Index

Agreement Concerning Concentrated Production (1964) 90
Asahi Glass 155, 158, 166–7
Asahi Kasei Chemicals 168
Asano Shipbuilding Co. 23, 27, 36
market share of 41
Ataka & Company 29
AU Optoelectronics (AUO) 169
Avan Strate 155
Bar Segment Agreement 28
black market 48
Busicon 139
cartels 32–3, 37–9, 90
establishment of 29, 32, 35–6
role in reduction of steel imports 32
Casio 125–6
co-development of LSIs 123
personnel of 122
use of ICs by 119–22, 136
Chandler Jr, Alfred 180
Chimei Business Group
Chimei Electronic 167
role in establishment of Taiwanese Science Park (1999) 169
Committee for Measures to Market Conditions 53
Dai Nippon Printing (DNP) 162, 169
digital signal processor (DSP) 144
ECL 130–32
role in development of IC chips 132–3
Electronic Array 139
factory automation (FA) 93, 108
Fairchild 139
Filco Ford 123
First World War (1914–18) 26, 28–9, 31, 34, 60, 80, 82, 175
demand for steel during 34
following 22–4
expansion of machine tool industry during 73, 75–6, 79–80
floppy disk controller (FDC) 144
Fuji Iron and Steel Co. 45, 47, 53
Hirobata Factory 47
market share of 58
role in formation of Kanto Steel Material Sales Association (1927) 29
Fujifilm
Hunt Chemicals 162
products developed by 158
co-development 159
Fujitsu 112, 118, 129, 144, 173
personnel of 134
role in development of DEX-2 132
role in development of VLSI 132
FUNUC, market share of 97
Germany 81
banning of exports to Japan 22
steel exports of 28
globalization 179
graphics display controller (GDC) 144
Great Depression 24, 32–4, 40, 79

183

Yongdo Kim - 9781784715359
Downloaded from Elgar Online at 07/25/2019 01:19:44PM
via free access
impact on machine tool demand
75
steel price fluctuation during 39

*Hanbai Jumpo* 40, 42
hard disk controller (HDC) 144
Haruhito, Takeda 3
Hitachi 112, 119, 122–3, 129–30, 135–6, 140, 144, 173
coop-velopment of LSI 123
role in development of DEX-2 132
role in development of VLSI 132
standard IC sales of 137
Hitachi Chemical 162
Hitachi Seiki 95
personnel of 95–6
Hitachi Zosen, steel inventory of 51
Honda Motor Company 59
Howa Kogyo 97

Ikeai Co. 78, 95
Institute of Electrical and
Electronics Engineers (IEEE)
Conference (1980) 128–9
application-specific integrated
circuits (ASICs) 112
application-specific standard
products (ASSPs) 115, 117, 144
approval system for 130–31
bipolar ICs 109–10, 124
digital 112
captive IC companies 144–5
complimentary metal oxide
semiconductor (CMOS) 138
co-development of 117–20, 123–5, 129–35, 139, 176
market principle in 119–20
Controlled Saturation Logic (CSL) IC 128, 134
custom ICs 45, 110, 113–15, 119–20, 122–3, 125
semi-custom 110, 115
Den-Den Kosha Electrical
Exchange Equipment-2 (DEX-2) 128, 130, 132
digital 110, 112
domestic market of 116
DRAM market 116
export market of 116–18
imported 136
large scale IC (LSI) 109, 119, 121–2, 125, 135–6, 139
CMOS 120, 125
custom 136–9
imports 138
MOS 119, 122, 124, 136
PMOS 122
linear ICs 113
Makimoto Wave Hypothesis 114
market segments 110–11, 141
memory 109–10
micon (MPU) 114, 142–3
development of 143
market 144
MOS ICs 109–10, 113, 116, 121
positive metal oxide
semiconductor (PMOS) 126, 138
ingineering samples (ES) of 124
standard ICs 113–14, 128, 132, 136–8, 140
use in semiconductor 7–9, 91, 109
Intek 162
Intel Corporation 143
Intermediary Organization Theory (IOT) 12
concept of 11
International Business Machines (IBM) Corporation 135
International Marketing and
Purchasing (IMP) group 5
Ishikawajima 76
Iwai & Company 29
Japan 1–3, 5, 12, 21, 75, 79, 97, 137–9, 166, 172
Aichi Prefecture 96
aircraft manufacture industry of 76
automobile industry of 9–11, 46–7, 50, 56–7, 77
importing of machine tools 84
inventory control in 54
role in development of machine tools 88
Customs Tariff Law Amendment (1921) 28
economy of 1, 3
growth of 42–3, 108
electronics industry of 11–12
government of 36, 48, 127
Shipbuilding Plan (1947–87) 47–8
interfirm relationships in 4–6, 9, 12–13, 22, 35, 72, 82, 158–9, 168–9, 173, 179
subcontracting system 10–11
Kanagawa Prefecture 96
Meiji Period (1868–1912) 81
Meiji Restoration (1868) 73
Mie Prefecture 160
Military of 60, 76
Ministry of Commerce and Industry Bureau of Mines 41
Ministry of International Trade and Industry (MITI) 53, 84
surveys conducted by 89
ultra LSI technology research cooperative 129
Ministry of Railways 77
Nagoya 143
Navy of 58, 60, 76
Osaka 143
shipbuilding industry of 23, 27–8, 34–8, 41–5, 48, 53, 75–6
Shizuoka Prefecture 98
Strategic Industries Control Act (1932) 32
Tokyo 140
Akihabara 115
uniqueness of 3, 5–6, 8, 12, 178–9
Japan Machine Tool Builders’ Association (JMTBA) 89–90
members of 95
Japanese Development Bank 48, 116
Japanese Shipbuilders Association
board of directors meeting (1932) 36
establishment of (1932) 35
JSR 158, 162
JSR Micro Taiwan 169
Kamaishi
role in formation of Kanto Steel Material Sales Association (1927) 29
Kanto Steel Material Sales Association
formation of (1927) 29
Karatsu Iron Works Co. 78
Kawasaki Heavy Industries Ltd 43
Kawasaki Shipbuilding Corporation
23, 27, 36, 41–2, 76
Fukiai Factory 27
market share of 41
reliance on Suzuki & Co. 26
Kawasaki Steel Co.
Chiba Factory 59
market share of 58
keiretsu 30
Kiryu Machine Manufacturing development of special machine tools 88
Konica Minolta 158
Korean War (1950–3), exporting of machine tools during 84
Kurarey 163
labour
division of 4, 32
LG Display 167
The dynamics of interfirm relationships

<table>
<thead>
<tr>
<th>Company/Division</th>
<th>Index/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitsubishi Heavy Industries Ltd</td>
<td>76</td>
</tr>
<tr>
<td>Yokohama Factory</td>
<td>45</td>
</tr>
<tr>
<td>Mitsubishi Motor Company</td>
<td>59</td>
</tr>
<tr>
<td>Mitsubishi Shipbuilding Co.</td>
<td>39</td>
</tr>
<tr>
<td>Mitsubishi Zosen</td>
<td>43, 45</td>
</tr>
<tr>
<td>Mitsui &amp; Co. Ltd Trading Company</td>
<td>29</td>
</tr>
<tr>
<td>steel sales of 25</td>
<td></td>
</tr>
<tr>
<td>trading of machine tools</td>
<td>81</td>
</tr>
<tr>
<td>Mitsui Zosen</td>
<td></td>
</tr>
<tr>
<td>purchasing system of 53–4</td>
<td></td>
</tr>
<tr>
<td>steel inventory of 51</td>
<td></td>
</tr>
<tr>
<td>Mori Seiki</td>
<td>101</td>
</tr>
<tr>
<td>market share of 93, 95</td>
<td></td>
</tr>
<tr>
<td>Motorola, Inc.</td>
<td>123, 143</td>
</tr>
<tr>
<td>Nakajima Aircraft</td>
<td>76</td>
</tr>
<tr>
<td>National Semiconductor Co. (NSC)</td>
<td>139</td>
</tr>
<tr>
<td>NEC</td>
<td>112, 117–18, 122–3, 125, 129–30, 136, 140, 144, 173</td>
</tr>
<tr>
<td>Applied Technology Section</td>
<td>143</td>
</tr>
<tr>
<td>co-development of ICs</td>
<td>124</td>
</tr>
<tr>
<td>LSIs</td>
<td>123</td>
</tr>
<tr>
<td>custom ICs designed by 120–21</td>
<td></td>
</tr>
<tr>
<td>Department of Microcomputer System</td>
<td>143</td>
</tr>
<tr>
<td>MPU market share of 142–3</td>
<td></td>
</tr>
<tr>
<td>personnel of 125, 128, 133, 139–40, 143</td>
<td></td>
</tr>
<tr>
<td>products developed by 144</td>
<td></td>
</tr>
<tr>
<td>role in development of VLSI</td>
<td>132</td>
</tr>
<tr>
<td>standard IC sales of 137</td>
<td></td>
</tr>
<tr>
<td>network theory</td>
<td>11</td>
</tr>
<tr>
<td>Nihon Kokan (NKK)</td>
<td>47</td>
</tr>
<tr>
<td>market share of 58</td>
<td></td>
</tr>
<tr>
<td>role in formation of Kanto Steel Material Sales Association (1927)</td>
<td>29</td>
</tr>
<tr>
<td>Niigata Engineering Co.</td>
<td>78</td>
</tr>
<tr>
<td>Nippon Electric Glass</td>
<td>155, 166, 168–9</td>
</tr>
<tr>
<td>Nippon Gohsei</td>
<td>163</td>
</tr>
<tr>
<td>Nippon Steel Corporation</td>
<td>38–9</td>
</tr>
<tr>
<td>market share of 41</td>
<td></td>
</tr>
<tr>
<td>personnel of 33–4</td>
<td></td>
</tr>
<tr>
<td>sale of steel by 32</td>
<td></td>
</tr>
<tr>
<td>Nippon Telegraph and Telephone (NTT)</td>
<td>110, 126–7, 130–32, 134</td>
</tr>
<tr>
<td>co-development efforts of 173</td>
<td></td>
</tr>
<tr>
<td>Dendenkosha Information Processing System (DIPS)</td>
<td>127, 130</td>
</tr>
<tr>
<td>ECL division of 132–3</td>
<td></td>
</tr>
<tr>
<td>personnel of 118, 120</td>
<td></td>
</tr>
<tr>
<td>revenues of 128</td>
<td></td>
</tr>
<tr>
<td>role in development of DEX-2</td>
<td>132</td>
</tr>
<tr>
<td>use of ICs</td>
<td>127–8</td>
</tr>
<tr>
<td>VLSI project of 132</td>
<td></td>
</tr>
<tr>
<td>Nissan Motor Corporation</td>
<td>46, 51, 59, 88</td>
</tr>
<tr>
<td>Nitto Denko</td>
<td>158, 163</td>
</tr>
<tr>
<td>NSK</td>
<td>97</td>
</tr>
<tr>
<td>numerically controlled (NC)</td>
<td></td>
</tr>
<tr>
<td>appliances</td>
<td>83</td>
</tr>
<tr>
<td>machine tools</td>
<td>93</td>
</tr>
<tr>
<td>office automation (OA)</td>
<td>108</td>
</tr>
<tr>
<td>Oki Electric</td>
<td>130</td>
</tr>
<tr>
<td>Okuma Machinery Works</td>
<td>78</td>
</tr>
<tr>
<td>market share of 93, 95</td>
<td></td>
</tr>
<tr>
<td>Okuragumi</td>
<td></td>
</tr>
<tr>
<td>steel sales of 25</td>
<td></td>
</tr>
<tr>
<td>trading of machine tools</td>
<td>81</td>
</tr>
<tr>
<td>Omega Group</td>
<td>117</td>
</tr>
<tr>
<td>Omron Tateisi Electronics</td>
<td>120, 123, 140</td>
</tr>
<tr>
<td>in co-development in IC market</td>
<td>119–21</td>
</tr>
<tr>
<td>in LCD materials industry</td>
<td>161</td>
</tr>
<tr>
<td>intertwining with market principle</td>
<td>108, 116, 119–21, 130, 180</td>
</tr>
</tbody>
</table>
The dynamics of interfirm relationships

Osaka Iron Works annual report 41
Osaka Kishimoto, steel sales of 25
OSG, personnel of 98

Public Electronic
Telecommunications Act, partial emendation of (1971) 127

Rockwell 119, 139
Russo-Japanese War (1904–5) 76
importing of machine tools during 81

Samsung Electronics 167
Sanyo Electric 123, 140
SC-IK Technology, joint ventures of 169
Second World War (1939–45) 21, 127
expansion of machine tool industry during 80
Production Capacity Expansion Plan 58
Seitetsu Sanko Siro 23
Shanghai Incident (1932), impact on machine tool demand 75–6
Sharp Corporation 121, 140, 144
co-development efforts 159
of ICs 124–5, 135
Kameyama City Factory 160–61
Koriyama Factory 126
use of ICs 136
Shinto Paint 164
Signetics 123
small- and medium-sized enterprises (SMEs) 9–10, 48
LCD market 154
manufacturing 99
Smith, Adam 4
Sony Corporation 141
sale of ICs to external customers 140–41
South Korea 153–4, 166–7
exporting of Japanese machine tools to 84
LCD industry of 8, 167–8, 174
Stanley Electronic Co. 158
steel industry 7–9, 14, 21–2, 28–9, 36, 40–46, 48, 50–51, 53, 57–61, 72, 82, 153–4, 173, 175, 177
civil market 25
demand 22–4, 27, 34, 39
imports 29, 32
inventory control 51, 53
just-in-time (JIT) system 53–7, 61
iron and steel famine 23–4
prices 28, 31, 36–7, 39
market 50–1, 60–61
production 27
domestic 60
standardized quantity units 31
steel sheet
cold-rolled 50
thick 35, 40
transactions 37–40, 56
use in automobile industry 46–7, 50, 54, 56–7
use in shipbuilding 34–5, 37, 39–40, 43–5
wholesalers 29
Sumitomo Chemical 166
joint ventures of 169
product lines of 169
Sumitomo Metal Industries Ltd sale of steel 59
Wakayama Iron and Steel Works 59
Sumitomo Steel Co. 53
Suzuki, Yasoji 125
Suzuki & Co., use in steel purchases 26
Suzuki Motor Company 59
Taiwan 153–4, 166–7
exporting of Japanese machine tools to 84

Yongdo Kim - 9781784715359
Downloaded from Elgar Online at 07/25/2019 01:19:44PM via free access
Index  

banning of exports to Japan (1917) 22  
civilian IC market of 135  
Department of Defense (DOD) 126–7  
steel production in 24, 27  

Washington Treaty (1922) 27  
impact on Japanese machine tool industry 75  
Williamson, Oliver 180  

Yamazaki 101  
market share of 93, 95  
Technology Development Center 95  

Yawata Iron and Steel Co. 45, 47  
market share of 58  

Yawata Steel Works 22–3, 28, 32, 35, 39, 175  
market share of 41  
steel trading practices of 25–6, 28  
designated merchants system 29–30, 33–4  
futures contracts 31  

ZEON 158  
Zilog, Inc. 143  
Zosen Rengokai 38, 41  

LCD industry of 8, 167–9, 174  
Science Park 169  

Takada Co., trading of machine tools 81  

Texas Instruments (TI) 135, 139  

THK 97  
Tokai Kogyo 36  
Tokyo Electric Co. 142  
Tokyo Gas Electric Engineering Co. 78  
Tokyo Ohka Kogyo 162  
Tokyo Morioka, steel sales of 25  

Toppan 162, 166, 169  

Toshiba 118, 138, 141, 144  
co-development of ICs 125  

Toshiba Machine 95  
Tottori Sanyo 120–21  

Toyo Ink 162  

Toyota Kohki 95  
development of special machine tools 88  

Toyota Motor Corporation 46, 51, 59, 88  

United Kingdom (UK) 81  
banning of exports to Japan (1916) 22  

steel exports of 28  

United States of America (US) 5, 10, 12–13, 81, 95, 97, 129, 139, 172, 179  

Williamson, Oliver 180  

Yamazaki 101  
market share of 93, 95  

Technology Development Center 95  

Yawata Iron and Steel Co. 45, 47  
market share of 58  

Yawata Steel Works 22–3, 28, 32, 35, 39, 175  
market share of 41  
steel trading practices of 25–6, 28  
designated merchants system 29–30, 33–4  
futures contracts 31  

ZEON 158  
Zilog, Inc. 143  
Zosen Rengokai 38, 41