

Arrested Agglomeration: The Spilling Out of Singapore's Economic Activities into the Surrounding Sub-Region

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If cities have the ability to reach across borders to develop functional city regions, then the process of transborderization across sub-regional spaces depends on a well-functioning governance structure and leverage on potential agglomeration economies. The case of Singapore shows how thorny these processes are. Statistics show rapid growth in the sub-region as a result of inter-state cooperation. This is supported by the experiences of four case companies in the transborder region. However, taking a regional political economy perspective shows that inter-state cooperation is susceptible to the ebbs and flows of strategic interests, leadership changes, and popular protests without strong associations and rules to govern behavior. Agglomeration economies work well within national boundaries; however, they become problematic when economic activities stretch across a sub-region that not only has different factor endowments but also experiences market-driven developments that are constrained by political boundaries.

Keywords: City region, Transborder development, Spillovers, Sub-Regional development, Singapore

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“There has been definitely a quantum change in attitude, giving preference to economic rationality. Who could have, for instance, thought of an official endorsement of the Southern Growth Triangle (SIJORI) in 1989? Since independence, Singapore has been the whipping boy of Malaysia and Indonesia... suddenly, both countries allowed their per-

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iphery to gravitate towards another pole, which happened to be Singapore” (Ng 2000).

I. Introduction: Agglomeration and City Regions

Scott (2001) considers city regions as comprising a competitive agglomeration arising out of denser networks of production. Cost considerations for transport, inter-firm transactions, labor availability, and the need to have short response times to market conditions motivate these concentrations (Scott and Storper 2003). In this manner, successful regions then become the key engines of national economies (Scott and Storper 2003). Within East Asia, we see evidence of different types of transborder linkages, particularly with China as the region’s fastest growing economy (Kim 2011). Hong Kong, as China’s special administrative region, is a special case demonstrating how the city has evolved to have dense economic ties with Southern China (Chan 2011).

If this concept of city region is built on an assumption of agglomeration, then this relationship needs to be explained in detail. For instance, the cases of agglomeration cited in Scott’s (2001) article suggests a set of shared resources external to the firms but are known within the sub-region. As Maskell and Kebir (2006) suggest, these are spillovers classified under locational economies. To the extent that the sharing of resources from co-location is highly similar, then the types of activities are similar or complementary, and in the typical example, comprise small firms supported by family and community institutions (Paniccia 2006). The concept of city regions, however, moves beyond the notion of locational economies to include urbanization economies, specifically the advantages enjoyed by companies resulting from the diversity created by the presence of large cities.¹ The advantages created by the co-location of a set of diverse economic activities and skill sets typical in a large city form the dynamics of urbanization economies. Following Scott (2001), this combination of specialization clusters as well as diverse urbanization economies provide an example of how a city’s economy spills onto neighboring regions. Sassen (2001) points out that the focus on city regions calls for a change of scale from the city to the region.

The growth of a city region, thus depends on how economic activities cluster at this scale drawing on advantages which are tied to co-location

¹ Please see the review, *Locational and Urbanization Economies* by Rosenthal and Strange, 2004.

and urbanization. Reviews of the literature by Ihlanfeldt (1995) and Rosenthal and Strange (2004) provide ample evidence of how cities contribute to the development and prosperity of the surrounding region. However, this market-driven model of growth requires an added set of dynamics when we consider transborder regional development.

Three points from Ho and So's (1997) paper comparing the borderlands of Hong Kong and Singapore remain important as analytical guidelines for the present paper. First, the global organization of production, which refers to the ability of capitalist modes to organize itself across multiple locations to take advantage of the differing availability of resources (land, labor, and capital) is an important impetus in the expansion of economic activities beyond the borders of the city. The division of labor in the production process also defines the economic division of labor among the countries located within the sub-region. Second, and this is what gives the paper its particular focus, is the power of borders to hold and keep apart people and activities (Ford and Lyons 2006). As expansion moves across political boundaries, it is equally important to keep in mind the changing political climate among neighbors. This raises the issue of the interplay between economic and political forces, both in terms of its mutuality as well as the tensions involved in their interactions. Third is the importance of identifying the different interests at play. The focus on three sets of interests, namely, state, capital, and community, allows the anchoring of broader macro processes with effects at the local level; it also facilitates the identification of the mediating interests at play.

In the present paper, we incorporate these three points in the analysis and add a fourth point, that is, the need to incorporate different types of economic activities. If the regionalization of production occurs as capital moves from more advanced to more peripheral regions, then the economic makeup of these incorporated regions must be considered. As Mubyarto (1997) points out, the impacts of foreign direct investment (FDI) have to be seen in terms of its impact on the different types of economies and the communities implicated in them.

Putting the four points together, the present paper provides an analysis of an expanding city region. The fact that this expansion crosses political boundaries is significant, because it requires inter-state action. How the state and capital impact on the communities of the peripheral region depends on its insertion as well as the displacement of secondary and traditional modes of production by newer forms of state-sanctioned activities. The growth that stretches across boundaries implies that expan-

sion is never smooth; it also indicates that development can be arrested not only by the global and regional economy, but by instabilities of bilateral ties that may be motivated by both political and economic considerations. Thus, it can work at cross purposes. For this reason, a policy-driven analysis of transborder regions requires a consideration of the strategies needed to transform the region into a functional entity as well as the interventions required to manage the negative effects of displacement and unrestrained growth.

II. Singapore's Transborder Sub-Region

The growth triangle is the name given to a tri-partite arrangement in the 1990s among Singapore, Indonesia, and Malaysia, in which they agreed to collaborate on a range of developmental projects. However, after the first 10 years of development, the project has lapsed into bilateral relations between Singapore and Malaysia, and Singapore and Indonesia.² In part, this is due to the lack of economic synergy between Johor (Malaysia) and Riau (Indonesia) (Abdullah 1996). The past conflicts among the three countries have also resulted in a continuous attempt at maintaining cooperative ties; in such a system, it is Singapore that has the most to gain and lose, since it takes the most active role in diplomacy.³

Between Riau Islands and Johor, the two regions on the side of Singapore, the latter has received more from the inter-state cooperation through the involvement of state-linked companies. As a result, the islands have experienced significant infrastructural developments⁴ along with the influx of foreign and domestic investments (Figure 2).

² On 28th February 2008, Singapore's Foreign Minister, in a parliamentary reply to queries, said, "like with Malaysia, Singapore has strong economic links with Indonesia." Projects in the Riau islands were mentioned. Mr Yeo mentioned in the same parliamentary session, that "Dr. Ong (a member of the Parliament) asked about the progress of the Indonesia-Malaysia-Singapore Growth Triangle. This was in fact an idea first mooted by Senior Minister Goh Chok Tong in 1989. Although we have not had meetings for many years, the time may be ripe to revive it or, to use Dr. Ong's words, to revitalize it."

³ Small states play a more active role in maintaining regional diplomacy (see Katzenstein 1985).

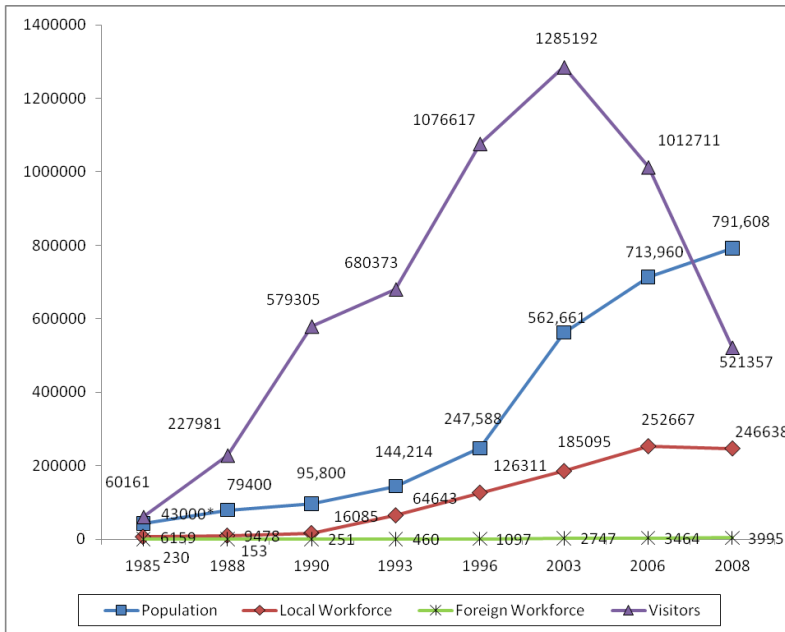
⁴ The Batam Industrial Development Authority Report entitled, "Barelang: Batam-Rempang-Galang" (1997?) includes the following infrastructural developments: roads, bridges, water, and electrical supplies, telecommunications, port, and airport facilities.

For Johor, following several years of good bilateral relations in the early 1990s, which led to the formalization of the growth triangle in 1994, the next decade involved poor relations along with financial turmoil and the dampening of inter-state cooperation between Singapore and Malaysia (Barter 2006). Barter's (2006) account of transport development ventures between Singapore and Malaysia showed the tensions between the two countries even amidst the economic gains generated from the cooperation. This shows the power of politics and popular opinion to constrain agglomeration tendencies stemming from central and hinterland sub-regions.

The Malaysian government has worked fairly independently in terms of planning and infrastructural developments for Johor (see Guinness 1992). In the 1970s, before the start of the growth triangle, Johor already had the infrastructure to host industrial production. French TNC Thomson Electronics had a fully operational plant by 1979 (Field 2006). A respondent interviewed by Phelps (2004b, p. 358) observed that "long before you talked about the growth triangle, HP (Hewlett-Packard) had their subcontractors in Johor." This type of industrial linkage, along with a very dense cross-border trade and consumer ties, creates an important economic constituency, which buffers the more volatile political mood swings of the two countries. Despite the ups and downs of bilateral relations, the economies of Johor and Singapore are increasingly intertwined, especially since they are being facilitated by the two road links. About 150,000 Malaysian workers commute to Singapore to work in its factories on a daily basis (*New Straits Times* Feb. 2009). The industrial estates in Johor have, over the years, seen an increasing presence of Singaporean and multinational companies with operations based in Singapore as well. More recently, since 2007, there has been a more comprehensive Malaysian development plan dubbed the Iskandar Development Project with four of the five flagship projects ringing the northern coastline of Singapore in close proximity to the two road links. Nevertheless, it is still too early to determine and assess the result of this project.

III. Indicators of Development

Given that inter-state cooperation is strongest on the Indonesian side, we focus on the Riau Islands, particularly Batam, where data have been most systematically collected. Figure 1 shows a set of manpower indi-

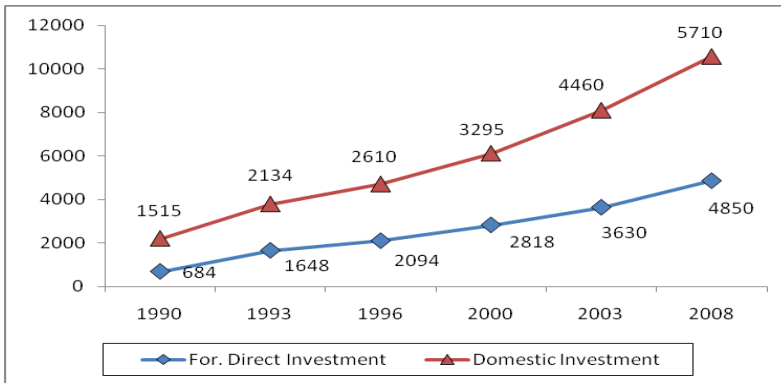


Note: The first data point for population in the Figure should be 1983.
 Source: Batam Industrial Development Authority (BIDA) (1997) and <http://www.batam.go.id/home/eng/index.php>.

FIGURE 1
 MANPOWER INDICATORS FOR BATAM ISLAND 1985-2008

icators dating back to 1985. In 1973, Batam was estimated to have 6,000 residents mainly engaged in fishing and farming. By 1978, when the Batam plan was made operational by the Indonesian government, the population grew to 31,800; in 1983, the figure rose further, reaching 43,000 and 79,400 in 1988 (Figure 1). A rather rapid increase in the 1990s followed, when the projects started taking off as a result of inter-state cooperation.

The tourists/visitor figures include the traffic from Singapore. They also include Indonesians using Batam as a transit stop to and from Singapore. The Batam stop serves as a cheaper way to travel to the city state compared with a direct flight from Jakarta (Lyons and Ford 2007). The visitor figures show a spectacular increase, peaking in 2003 at well over a million visitors. By the mid 2000, visitor arrivals have already started to slow down yet Bintan, the neighboring island, had achieved a



Source: Batam Industrial Development Authority (BIDA) (1997) and <http://www.batam.go.id/home/eng/index.php>.

FIGURE 2

FOREIGN AND DOMESTIC DIRECT INVESTMENT IN BATAM (US\$ MILLION)

fuller development as a tourist destination for Singapore tourists (see Bunnell, Muzaini, and Sidaway 2006). Moreover, the more sleazy side of Batam as a sex destination deterred families from visiting it (see Linquist 2004; Ford and Lyons 2006). The steep drop in 2008 is most likely connected to the recent economic crisis. Tourism, as a non-essential good, is one of the first items to be scaled back as regional travelers began to tighten their belts.

Although the growth of the local workforce had not been as explosive as tourism growth, it greatly increased in the 1990s through the early 2000s. This expansion in the local workforce grew further as foreign and domestic direct investments increased (Figure 2).

Foreign workforce is small due to a specific reason. A TNC manager once commented on the difficulties of placing management in more remote areas, saying, “Large companies have difficulty bringing talents out here to oversee projects. But it helps having Orchard Road and places like that in Singapore to make it more tolerable” (cited in Field 2006, p. 82). Thus, the proximity between Singapore and Batam serves as a reason for relocating part of the company operations to Batam. This proximity means that the management can be based in Singapore and simply make frequent trips to Batam to oversee operations. Thus, in Batam, the number of people comprising foreign labor mainly in the management side (3,995) is miniscule compared with the local labor

workforce.

Although domestic investment is higher than foreign investment (as indicated in Figure 2), the interaction between the two types of flows are important. Much of the initial investments in Batam are the result of joint ventures between large private firms close to the government and Singapore government-linked companies in the building of infrastructural projects, such as industrial parks and public utilities in what was essentially a greenfield site before the 1980s (Field 2006).

As rosy as these economic indicators may be, the economic development of Riau also suffered from political developments. For example, the close bilateral relations which led to Singapore involvement in the Riau Islands slowed considerably when there was a regime change in Indonesia (Phelps 2004a). Moreover, popular protests, such as the one in 2000, during which students joined villagers in Bintan to protest the displacements, access, and compensation, resulted in "massive cancellations of hotel bookings, disruptions to the transfer of supplies, and was a major blow to tourist and investor confidence" (Chang 2004, p. 4).

Phelps (2004a) also states that the enclave nature of industrial development in Batam creates a skewness with the absence of local backward linkages and spillovers. The survey conducted of industrial park tenants by Yeoh *et al.* (2005, p. 59) indicated that those in the Batam Industrial Park perceived that the most frequent problems faced were "in order of ranking, difficulties in obtaining quality support services, procuring materials and components locally, acquiring and adapting essential technologies, (as well as) high and/or rising overhead and material costs." Clearly, the first three problems were those created by the lack of an industrial cluster.

Shifting the analysis from capital and labor to community, the existing literature has documented a variety of effects at the community level. The desire to control developments by government bodies on both the Singapore and Indonesian side meant restrictions to the flow of people. Singaporeans and foreigners can cross over with ease into the Riau Islands, but it is more difficult for Indonesians to make the same journey to Singapore because of ongoing concerns on illegal workers (Ford and Lyons 2006). Batam also instituted internal population control programs, in which prospective migrant workers must make a deposit equivalent to a return plane ticket home and must have sufficient funds to last for two weeks (Ford and Lyons 2006). Large-scale agricultural, industrial, and tourism developments have also led to systematic displacements of local settlers. Tourism projects in Bintan have displaced vil-

lagers and fishermen affected by the developments (Bunnell *et al.* 2006). The development of large plantations in the Sumatra side of Riau displaced the Orang Talang (Bamboo people) from their ancestral lands (Chou 2006), as well as the Orang Laut (People of the Sea) from their fishing grounds (Mubyarto 1997).

Industrial development brings about social change, displacements, and new inequalities that are more severe when they happen across rather undeveloped borderlands of the Riau Province. As with change associated with economic change, these developments have to be managed at the point of origin. For example, arresting the displacement of traditional activities requires local level intervention with NGO participation. It also involves projects, such as preserving habitats, and integrating communities into tourism activities while remaining sensitive to community traditions and practices.

More positive interventions from across the border can be seen from a modest vegetable project. This project involved the transfer of technical knowledge in terms of seed, method of farming, pest control, and nutrient logistics from the Singapore Agri-Food and Veterinary Authority; meanwhile, the Indonesian government provided land and low interest loans to participating farmers.⁵ The project also involved the building of packing facilities and boats with chillers to transport the vegetables to Singapore where Singapore's government-linked largest supermarket chain, NTUC Fairprice served as the institutional buyer. The data showed that farmer incomes have increased significantly (Menkhoff 2007).

IV. Transborderization and Its Impact on Singapore

The literature on the growth triangle involving Singapore, Johor, and Riau (SIJORI) is by now spread out over a 15-year period since the first articles appeared from 1993-1994. The argument has been typical in the sense that the literature documents the changes in the border regions as a result of the development of Singaporean economic and tourism activities in these areas. These changes have been reported fairly extensively in terms of the socio-economic experiences of the receiving sub-regions. From the Singaporean perspective, economic gains have been realized as Singaporean and multinational companies gained access to cheaper land and labor.

⁵The project emphasized the participation of small farmers rather than large commercial operations (Menkhoff 2007, p. 19).

It is important to move beyond these fairly general descriptions and take a firm-level case analysis to document the evolution of these trans-border activities over time.⁶ Four companies and their operations were selected in order to provide brief but significant sketches on the role of Singaporean-located capital and their operations in the border regions. Three of the four companies, namely, Mashushita (Japan), BASF (Germany) and Seagate (US), all have their Regional Headquarters (RHQ) in Singapore. They have developed significant manufacturing and service operations in Singapore for over two decades. They were selected for analysis whose results can shed light on the division of labor the companies developed between Singapore and its border regions. Sembawang Engineering was chosen as the fourth company. A government-linked company, Sembawang, was the lead company paving the way to growth triangle developments. A study of its key activities can show how these state-led developments have evolved compared with market or industry-led ventures.

A. Scenario 1: Manufacturing Consolidation and Services Division (Matsushita & Seagate)

The production of hard disk drives in Singapore has seen its golden years from 1997-2004, during which it produced one-third of the world's hard disks (*Straits Times* 30 July 2006). However, after the mid 2000s, production facilities moved into Malaysia and emerging countries, such as Thailand and China. The adjustment of this particular type of production and its role in the city region can be seen in the activities of Matsushita and Seagate. The Japanese multinational consumer electronics giant has been in Singapore since the 1970s. As such, the activities of this company parallel the logic of the SIJORI development, in which land and labor in the neighboring region were used to host labor-intensive manufacturing activities. Matsushita had already developed its regional headquarters in Singapore, and the spatial logic of production meant that it could oversee quite easily its plants in Johor and Batam. However, it eventually stopped its manufacturing operations in Singapore, and the Singapore side concentrated on management and sales activities. For Singapore, such a strategy meant the city could keep its advanced producer services while manufacturing is close by.

The case of Seagate followed a similar trend. Its plants in Malaysia

⁶ For an industry-level analysis of transborder linkages, see Chen (2011).

TABLE 1
FOUR COMPANY SCENARIOS IN SIJORI

Company/ Industry	Riau	Johor	Singapore
Matsushita (Japan) Consumer Electronics	Factory produces HDD with admin support from Singapore (BT 22/5/2002)	Factory in Johor produces audio and TV equipment with coordination from Singapore (BT 6/6/1991)	RHQ in Singapore (BT 6/6/1991). Stops HDD production in Singapore, 1600 workers laid off. Singapore office focuses on procurement, sales, and admin support for Batam plant (BT 22/5/2002).
Seagate Technology (USA)	PCB plant in Batam. Operations managed from Singapore (BT 8/4/1997)	Senai PCB assembly in 1996. Operations managed from Senoko plant in Singapore. (NST 3/6/1996). Seagate shuts down Irish plant and moves disk drive components production to Johor (Irish Times 31/10/2007)	RHQ in Singapore. Senoko plant in Singapore and Batam account for 65% of Seagate's internal demand for PCBs (NST 3/6/1996). Senoko plant shuts down with activities moved to Senai and the other plant in Singapore (ST 17/1/2000). Seagate buys Maxtor and consolidates its HDD and R & D operations in Singapore (ST 22/12/2005; ST 22/3/2006)
BASF (Germany) Chemicals		Polystrene Plant in Johor in 1992 (Reuters 4/5/1990). Textile and Leather research center in 1997 (NST 15/5/1998)	Operated largest SMPO Production facility in Asia, which is a joint venture with Shell (BT 4/7/2005). Asia RHQ in HK and SG (BT 1/3/2007; 29/4/2006). Establishment of its three nano research facilities in Singapore in 2006 (BT 29/4/2006).
Sembawang Corporation (various affiliates) (Singapore) Government-liked company involved in infrastructure projects and oil rig construction	Production site in Batam to build oil and gas platforms in South-East Asian fields (ST 14/10/1997). Expanded production facilities in 2006 (BT 14/7/2006)	Small stake in fabrication yard to produce platform components for Malaysian oil and gas fields in Pasir Gudang Port with Sime Darby as majority stakeholder (BT 14/4/89; ST 5/5/93)	Shipyards and production facilities for oil and gas platform construction (ST 14/10/97). Consortium led by Sembawang worked out a 22-year deal to build a 480 km-pipeline that will deliver gas (used to generate electricity) to Singapore in 2001. (BT 6/8/98). Further sale contracts were signed in April 2008.

expanded rapidly, taking production capacity from the Singapore Senoko plant, which closed down, as well as from the Seagate plant in Ireland. Seagate also developed lower technology PCB assembly operations in Batam. The combined presence of plants in Johor and Batam probably slowed the exit of Seagate from Singapore; hence, its Singapore operations were consolidated with Seagate's takeover of another electronics

company known as Maxtor. Both operations were downsized, and the result was a smaller but higher technology HDD production. On August 5, 2009, the front page of the *Straits Times* announced that Seagate dismissed 2,000 workers, closed its Singapore HDD plants, and moved its activities to other existing HDD plants (China, Thailand, and Malaysia were the locations mentioned). Thus, Seagate followed a logic, which drove Matsushita to abandon its HDD manufacturing in Singapore.

Electronics production continues to be a vital industry in Singapore, accounting for 90,000 workers in 2008 (SEID 2009). Moreover, both companies have other higher end manufacturing operations in Singapore. Seagate, for example, has a disk media plant, and its particular activity is where Singapore's competitive advantage resides at this particular point in time (ST 5/8/2009). The point is that the restructuring process is dynamic, and electronics giants, such as Matsushita and Seagate, are constantly making these adjustments in response to market conditions. In this sense, the move of its facilities to border sub-region is a first step before more drastic moves. This suggests that the border region acts as a buffer, thereby giving Singapore a bit more time (2 to 3 years) to make its own adjustments.

B. Scenario 2: Manufacturing Division and Expansion in Singapore (BASF)

Although the Matsushita and Seagate accounts represent a particular branch of electronics production that can be considered sunset stories,⁷ BASF accounts represent the other end of the spectrum. The chemical giant BASF has developed a strong presence in Singapore by establishing its regional headquarters in the country. It is the largest Asian production plant with significant research activities in the city state. There is some division of activities between Johor and Singapore, but unlike the electronics companies, the scale of activities is skewed towards Singapore both in manufacturing and services alike.

C. Scenario 3: Manufacturing Expansion with Expanding Collaborative Agreements (Sembawang)

Sembawang represents the Singapore government's side of the story, representing the corporate reach of the government in SIJORI develop-

⁷ Both accounts show the decline presence of the company activities in the city region.

ment. The skewed development, with Batam having the greater share of Singapore attention, is seen in the scale of Sembawang activities in Batam and other islands. In contrast, Sembawang's diminished economic presence in Johor is through its minority share in a fabrication yard which is involved in building platform components for Malaysian oil and gas fields. Indonesia is its main focus; this is an assumption we made based on our sketch of a fraction of its activities as a builder of platforms for Indonesian oil and gas exploitation. The activities of the company should be seen as the collaboration between Indonesia and Singapore. With Sembawang's activities, we see how early efforts in the Indonesian-Singaporean bilateral collaboration in the development of the Riau Islands have led to further developments, notable of which is the exploitation of the Natuna gas fields (around 480 kilometers north-east of Singapore) to supply the city state's energy needs.

V. Discussion and Conclusion

The firm perspective to transborderization shows clearly the benefits to Singapore as companies spread their labor-intensive activities to the surrounding region. In the process, Singapore takes on the function of the city of advanced services, research, and development as well as the choice of expatriate residential location. However, such firm activities have to be viewed within a broader urban and regional perspective both in terms of industry logics, locational economies, and urbanization economies.

The expansion of Singapore's global city region in the 1980s has been built on a longer history of cross-border ties between Singapore and its two closest sub-regions, Johor and the Riau Islands (primarily Batam). The contemporary expansion was the result of inter-state initiatives driven by mutual economic interests among the three parties Singapore, Malaysia, and Indonesia. As the paper shows, this expansion has been arrested because of the volatile nature of bilateral ties, especially those between Singapore and Malaysia. As a result, the agglomeration tendencies that would have been the result of a global city region have to take politics into consideration.

Global city regions are created and sustained by localization and urbanization economies associated with competitive industrial clusters as well as diversity and economic breath afforded by a large city. The case of the Singapore global city region indicates some interesting aberrations.

tions to these foundations. The history of the region shows clearly that Singapore has been linked to Johor and Riau Islands through cross-border trade links, with producers in these localities being drawn into the orbit of Singapore's market. With the onset of industrial development, the nature of these linkages took a more complex form, with inter-state cooperation taking a primary role in shaping the economic connections. Batam's development has been built on industrial parks attracting TNCs with bases in Singapore. It is the enclave nature of industrial development in Batam, which hinders the locational economies associated with industrial cluster, especially since such activities are linked to Singapore and are sealed off from the larger Riau province, which remains largely agrarian.

Earlier inter-state initiatives have resulted in the rapid industrialization of Batam. While there have been negative consequences highlighted in the previous section, what is also clear are the benefits from a regional growth policy to disperse economic activities away from the capital region. Within the Indonesian context, this sound regional policy avoids the primate development around the capital region as witnessed in earlier periods. For Singapore, this has also worked in terms of maintaining a critical manufacturing sector, while its counterpart (*i.e.*, Hong Kong) has lost most of its manufacturing to China (see Chiu, Ho, and Lui 1997). Even having an expanded region does not necessarily mean that manufacturing does not migrate out of this city region, as the case of Seagate illustrates.

Company surveys also show the limits of enclave industrialization on the Indonesian side. Thus, the next phase requires strengthening industrial capacity in Riau through technology transfers of the type seen in the farming case discussed by Menkhoff *et al.* (2007). The next phase of development will also require Riau-based transnational manufacturing companies to work with the Indonesian provincial government to build a layer of competent local companies capable of providing components and engineering services. In the absence of a more porous border allowing Indonesian workers to get education and training in Singapore, authorities also need a stronger worker-development infrastructure in Riau to support industrial upgrading.

Ironically, although the volatile nature of Malaysian-Singapore relations has often hindered inter-state cooperative attempts, Singapore and Johor exist as a functional city region, as companies on the Singapore side have production facilities across the border. Johor, unlike Riau has a strong industrial infrastructure. For example, the planning and develop-

ment of Pasir Gudang, a major port in Southern Johor linking industrial estates started in 1971 (Guinness 1992, p. 34). Guinness (1992, p. 41) estimates that domestic industrial equity in Johor was 44.3 percent in 1985, suggesting a significant local manufacturing presence alongside foreign manufacturing capital. There has also been freer movement of labor between Johor and Singapore because of historical ties. This has effectively resulted in a fuller incorporation, enabling Johor businesses to tap on Singapore as a market for clients, Johor workers to upgrade their skills through employment in Singapore, and students to benefit from Singapore schools. Although more evidence needs to be presented in order to support the presence of competitive clusters, which requires a more developed set of shared resources such as universities, training facilities as well as cooperative arrangements between firms (see Belussi 2006), the foundation for locational economies in manufacturing seems stronger between Johor and Singapore than for Riau Islands. If inter-state relations continue to be volatile despite the strong economic linkages, then one solution is the development and strengthening of local business associations whose bridging function is to maintain economic links between the city and the region.

Duranton and Puga (2004), in their review of urban agglomeration economies, highlight three crucial micro-foundations that cities play in fostering economic growth. These are *sharing* gains (from indivisible resources, variety, and specialization), *matching* in the labor market of skills and opportunities, and *learning* the diffusion of ideas and skills. These three micro-foundations share one essential assumption, the movement (and therefore access) of people and activities within the city region. For example, the freer movement between the Singapore-Malaysian border has allowed for Malaysian labor [presently 350,000 Malaysians work in Singapore with 150,000 commuting to Singapore (*New Straits Times* Feb. 2009)] not just to seek out opportunities in the better paying Singapore labor market but, more importantly, to acquire skills, ideas, and contacts crucial to newcomers in Johor. Although Yeoh, Cai, and Wee (2003, p. 14) may be right in suggesting "management economies in overseeing the new factories, sharing resources with Singapore operations and providing access to the city state's logistics support," this essentially Singapore-centric view neglects the enclave production nature of manufacturing in Riau. More importantly, the immigration controls for Indonesians traveling to Singapore restrict various sharing, matching, and learning activities associated with urbanization economies. The result is a weakened Indonesian manufacturing capacity, because the domestic workforce de-

pends on a smaller group of transnational companies based in Riau to train labor instead of utilizing the good educational and training opportunities in the city state.

Unlike other city regions, Singapore's expanding city region continues to be defined by the political dynamics underpinning the city state, its two neighboring countries, and the restrictions that come with the borders. In addition to agglomeration economies that drive the spread of economic activities across city regions, Singapore's city region is propped up by bilateral ties affected by suspicions from a history of past conflicts, changing strategic interests, and disrupting popular protests.

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