model states that the attraction between objects is proportional to its mass multiplication and inversely proportional to the distance between them (Deadorff, 1998). The gravity model was originally applied to explain the factors that influence the number of trips between cities. The law of gravity was later also widely applied on both foreign trade (Brockner, 1989; Carrillo-Tudela & Li, 2004; Batra, 2004; Athukorala, 2011; Kristjánsdóttir, 2008) and domestic trade (Chun, Kim, & Kim, 2012; Firdaus & Widiasanti, 2010; Cadarajat & Yanfitri, 2007). A more recent development of the the major theoretical and empirical aspects of the gravity model in the context of trade flows is presented by Kabir, Salim, & Al-Mawali (2017).

To indicate the existence of spatial interaction, various variables have been used. (Carrillo-Tudela & Li (2004) and (Chun, Kim, & Kim, 2012) per capita income. Carrillo-Tudela & Li (2004), Batra (2004), Athukorala (2011), and (Chun, Kim, & Kim (2012) also used geographical distance. Free trade agreements variable was used by Carrillo-Tudela & Li (2004), Batra (2004); Kristjánsdóttir (2008); and Athukorala (2011), while common language variable was used by Batra (2004) and Athukorala (2011). Exchange rate variable was used by Cadarajat & Yanfitri (2007). Transportation costs and the Human Development Index were used by Firdaus & Widiasanti (2010)), trading quality index by Athukorala (2011), cultural similarity by Athukorala (2011). The influence of regional and global economic crisis was also investigated by Athukorala (2011). Chun, Kim, & Kim (2012) employed the number of employees in the region of origin, average production in the region of origin, the size of the plant in the region of origin, the number of residents in the region of destination, the number of factories in the region of destination, and competing destinations as determinants. To measure the degree of economic integration, some studies have developed an index of economic integration (Acharya, Someshwar, & Sawchuk, 2002; Fernandez, Garcia, & Ausina E, 2007; and (Cheung Y., Yiu, M, & Chow, 2009a).

METHOD

A descriptive analysis was employed to provide an overview of trade flows within the province (inter-regency) of West Sumatera. An economic integration index was developed by making adjustments to a formula introduced by Cheung, Yiu, & Chow (2009a) and Cheung, Yiu, & Chow (2009b). They introduce a formula to measure regional economic integration as follows:

$$X_{ij} = (EX_{ij,t} + EX_{ji,t}) / (GDP_{i,t} + GDP_{j,t}) \quad (1)$$

where $EX_{ij,t}$ is exports from region i to region j at year t , $EX_{ji,t}$ is exports from region j to region i in year t , $GDP_{i,t}$ is GDP of region i in

year t , and $GDP_j, t = GDP$ of region j in year t . The value of X_{ij} is multiplied by 100 to make it a percentage rather than the sum of both GDP_i and GDP_j . If the value of $X_{ij} = 0$, then it implies no integration between the two regions and if the value of $X_{ij} = 1$, then the two economies are perfectly integrated. The formula was also adopted by (Acharya, Someshwar, & Sawchuk, 2002).

In this article, we measure the economic integration between region i and region j by $TF_{ij,t}$, that is trade flows between i and j instead of X_{ij} . GDP is replaced by total exports of each region to the other, i.e. $\Sigma EX_{i,t} + \Sigma EX_{j,t}$.

$$TF_{ij, t} = (EX_{ij,t} + EX_{ji,t}) / (\Sigma EX_{i,t} + \Sigma EX_{j,t}) \quad (2)$$

By multiplying equation (2) by 100, we get an index with the value ranging from 0 to 100. If the value is 0, we can conclude that region i and j are not economically integrated. If the value is 100, then it is a perfect interregional economic integration. The greater the value of the index, the higher the degree of economic integration of the two regions.

Both secondary and primary data were used. Secondary data are the aggregated data collected and published by the Central Agency of Statistics of West Sumatera Province. Primary data were collected through a field survey conducted in 2021 of whose sale tradesmen that trade cross-border within the province. We include a wide range of commodities commonly traded inter-regency within West Sumatera province. Those commodities are rice, eggs, chicken, and seafood. These commodities are selected to represent a wider range of commodities actually traded cross-border within the province. A particular region's economy is divided into two sectors, one the sector that exports and the other that produce goods only for local consumption. The latter is the food crops and horticulture subsector (represented by rice), livestock subsector (represented by chicken and chicken eggs), and fishery subsector (represented by fresh seafood).

As many as 15 regions (regencies) out of 19 regencies in the West Sumatera province (omitting newly established regencies like Solok Selatan, Pasaman Barat, Dharmasraya, and Kepulauan Mentawai) were included. The number of sample tradesmen was calculated by using Slovin formula (Umar, 2004) and considering criteria proposed by (Fraenkel & Wallen, 1993). Population of wholesale tradesmen for each commodity was not available. However, an estimate was made such a way that 20 wholesale tradesmen was estimated for Kota Padang and 15 for each of other regencies. Hence, in total 146 wholesale tradesmen sample size was chosen to be surveyed. The survey was carried out in a snowballing sampling manner where a respondent was first identified, and subsequently another respondent was chosen. This convenience sampling method is justifiable because it is believed one respondent is independent of other respondent(s) with regards to their response to questions. A reliability test was conducted to obtain the consistency of the instrument measurements, i.e. whether the measurement is reliable and remains consistent when it is repeatedly used. In this study we

used the Alpha method (Cronbach's). The alpha method is particularly suitable for scale scores (e.g. 1-4, 1-5) or span scores (e.g. 0-20, 0-50). The alpha method can also be used on dichotomy scores (0 and 1) and will result in equivalent calculations using the KR-20 and Anova Hoyt methods. The significance test was conducted at the 0.05 significance level, meaning that the instrument can be said to be reliable if the alpha value is greater than the critical product moment r , or we can use certain limits. Ghozali (2005: 133) shows that a criterion for an instrument to have a high reliability is when the calculated coefficient value is greater than 0.60.

RESULTS AND DISCUSSION

West Sumatera Province as part of Indonesia also has an agrarian economic structure. The share of agriculture in its economy, as measured by Gross Regional Domestic Products (GRDP) at market prices, has not declined to a significant level which is supposedly the common case for an economic structural change. There has been a small decline of only 2.5 percentage points for seven years, i.e. from 25.9 percent in 2010 to 23.5 percent in 2017. Within the broad definition of agriculture, the total share in GRDP of food crops, horticulture, plantations, animal husbandry and agriculture-related services is dominant at 18.6 percent in 2017, only a 2.6 percentage points decline from 2010 (BPS Sumatera Barat, 2018). Furthermore, commodities that are traded inter-regionally within the province seem to be similar, revolving around rice, peanuts, onions, beans, chilies, bananas, citrus, and fresh seafood. Depending on its natural and geographical advantages, some regions (districts) produce more of one commodity, while others produce more in other commodities. But overall, almost regions produce everything except seafood, that is specific to coastal regions. Hence, trade may take place as a result of surpluses and deficits of some commodities over other commodities.

On the demand side, population and income determine the level of consumption. Padang, being the capital city of the province and the center of trade itself, has higher concentration of people and higher income per capita. Therefore, it plays an important role in the economy of West Sumatera and in interlinking other regions. The city accounts for 17.4 percent of the province's population, and the concentration of the population may reflect its importance in making trading connections of one region to another. The per capita consumption of primary commodities such as rice, peanuts, onions, long beans, chilies, and bananas vary across regencies and there are differences in the levels of discrepancies between production and consumption. This, in turn, results in the need for interregional trade among regencies.

Appendix 1 shows the inter-regency trade flows in selected primary commodities in the West Sumatera Province. It can be seen that Padang city is a major destination for inter-regency trade in West Sumatera. This is because Padang city has a very large population and the center of trading connecting other regions. As rice is the main

staple, there is always a high demand for rice from other regions. The main rice producing regions in West Sumatera Province are Solok regency, Agam regency, Pesisir Selatan regency, Padang Pariaman regency and Tanah Datar regency. Rice wholesale traders in Padang city also resell the rice to other regions - both in West Sumatra and outside of West Sumatra.

The regions that sell chicken eggs to other regions are Tanah Datar regency, 50 Kota regency, Padang city, Solok city, Sawahlunto city, Bukittinggi city and Payakumbuh city. It does not necessarily mean that a selling regency is surplus region. However, some regencies are really surplus regions. Tanah Datar regency, 50 Kota regency, Padang city, and Payakumbuh city sell chicken eggs to other regions because these regions have a surplus of eggs, while Solok city, Sawahlunto city and Bukittinggi city buy eggs from surplus regions and then resell them to other regions.

50 Kota regency is the largest seller of chickens in West Sumatra, while Payakumbuh city ranks the second. Other selling regencies are Padang city, Tanah Datar regency and Padang Pariaman regency. The selling regency of fresh seafood is Pesisir Selatan regency, Padang Pariaman regency, Agam regency, Padang city, and Solok city. In general, this selling regency is a producer of fresh seafood (except Kota Solok). Solok can be a seller of fresh seafood, although it is not a producer, because wholesale traders in the region buy seafoods and sell them to other regions adjacent to Solok city such as Solok Regency, Sawahlunto city and Sijunjung Regency. Most of the sales of fresh seafood are destined to Padang where a high demand exists.

Conversely, Appendix 2 shows which regencies buy from which. Padang city turns out to be the largest rice buyer. Padang City buys rice from Pesisir Selatan regency, Solok regency, Tanah Datar regency, Padang Pariaman Regency, Agam Regency and Bukittinggi City. Almost all other regencies buy chicken eggs from Payakumbuh city and 50 Kota regency. Padang city is the largest chicken egg buyer because it suffers from undersupply. It buys chicken eggs mainly from Payakumbuh city, while 50 Kota regency is the biggest chicken egg producer and Payakumbuh city is the second. Other important egg selling regions include Padang city, Tanah Datar regency and Padang Pariaman regency. We can also see that Padang city is the largest buyer of chickens in West Sumatra. Solok city is the second largest and Pasaman Regency is the third. The egg wholesale traders of Padang city buy slaughtered chickens not only to meet the needs of its own inhabitants, but also to be sold again to other regions. Similarly, Solok city and Pasaman regency also resell eggs to other regions.

Trade between 50 Kota regency and Payakumbuh city is very large in number. Although 50 Kota regency is the selling region of slaughtered chicken, they also buy from Payakumbuh city and vice versa. Besides trading with Payakumbuh city, 50 Kota regency also trades with other regions in West Sumatra. Other regions buy slaughtered chicken from both Payakumbuh city and 50 Kota regency.

Although Padang is the seller of fresh seafood to other regions, but it also buys seafood from other regions, i.e. from Pesisir Selatan regency and Padang Pariaman regency. Some regions such as Pesisir Selatan regency, Padang Pariaman regency and Agam regency only sell fresh seafood to other regions, without buying any from them.

The indices of interregional economic integration in West Sumatera Province, denoted by TF (see Equation 2) are shown in Table 1. Pesisir Selatan regency is more economically-integrated with Padang city with an index of 16.8 compared with Solok city with an index of only 0.03. Whereas with other it is not integrated at all. Solok regency is better integrated with other regencies, except with Pesisir Selatan regency and Pariaman city, highest with Padang City (10.89), followed by Payakumbuh city (9.98) and 50 Kota regency (6.83).

Sijunjung regency is integrated with Solok regency, Tanah Datar regency, 50 Kota regency, Solok city, Sawahlunto city, Padang Panjang city and Payakumbuh city. The highest index for Sijunjung regency is with Tanah Datar regency (3.86), followed by Solok city (3.53) and Solok regency (2.80). This shows that Sijunjung regency is more integrated with these three regions compared to other regions in West Sumatera Province. Tanah Datar regency is integrated with all other regions except with Pesisir Selatan regency and Pasaman regency, as indicated by the index with Payakumbuh city at 6.45 and with Sawahlunto city at 6.14. Padang Pariaman regency is integrated with other regions in West Sumatera province except with Pesisir Selatan regency, Sijunjung regency and Pasaman regency. The index of Padang Pariaman regency's economic integration with other regions is highest with Pariaman city at 36.63, followed by Solok regency at 6.68, Solok city at 4.74 and Tanah Datar regency at 3.55. Meanwhile, it is not integrated at all with some other regions, as shown by zero indices.

Agam regency is also integrated with almost all other regions in West Sumatera except with Pesisir Selatan regency, Sijunjung regency and Sawahlunto city. The highest value of integration index for Agam regency is with 50 Kota regency (9.44), followed by Payakumbuh city (8.76), Padang Panjang city (2.60), Pasaman regency (2.52) and Bukittinggi city (2.23). 50 Kota regency itself is integrated with all other regions except with Pesisir Selatan Regency. The highest integration index for this regency is with Payakumbuh city (30.29), followed by Padang city (14.34), Agam regency (9.44) and Bukittinggi city (9.12).

Pasaman regency is only integrated with Solok regency, Agam regency, 50 Kota regency, Bukittinggi city and Payakumbuh city, with the highest index being with Payakumbuh city (7.74), 50 Kota regency (5.43), and Agam regency (2.52). Meanwhile, Padang city is integrated with almost all other regions in West Sumatra Province, except with Sijunjung regency, Pasaman regency and Sawahlunto city. The highest index is with Pesisir Selatan regency (16.80), 50 Kota regency (14.34) and Solok regency (10.89).

Solok city is integrated with almost all other regions in West Sumatra Province, except with Pasaman regency and Pariaman city,

with the highest integration being with Padang Pariaman regency (6.68), Sawahlunto city (6.65) and Payakumbuh city (5.08). Sawahlunto city is only integrated with Solok regency, Sijunjung regency, Tanah Datar regency, Padang Pariaman regency, 50 Kota regency and Solok regency. The value of the index of integration is with Solok city (6.50), followed by Tanah Datar regency (6.14), 50 Kota regency (4.99) and Padang Pariaman regency (3.34).

Padang Panjang city is integrated with almost all regions, except with Pesisir Selatan regency, Pasaman regency, Sawahlunto city, and Bukittinggi city, with the highest being with Payakumbuh city (6.02), Pariaman city (3.36) and Padang Pariaman regency (3.03). While Bukittinggi City is also integrated with almost all regions in the province except with Pesisir Selatan regency, Sijunjung regency, Sawahlunto city and Padang Panjang city. The value of the index of integration is highest with Payakumbuh city (12.25), then followed by 50 Kota regency (9.12), and Agam regency (2.23). Payakumbuh city has high indices of integration with commodities with Payakumbuh city is 50 Kota regency (30.29), Bukittinggi city (12.25) and Solok regency (9.98), while it also has good integration with almost all regions in West Sumatra Province, except with Pesisir Selatan regency and Sawahlunto city.

Pariaman city is only integrated with Tanah Datar regency, Padang Pariaman regency, Agam regency, 50 Kota regency, Padang city, Padang Panjang city, Bukittinggi city and Payakumbuh city, while it has little integration with other regions, as indicated by 0 indices. The highest index of integration is with Padang Pariaman regency (36.63), followed by Padang Panjang city (3.36) and Payakumbuh city (2.17).

The above description implies several things. First, geographically adjacent regions generally have a close spatial relationship. This is reflected by the high integration index of the two regions. Second, the availability of a road network connecting the two regions yields a better degree of integration. For example, in the northern part of West Sumatra, transportation between 50 Kota regency and Pasaman regency has not been good because the road infrastructure between the two regions has not been well developed. Third, since the consumption of primary goods is closely related to the population, then the region with relatively large population has a greater chance of becoming a trade nodal region, even though the region is not a producer of a commodity.

Table 1. Interregional Economic Integration Indices for Regions in West Sumatera Province

Regencies of Destinations Selling Regencies	Kab. Solok	Kab.Swl. Sijunjung	Kab. Tanah Datar	Kab. Pdg Pariaman	Kab. Agam	Kab. 50 Kota	Kab. Pasaman	Kota Padang	Kota Solok	Kota Sawahlunto	Kota Padang Panjang	Kota Bukittinggi	Kota Payakumbuh	Kota Pariaman
Kab. Pesisir Selatan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.80	0.03	0.00	0.00	0.00	0.00	0.00
Kab. Solok		3.53	2.00	4.74	2.00	6.83	1.57	10.89	3.03	2.88	1.06	0.59	9.98	0.00
Kab.Swl. Sijunjung			3.86	0.00	0.00	2.56	0.00	0.00	2.80	2.66	1.07	0.00	0.76	0.00
Kab. Tanah Datar				3.55	0.91	4.66	0.00	1.10	0.41	6.14	2.69	1.34	6.45	1.33
Kab. Pdg Pariaman					1.19	3.17	0.00	2.77	6.68	3.34	3.04	2.11	2.61	36.63
Kab. Agam						9.44	2.52	1.99	0.86	0.00	2.60	2.23	8.76	0.44
Kab. 50 Kota							5.43	14.34	4.99	4.91	1.55	9.12	30.29	1.39
Kab. Pasaman								0.00	0.00	0.00	0.00	0.45	7.74	0.00
Kota Padang									0.46	0.00	0.72	0.99	7.89	0.32
Kota Solok										6.50	0.20	0.09	5.08	0.00
Kota Sawahlunto											0.00	0.00	0.00	0.00
Kota Padang Panjang												0.00	6.02	3.36
Kota Bukittinggi													12.25	0.41
Kota Payakumbuh														2.17

CONCLUSION

West Sumatera province has experienced a slow structural change in the sense that the share of primary (mostly agricultural) products in the economy has not substantially declined over the last decade. Spatial interaction between regions within the province is very limited due to the fact that commodities that are traded inter-regionally within the province seem to be similar.

Many regions in the West Sumatera province are not highly economically integrated with one another. This is due to the fact that trading takes place around the commodities that seem to be similar because of the agrarian characteristics of most of the regions. Geographical proximity is the most important determinant of spatial interaction, in this case trading in primary commodities between regions.

In order to promote within-province interregional trade, hence with to improve spatial interaction and economic integration among the regions (regencies and municipalities), specialization in production by taking comparative advantages of each region is required. Furthermore, acceleration of intra-province road network development would trigger more internal trades, and therefore there would be a potentially higher rate of GDRD growth of the province.

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Appendix 1: Inter-regency Selling Flows in Selected Primary Commodities

Regency of Destination \ Selling Regency	Kab. Pesisir Selatan	Kab. Solok	Kab. Swl Sijunjung	Kab. Tanah Datar	Kab. Padang Pariaman	Kab. Agam	Kab. 50 Kota	Kab. Pasaman	Kota Padang	Kota Solok	Kota Sawahlunto	Kota Padang Panjang	Kota Bukittinggi	Kota Payakumbuh	Kota Pariaman
Kab. Pesisir Selatan															
1)	215.3								215						
2)	12.7														
3)	393.1														
4)	53.8								98.4	44.6					
Kab. Solok															
1)		73.9					46.6		141.6	27.4	21.1	21.1	43.2	31.2	
2)		10.3													
3)		449.3													
4)		29.6													
Kab. Swl. Sijunjung															
1)			138.2												
2)			6.1												
3)			289.4												
4)			19.9												
Kab. Tanah Datar															
1)				139.2					133.4			16.3	26.9		23.0
2)			1.4	7.7								0.8			
3)				438.1								132.2	132.2		
4)				22.5											
Kab. Pdg Pariaman															
1)					201.6	97.9			131.5			46.6			60.0
2)					11.6										
3)		91.2			304.1				136.1						
4)					38.9	38.9	21.3		65.6				8.8	10.2	
Kab. Agam															
1)						218.9		60.5	150.7			11.0	38.4	43.2	14.9
2)						13.3									
3)						557.3									
4)						82.7		6.6					45.1	31.0	
Kab. 50 Kota															
1)						187.7	144.0						27.4	39.4	
2)		0.2		0.1	0.1		7.3							3.2	
3)						145.6	319.0	85.5	1,073.7	56.6	174.9	28.5	235.0	290.0	57.9
4)							28.1								

Kab. Pasaman														
1)										229.0				
2)										7.6				
3)										565.9				
4)										19.1				
Kota Padang														
1)	292.8									724.8			37.4	
2)	8.6									16.3				
3)	330.9	403.9								1,714.6				
4)				19.4				19.7		197.5	70.6		12.8	43.3 25.5
Kota Solok														
1)			90.7							100.3	68.2	12.0		
2)			0.4							1.1	0.4			
3)										596.2				
4)		0.3	0.2							256.8	205.4			
Kota Sawahlunto														
1)			60.9								128.6			
2)			0.7								1.2			
3)											213.8			
4)											43.6			
Kota Pdg Panjang														
1)									56.2			138.7		40.3
2)												1.9		
3)												159.8		
4)												18.9		
Kota Bukittinggi														
1)							61	89.3				98.9	22.6	25.9
2)					0.2							3.1		
3)												475.2		
4)												11.3		
Kota Payakumbuh														
1)						2.9		37.4				38.4	180	
2)						0.6							3.0	
3)		287.3		211.6		196.6	483.9	272.2	574.6	120.9		105.8	332.6	272.2 166.3
4)													12.0	
Kota Pariaman														
1)						50.9				89.8				137.8
2)														2.9
3)														190.1
4)														10.7

Source: Survey Results

*Shaded cells represent within own regency trade

1) Rice (in tonnes)

2) Chicken eggs (in thousand bundles, 1 bundle = 10 crates, 1 crate = 30 eggs)

3) Slaughtered chickens (thousand boxes, 1 box = 12 slaughtered chickens)

4) Fresh seafood (in tonnes)

Appendix 2: Inter-regency Buying Flows in Selected Primary Commodities

Regency of origin \ Buying regency	Kab. Pesisir Selatan	Kab. Solok	Kab. Swl.Sijunjung	Kab.Tanah Datar	Kab.Pdg Pariaman	Kab. Agam	Kab. 50 Kota	Kab. Pasaman	Kota Padang	Kota Solok	Kota Sawahlunto	Pdg Panjang	Kota Bukittinggi	Kota Paya-kumbuh	Kota Paria-man
Kab.Pesisir Selatan															
1)	215.3								216.2						
2)	4.2						6.2		8.6					4.1	
3)	121								272.2						
4)	196.8														
Kab. Solok															
1)		290.9		41.8		75.4									
2)							6.2							4.1	
3)							159.8		133.9					155.5	
4)										29.8					
Kab Swl Sijunjung															
1)		108.5	92.6	99.4							16.3				
2)							1.2		4.9						
3)							233.3							56.2	
4)									19.9						
Kab.Tanah Datar															
1)		115.2		120.5	22.3	82.8							24.7		
2)				4.9			3							2	
3)				67.4	101.5		215.6							185.8	
4)					8.5	2.7		3.4							
Kab.Pdg Pariaman															

1)		193			237.1									
2)					1.2		5.8							5.8
3)					95		224.6							216
4)					190.1									
Kab. Agam														
1)		129.1			71.5	245.3	27.4	14.9						
2)							8.2							5.2
3)							341.3							216
4)						206.6								
Kab. 50 Kota														
1)				119.5			131							
2)							5.5							5
3)							1,425.00							1,477.40
4)	7					12.6			7					
Kab. Pasaman														
1)		127.2				104.6		89.8						
2)							4.5							3.1
3)							349.9							216
4)						4.4								
Kota Padang														
1)	306	422.4		52.8	141.6	324			43.2				52.8	
2)							7.7		13.5					3.8
3)					707.2		498.5		1,089.50					154.2
4)	119.5				191.5				77.8					
Kota Solok														
1)	2.4			30.7	36.5	73.4				2.4			8.4	
2)							1.4							0.9
3)					280.8		203							112.3
4)	35.6								62.9					
Kota Sawahlunto														
1)		109.4							39.8	95.5				
2)							0.5		1.7					
3)					171.1		133.5							88.6
4)									19.9					
Pdg Panjang														
1)		40.3		103.7		176.4							31.2	

2)				0.4			0.9						0.6	
3)					82.1		43.2						34.6	
4)					8.8				10.1					
Kota Bukittinggi														
1)		55.9		63.1		142.1	27.4						142.1	
2)							2							1.3
3)					90.7		237.6							146.9
4)	2.8				2.8				2.8					
Kota Payakumbuh														
1)		10.6		32.6		53.8	124.8							10.6
2)							2.1							1.5
3)							1,762.60							1,153.40
4)	1.2				4.5				3.8					
Kota Pariaman														
1)				158.4	69.1							22.1	28.8	158.4
2)					0.9		1.2							0.8
3)					112.3		60.5							17.3
4)					6.2									4.5

Source: Survey Results

*Shaded cells represent within own regency trade

- 1) Rice (in tonnes)
- 2) Chicken eggs (in thousand bundles, 1 bundle = 10 crates, 1 crate = 30 eggs)
- 3) Slaughtered chickens (thousand boxes, 1 box = 12 slaughtered chickens)
- 4) Fresh seafood (in tonnes)