APPENDIX A: CITY CLUSTERS IN EACH INDUSTRY SUB-NETWORK

Table A1: Energy sub-networks of ASX derived network, January 2014

Cluster	*Most Central City*	*Characteristics*	*Sub-Components*
1	Perth	Globally diverse (25)	Australia (Broome*, Bunbury*; Roebourne*, Karratha*, Kimberley*, Mt Isa*); Africa (Abidjan, Swakopmund, Windhoek, Ouagadougou); Asia (Busan, Chongqing, Manila; Seoul, Tokyo); N. America (Atlanta, Salt Lake City); Europe (Bucharest, Budapest; Newcastle (UK); Rome; Salamanca; Vienna); Tax Haven (Guernsey)
2	Houston	USA energy centers (24)	Billings; Denver, Chicago, Anchorage, Las Vegas, Philadelphia, Oklahoma, Phoenix, San Francisco, Seattle
3	Sydney	Finance and energy producer related links (20)	Australia (Melbourne*, Darwin*, Geelong*, Narrabri*, Wollongong*); International (New York, Dar Es Salaam, Lilongwe); New Zealand and Asia Pacific (Auckland, Christchurch, Wellington, Dili),
4	Kuala Lumpur	Asia (19)	Singapore, Indonesia (Batam, Jakarta); Malaysia (Kuala Belait, Miri), Other Asia (Dhaka, Delhi, Hanoi, Bangkok, Ho Chi Minh)
5	Calgary	Canada energy centers (19)	Blackfalds, Edmonton, Fort McMurray, Fort St John, Calgary, Vancouver, Toronto, Saskatoon, Victoria
6	Dubai	Gulf Region/ port cities (18)	Gulf Region (Abu Dhabi, Fujairah, Kuwait City, Damman, Muscat, Erbil, Yanbu); Port cities (Tunis, Port Moresby, Miami); Adelaide*
7	London	Europe and Central Asia (17)	West (Aberdeen, Delft, Gloucester, Madrid, Stavanger), Central Asia (Almaty, Astana, Tashkent), East (Moscow, Krakow, Plzen, Sofia)
8	Johannesburg	South Africa (17)	Bloemfontein, Cape Town, Durban; Mthatha; Polokwane
9	Brisbane	Coal based network (16)	China (Beijing, Chengdu, Nanjing, Shanghai, Shenzhen, Tianjin); Queensland (Gladstone*, Gold Coast*, Mackay*, Maroochydore*, Roma*, Townsville*); Ulaanbaatar
10	Santiago	South America (7)	Belo Horizonte; Bogota; Rio de Janeiro, Lima, Port of Spain, Sao Paulo
11	Lagos	Africa (6)	Accra, Luanda, Gaborone, Lusaka, Tripoli

Cluster 12 represents an outlier; * denotes Australian cities and towns

Table A2: Materials sub-networks of ASX derived network, January 2014

Cluster	*Most Central City*	*Characteristics*	*Sub-Components*
1	Perth	Globally diverse mining production regions (56 cities)	Australia (Cooper Pedy*, Capel*, Dubbo*, Geraldton*, Kalgoorlie*, Kunnunurra*, Ravensthorpe*); Asia (Phnom Penh, Xian); Africa (Johannesburg, Conakry , Lilongwe, Lusaka, Mala, Maputo, Mombasa, Accra, Monrovia, Ouagadougou, Swakopmund, Yaounde, Abidjan, Dar Es Salaam); Europe (Antwerp, London, Grenoble, Tallinn); S. America (Belo Horizonte, Montevideo, Rio de Janeiro); N.America (Miami, Portland, Thunder Bay, Vancouver); Tax Havens (BVI, Bermuda, Monaco, Caymans)
2	Sydney	Globally diverse – largely East Asia (50 cities)	Australia (Albury*, Coffs Harbor*, Gold Coast*, Mt Isa*, Newcastle*, Tamworth*, Tweed heads*); Europe (Amsterdam, Dublin); Asia (Bangkok, Singapore, Hong Kong, Ho Chi Minh City, Cilegon, Guangzhou, Shanghai, Hanoi, Johor Bahru, Jakarta, Kuala Lumpur, Selangor, Kuantan, Manila, Melaka, Penang, Quanzhou, Seoul, Surabaya, Suzhou, Taipei, Tokyo, Ulaanbaatar, Shenyang); Tax Havens (Guernsey); N. America (Kamloops, Kansas City, Calgary)
3	Melbourne	Globally diverse – largely South and Central Asia (39 cities)	Australian (Bendigo*, Canberra*, Geelong*, Toowoomba*); South and Central Asia (Ankara, Chennai, Colombo, Bangalore, Delhi, Hyderabad, Kolkata, Mumbai, Kota Bharu, Nanjing); N.America (Denver, Montreal, SLC, Seattle); Europe (Hamburg, Manchester); Pacific Islands (Suva, Lae)
4	Düsseldorf region	Europe (36 cities)	Germany (Linz, Leipzig, Munich); Rotterdam, Bucharest, Budapest, Copenhagen, Poland (Wroclaw, Katowice, Polkowice, Czestochowa, Warsaw); France (Paris, Toulouse), Geneva, Helsinki, Ljubljana, Spain (Barcelona, Madrid, Oviedo); Milan, Oslo, Ostrava, Prague, Stockholm, Zurich
5	Santiago	Americas (19 cities)	Americas (Bogota, Buenos Aires, Chicago, Georgetown (Guyana), La Paz, Lima, Monclova, Panama; Santo Domingo; Sao Paulo, Louisville, Houston, Saskatoon, St Louis, Valencia; Wollongong*
6	Brisbane	Australia-based resource cities (17 cities)	Australia (Adelaide*, Darwin*, Gladstone*, Maroochydore*, Ballarat*, Cairns*, Mackay*, Townsville*); Port Moresby, Gaborone, Vientiane, Pamplona
7	Auckland	N. America, NZ, (14 cities)	N. America (Atlanta*, LA*, Dallas*, San Antonio*, Toronto*); NZ(Wellington, Christchurch, Timaru); Asia (Kuching); Europe (Lyon, Milton Keynes)
8	Beijing	Global (9 cities)	Belem, Brasilia, Pittsburgh, Dubai, NY, Osaka, Qingdoa, Weihai,
9	Moscow	Russosphere (4 cities)	Donetsk, Karagandy, Leninsk-Kuznetskiy

Clusters 10-12 represent outliers;* denotes Australian cities and towns

Table A3: Industrials sub-networks of ASX derived network, January 2014

Cluster	*Most Central City*	*Characteristics*	*Sub-Components*
1	Brisbane	Most global (35)	Australia (Bundaberg*, Cairns*, Gladstone*, Hervey Bay*, Maroochydore*, Wollongong*); Gulf Region (Jeddah); Europe (Liverpool, Moscow); N. America (Albuquerque, Denver, Gillette, Portland, Reno, Sacramento, San Francisco, Houston); S. America (Buenos Aires); Pacific Islands (Apia, Nadi, Nuku'Alofa, Honiara, Port Moresby); Asia (Bangkok, Huzhou, Pune, Ulaanbaatar); Tax havens (Cork, Emerald, Galway)
2	Perth	Resource related producers (30)	Australia (Broome*, Bunbury*, Busselton*, Geraldton*, Kalgoorlie-Coolgardie*, Karratha*, Newman*, Mackay*, Rockhampton*, Tom Price*); Asia (Balikpapan, Jakarta, Cebu, Beijing, Shanghai); Europe (Brussels, Newcastle, Sheffield); N. America (Edmonton, Kansas City, Miami, Pittsburgh); Port of Spain; Takoradi
3	Sydney	Financial markets (29)	Australia (Armidale*, Coffs Harbour*, Gunnedah*, Lithgow*, Orange*, Port Hedland*, Tamworth*); North America (Chicago, Cincinnati, LA, NY, Philadelphia, Tucson); Africa (Lusaka); Europe (Deggendorf, Zurich); Asia (Hong Kong, Shenzhen, Kuala Lumpur, Singapore, Nanjing, Phnom Penh, Tokyo); Tax Haven (Bermuda)
4	Melbourne	Advanced manufacturing networks (23)	Australia (Albury*, Bendigo*, Canberra*, Darwin*, Geelong*, Hobart*, Launceston*, Mount Gambier*, Shepparton*, Townsville*); Asia (Delhi, Guangzhou, Ho Chi Minh, Manila, Selangor, Seoul); Istanbul, Johannesburg; Europe (Hannover, Maastricht, Oxford)
5	Milton Keynes	Europe (19)	UK (Birmingham, London, Dublin, Leeds, Manchester, Reading, Nottingham); Rest of Europe (Amsterdam, Rotterdam, Antwerp Barcelona, Copenhagen, Krakow, Munich, Prague, Vienna, Warsaw)
6	Washington	Americas (17)	South America (Belo Horizonte, Lima, San Juan (Arg), Salvador, Santiago, Vitoria); North America (Calgary, Halifax, Mobile, Montreal, SLC, Toronto, Vancouver); Geneva
7	Gold Coast	Global (10)	Muswellbrook; Antofagasta, Batam, Casper, Dubai, Mexico City, Mumbai, St Louis
8	Auckland	New Zealand and South Australia (9)	Christchurch, Wellington, Hamilton (NZ), Hastings, Taupo, Tauranga; Australia (Adelaide*, Wyalla*)
9	Narrabri	Rural New South Wales (5)	Dubbo*, Goondiwindi*, Moree*, Toowoomba*

Clusters 10-12 represent outliers;* denotes Australian cities and towns

Table A4: Financials sub-networks of ASX derived network, January 2014

Cluster	***Most Central City***	***Characteristics***	***Sub-Components***
1	London	Europe (22)	Amsterdam, UK (Birmingham, Edinburgh); Bratislava, Brussels, Budapest, Germany (Frankfurt, Düsseldorf region, Hamburg); Krakow, Warsaw, Luxembourg, Barcelona, Madrid, Manchester, Milan, Paris, Poznan, Prague, Reading, Stockholm
2	Sydney	Australia, global (19)	Australia (Adelaide*, Canberra*, Bathurst*, Darwin*, Dubbo*, Gold Coast*, Maroochydore*, Orange*, Rockhampton*, Tamworth*, Wollongong*); Dublin; Hanoi; Ho Chi Minh; Jersey; Lismore; Sao Paulo
3	Hong Kong	Asian Financial Hubs (15)	Bangkok, China (Chongqing, Guangzhou, Beijing, Shanghai, Shenzhen, Tianjin); Singapore, Jakarta, Kuala Lumpur, Mumbai, Osaka, Tokyo, Seoul
4	New York	Americas (13)	Allentown, LA, Boston, Chicago, Columbus, Durham, Mexico City, Nashville, San Francisco, Seattle, Tampa, Washington
5	Perth	Australian Resource States (10)	WA (Bunbury*, Esperance*, Kalgoorlie-Coolgardie*, Albany*); USA(Miami); Greater Queensland (Brisbane*, Hervey Bay*, Dalby*, Tweed Heads*)
6	Melbourne	SouthEast Australian States (10)	Australia (Geelong*, Bendigo*, Cairns*, Hobart*, Launceston*, Newcastle*, Shepparton*, Noumea*); Gulf Region (Dubai)
7	Auckland	NZ/ Pacific Islands	NZ (Christchurch, Wellington); Pacific Islands (Kokopo, Lae, Port Moresby, Raratonga, Suva, Apia, Nadi)

Clusters 8-12 represent outliers;* denotes Australian cities and towns

Table A5: Sub-networks of total ASX derived network, January 2014

Cluster	***Most Central City***	***Characteristics***	***Sub-Components***
1	Perth	Mining and Energy	Australia (Kalgoorlie*, Karratha*, Busselton*); Africa (Luanda, Accra, Gaborone, Windhoek); Tax Havens (BVI, Caymans, Guernsey)
2	Melbourne	Diverse across Asia-Pacific	NZ (Auckland, Christchurch, Wellington, Hamilton); South Pacific (Suva, Raratonga, Noumea); South and East Asia (Manila, Kuala Lumpur, Selangor, Bangkok, Singapore, Hong Kong, Shanghai, Delhi)
3	Sydney	Links Australian Industry through Finance	Australia (Canberra*, Adelaide*, Darwin*); NSW (Dubbo*, Narrabri*, Coffs Harbour*); Tax Havens (Jersey, Isle of Man, Macau),
4	London	Industrial and Resource Based Europe	UK (Bradford, Birmingham, Manchester); Continental Europe (Duesseldorf, Paris, Budapest); Central Asia (Tashkent, Atyrau)
5	Houston	Industrial and Resource Based Americas	Americas (Buenos Aires, New York, Montreal, Dallas, Santiago, Toronto, Washington); Resources cities in the Americas (Anchorage, Calgary, Casper, Denver, Allentown, Belo Horizonte)
6	Brisbane	Resource Intensive Centers and Outposts	Queensland (Hervey Bay*, Emerald*, Cairns*, Gladstone*, Bundaberg*, Townsville*); South Pacific (Nuku'Alofa, Port Vila, Honiara), Former Soviet Union (Karagandy, Moscow, Donetsk)
7	Dubai	Gulf Region	Gulf Region (Doha, Abu Dhabi, Suleimaniyah, Erbil, Manama, Kuwait)
8	Edmonton	Mining Canada	Alberta (Fort McMurray, Blackfalds, Cold Lake, Fort St John)

Clusters 9-12 represent outliers;* denotes Australian cities and towns