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## Dual-Use Free Trade Agreements: The Contemporary Alternative to High-Tech Export Controls

### Keywords

International Trade, Administration Law, Exports, National Security

# DUAL-USE FREE TRADE AGREEMENTS: THE CONTEMPORARY ALTERNATIVE TO HIGH-TECH EXPORT CONTROLS

Michael D. Klaus\*

## I. INTRODUCTION

In the modern global economy, U.S. export controls crafted during the height of the Cold War<sup>1</sup> are failing to forestall the transfer of advanced dual-use technology<sup>2</sup> to potential adversaries: China secured the necessary equipment to construct semiconductor manufacturing facilities capable of revolutionizing the People's Liberation Army,<sup>3</sup> Russia deployed an extensive fleet of intelligence satellites using its own technology,<sup>4</sup> and with sufficient financial resources, countless other foreign militaries are capable of building competitive communicants, remote sensing, and navigation satellites without U.S.

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1. The U.S. continues to regulate exports of goods and technologies with military applications under the Export Administration Regulations (EAR) of The Export Administration Act (EAA) of 1979 (50 U.S.C. app. § 2401). See generally R. Aylan Broadbent, *U.S. Exports Controls on Dual-Use Goods and Technologies: Is the High-Tech Industry Suffering?* 8 CURRENTS: INT'L TRADE L.J. 49 (1999). See also *infra* Part II(B).

2. Dual-use technology is technology that can be used for commercial or military purposes. Examples include carbon fibers (used in skis, golf clubs, and ballistic missiles), maraging steel (used for centrifuge rotors that enrich uranium for nuclear weapons), corrosion resistant valves (the essential components in plants that enrich uranium to nuclear weapon grade, which are also widely used in oil and gas industries), and semiconductors (computer chips used in virtually all commercial electronics and military technologies). See *Hearings on U.S.-China Commission Export Controls and China*, 107th Cong. 1071-77 (Jan. 17, 2002) [hereinafter *Hearings on US-China*] (prepared Statement of Gary Milhollin, Director, Wisconsin Project on Nuclear Arms Control), in COMPILATION OF HEARINGS HELD BEFORE THE U.S. CHINA SECURITY REVIEW COMMISSION (2002).

3. See U.S. DEP'T OF DEF ANN. REP ON THE MILITARY POWER OF THE P.R.C. 39-42 (2003), available at <http://www.defenselink.mil/pubs/20030730chinaex.pdf> (last visited Nov. 18, 2003) [hereinafter ANNUAL REPORT]; *Export Controls: Rapid Advances in China Semiconductor Industry Underscore Need for Fundamental U.S. Policy Review*, U.S. GEN. ACCT. OFF ANN. REP TO THE RANKING MINORITY LEADER MEMBER, COMMITTEE ON GOVERNMENTAL AFF U.S. SENATE (2002), available at <http://www.gao.gov/new.items/d02620.pdf> (last visited July 30, 2003) [hereinafter *Export Controls*]; Michael Klaus, *Red Chips: Implications of the Semiconductor Industry Relocation to China*, 29 ASIAN AFF AN AM. REV. 237 (2003).

4. See JAMES A. LEWIS, PRESERVING AMERICA'S STRENGTH IN SATELLITE TECHNOLOGY: A REPORT OF THE CSIS SATELLITE COMMISSION 5 (2002).

components.<sup>5</sup> Since the U.S. no longer maintains a monopoly on the world's most sophisticated technologies,<sup>6</sup> unilateral restrictions on high-tech exports are more prone to impairing U.S. corporations than protecting national security.<sup>7</sup> Despite intense lobbying campaigns of industry representatives,<sup>8</sup> Congress has repeatedly eschewed substantive revisions to U.S. export administration regulations,<sup>9</sup> thereby prolonging the futile effort to impede the technological advancements of distrusted foreign nations by restricting U.S. exports.

China's astonishing technological and military advancements lie at the center of the export control debate as U.S. exporters demanding opportunities to sell advanced technology to China's explosive high-tech industries clash with policy analysts apprehensively forecasting strategic concerns in the Taiwan Strait.<sup>10</sup> Favoring the dynamic national security concerns, the U.S. restricts exports of dual-use technology (technology that can be used for commercial or military purposes) to China under U.S. Export Administration Regulations,<sup>11</sup> although few other governments impose such cumbersome rules.<sup>12</sup> Consequently, foreign corporations are securing lucrative high-tech contracts, U.S. exporters are losing billions in sales,<sup>13</sup> and China is rapidly acquiring the advanced technology that it desires to build a formidable modern military<sup>14</sup>

While export controls defy the fundamental tenets of the global marketplace, ongoing negotiations for free trade agreements (FTAs)<sup>15</sup> with Chile, Singapore, and Latin America embrace the global competition that is rendering export controls obsolete.<sup>16</sup> The Bush administration's ambitious campaign to negotiate

5. *Id.* at 14.

6. *See infra* Part III(A).

7. *See, e.g.,* *Hearings on US-China*, *supra* note 2, at 1019-24 (Prepared Statement of James Lewis, Director, Technology Policy, Center for Strategic and International Studies).

8. *See AIA, EIA, NDIA Call on Bush to More Rapidly Reform Export System*, DEF DAILY INT'L, Feb. 8, 2002, at 1.

9. *See, e.g.,* Jim Puzanghera, *Tech Leaders Vow to Push for Eased Export Controls*, KNIGHT RIDDER TRIB. BUS. NEWS, May 28, 2003, at 1. *See also infra* note 55 and accompanying text.

10. *See generally* ANNUAL REPORT, *supra* note 3, at 43-50.

11. *See infra* Part II(B).

12. *See* Christopher F. Corr, *The Wall Still Stands! Complying with Export Controls on Technology Transfers in the Post Cold War, Post 9/11 Era*, 25 HOUS. J. INT'L L. 441 (2003). *See also infra* Part III(A).

13. *See infra* Part III(B).

14. Enabled by modern technology, China has 450 short-range ballistic missiles aimed at Taiwan and is adding seventy-five more each year. *See* ANNUAL REPORT, *supra* note 3, at 5.

15. Under free trade agreements (FTAs), "member countries agree to eliminate tariffs and non-tariff barriers on trade in goods within the FTA, but each country maintains its own trade policies, including tariffs on trade outside the region. William H. Cooper, *Free Trade Agreements: Impact on U.S. Trade and Implications for U.S. Trade Policy*, CONGRESSIONAL RESEARCH SERVICE REPORT FOR CONGRESS 2 (2002), available at [http://www.usembassycanada.gov/content/can\\_usa/freetrade\\_crs\\_040902.pdf](http://www.usembassycanada.gov/content/can_usa/freetrade_crs_040902.pdf) (last visited Nov. 23, 2003).

16. The U.S. signed an FTA with Singapore in May 2003 and with Chile in June 2003. Negotiations are ongoing with Australia, Morocco, Bahrain, Guatemala, Honduras, El Salvador, and Costa Rica, among others. *See, e.g.,* Daniel T. Griswold, *Free Trade Agreements: Steppingstones to More Open World*, Center for Trade Policy Studies, Trade Briefing Paper no. 18, at 2 (July 10, 2003), at <http://www.freetrade.org/pubs/briefs/tbp-018.pdf> (last visited Nov. 18, 2003).

FTAs hails the economic and political benefits for parties to the agreements,<sup>17</sup> but on a global scale, the effects of U.S. free trade agreements on China's developing high-tech sectors must also be considered. Judging by the aftermath of the U.S. Jordan free trade agreement signed in 2001,<sup>18</sup> as an economic matter, budding high-tech centers in countries with which the U.S. has a free trade agreement attract immediate investments from U.S. companies and once U.S. investment facilitates further development, foreign investment follows.<sup>19</sup> Unlike existing export controls, the secondary result of such a strategic free trade agreement is that increased competition in technology markets siphons some dual-use technology investments from China, thus mitigating the national security risks of burgeoning technology bases in the control of a potential foe without undermining U.S. economic interests.<sup>20</sup>

To establish a practical frame for the defense trade policy debate, this article begins by presenting the extraordinary growth of China's semiconductor industry and the military applications of China's emerging technologies. After evaluating the relevant technology Part Two outlines the history of U.S. export controls under the Export Administration Act and surveys the persisting fears concerning China's unprecedented military advances. Finally, Part Two discusses attempts to control dual-use technology exports on an international level during the Cold War era via the Coordinating Committee for Multilateral Export Controls (CoCom) and during the post-Cold War era through the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Technologies.

Part Three provides anecdotal evidence of the failures of high-tech export controls and analyzes the institutional weaknesses of international agreements designed to impede dual-use technology transfers. Extending the case study of China, the section illustrates the ease at which two of China's largest semiconductor foundries procured the equipment necessary to produce sensitive technology from foreign sources. Additionally, Part Three assesses the lack of enforcement power of the Wassenaar Arrangement and evaluates the practices of foreign governments in monitoring high-tech exports. Part Three concludes by presenting the economic losses of obstructive dual-use export controls for U.S. technology corporations seeking to capitalize on China's expanding business opportunities.

Once the futility of export controls is delineated, Part Four considers the strategic possibilities and implications of free trade agreements. The section begins by reviewing the strategic trade theories underlying FTA negotiations; by eliminating barriers to trade between contracting parties, FTAs divert investment from the most efficient countries to less efficient countries.<sup>21</sup> In instances in which

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17. *Id.*

18. See generally *infra* Part IV(D).

19. See Amjad Baker, *Intel Plans Investments in Jordan IT Sector AL-BAWABA* (Jordan), June 18, 2001, available at <http://www.intaj.net/news/readnews.cfm?id=136> (last visited Nov. 18, 2003). See also *infra* Part IV(D)(1).

20. See *infra* Part IV(A).

21. Griswold, *supra* note 16, at 1.

it is politically desirable, the U.S. can manipulate FTAs to support market reforms in developing countries and construct a template for broader trade agreements.<sup>22</sup> To broaden the strategic trade theories, the section cites evidence from the North American Free Trade Agreement (NAFTA) and the U.S.-Jordan Free Trade Agreement to posit that when FTAs guide dual-use technology investments, FTAs also advance national security interests. Finally, in Part Five, a conclusion is reached that an entirely new paradigm for defense trade policy must replace insular appeals for export control reforms. By accommodating and leveraging the global competition inherent in today's marketplace, FTAs protect U.S. corporate interests and serve as a valuable tool for addressing the national security concerns of China's technology-driven military modernization.

## II. EXPORT CONTROLS ON DUAL-USE TECHNOLOGY

### A. *China's Explosive High Tech Industry*

The rapid growth in China's semiconductor (computer chip) industry<sup>23</sup> elicits widespread trepidation and affords a practical basis for critiquing the role of export controls in managing national security concerns.<sup>24</sup> As global economic integration facilitates access to foreign markets, technology companies such as Motorola, Dell, and Texas Instruments are increasingly outsourcing manufacturing of semiconductors to foundries,<sup>25</sup> which produce semiconductors on a contract basis and allow their customers to concentrate on research and development.<sup>26</sup> Offered generous tax incentives and government-funded technology parks,<sup>27</sup> international investors are flocking to China to establish semiconductor foundries that can serve the needs of manufacturers of devices ranging from helpful hearing aids to

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22. *Id.* at 5.

23. See generally *Hearings on US-China*, *supra* note 2, at 1028-34 (prepared statement of George Scalise, President, Semiconductor Industry Association) ("[I]nevitably, China will be the center of semiconductor manufacturing."). Bryan Lee, *Chartered Eyes Stronger Presence in China*, STRAIT TIMES (Singapore), Feb. 22, 2003, LEXIS, News Library, Strait Times (Singapore) File (China's chip production is expected to increase by 40% annually, while the industry annual growth rate is 10%). See generally Klaus, *supra* note 3, at 238-242.

24. See *Hearings on US-China*, *supra* note 2, at 955 (prepared statement of James J. Jochum, Assistant Secretary of Commerce for Export Administration) ("China, itself, can be viewed as microcosm of the challenges we face as export control officials.").

25. The foundry market is expected to grow at a 20% annual rate with sales growing from \$7.5 billion in 2002 to \$32 billion by 2010. Mark LaPedus & Brian Fuller, *Fab Costs, Capacity Glut Seen Pointing to Consolidation Shakeout Looms for Foundries*, ELEC. ENG. TIMES, Mar. 17, 2003, at 1, LEXIS, News Library Electronic Engineering Times File. See also *TI to Buy More Chinese Made Products*, CHINA DAILY, Dec. 5, 2002, available at LEXIS, News Library, All News File.

26. See generally *Hearings on US-China*, *supra* note 2, at 1029-31 (prepared statement of George Scalise, President, Semiconductor Industry Association).

27. See JOSEPH I. LIEBERMAN, WHITE PAPER: NATIONAL SECURITY ASPECTS OF THE GLOBAL MIGRATION OF THE U.S. SEMICONDUCTOR INDUSTRY 4 (June 2003), available at <http://www.senate.gov/~lieberman/semi.pdf> (last visited Nov. 23, 2003). See also *Export Controls*, *supra* note 3, at 3.

alarming laser-guided missiles.<sup>28</sup> In turn, the semiconductor foundries throughout East Asia rely heavily upon U.S. semiconductor equipment to produce the chips, as U.S. companies supply 55% of the world's semiconductor equipment and possess the most advanced technologies.<sup>29</sup>

While foreign investment pours into their technology parks, Chinese leaders tout the "importance of developing "independent, proprietary high-technology capabilities as a means to boost China's economic and military prowess to counter 'hegemonic' actions of the United States."<sup>30</sup> Since semiconductors have direct military applications, Roger Cliff from Rand Corporation speculates, "China's grand strategy is to develop a world-class electronics industry and draw on it for military applications if needed."<sup>31</sup> Indeed, the semiconductor industry is designated as a "pillar industry" in China's Tenth Five-Year Plan (2001-2005).<sup>32</sup> Under the Plan, the Chinese government pledges to invest US\$18 billion in the sector and aspires to attract \$10 billion from foreign corporations in order to construct twenty-five new semiconductor plants by 2005.<sup>33</sup> Additionally in the past decade, China's State Development Planning Commission (SDPC) has granted \$725 million to eighty-four state-sponsored research centers<sup>34</sup> in an effort to expand Shanghai's semiconductor output from \$2 billion in 2000 to \$24 billion in 2010.<sup>35</sup>

Seeking electronic components capable of executing multiple functions, the military established the foundation for today's advanced semiconductors in 1959 with the invention of the integrated circuit (IC).<sup>36</sup> Since that time, applications for semiconductors have expanded far beyond the domain of the military.<sup>37</sup> Semiconductors are considered the 'crude oil' of the twenty-first century, fueling

28. *Export Controls*, *supra* note 3, at 9 ("[China's] improvements in semiconductor manufacturing capability are the direct result of the involvement of European, Japanese, and U.S. integrated circuit manufacturers in China, typically through joint ventures or wholly foreign owned manufacturing facilities.").

29. *See generally Hearings on US-China*, *supra* note 2, at 1119 (prepared statement of the Semiconductor Equipment and Materials International).

30. The U.S.-China Economic & Security Review Commission, *Report to Congress of the U.S. China Security Commission: The National Security Implications of the Economic Relationship Between the United States and China*, U.S.-CHINA ECON. & SEC. REV.COMMISS. ANN. REP. ch. 2 (July 2002), available at <http://www.uscc.gov/anrp.htm> (last visited Jan. 30, 2004).

31. George Leopold, *New China, Old Worries*, ELEC. ENG. TIMES, Apr. 1, 2002, at 1, LEXIS, News Library, Electronic Engineering Times File.

32. *See Shanghai Government Vows USD 9 Billion Investment in IC Sector over Next Five Years*, CHINA IT & TELECOM REP. Mar. 29, 2002, available at LEXIS, News Library, All News File.

33. *Id.*

34. *China Implements Hi-tech Plans to Boost Industry*, XINHUA GEN. NEWS SERVICE, Oct. 7, 2001, available at LEXIS, News Library, XINHUA File.

35. *See, e.g., Hearings on US-China*, *supra* note 2, at 1026 (prepared statement of Daryl Hatano, Vice President, Semiconductor Industry Association).

36. *See* Micron Technology, Inc., *Semiconductor History*, at <http://www.micron.com/k12/semiconductors/history.html> (last visited Nov. 25, 2003) [hereinafter *Micron Technologies, Inc.*].

37. Thirty years ago, U.S. semiconductor companies were primarily defense contractors; military systems and commercial IT products now rely on the same producers. *See generally Hearings on US-China*, *supra* note 2, at 1029 (prepared statement of George Scalise, President, Semiconductor Industry Association).

everything from cheap toys to military surveillance satellites.<sup>38</sup> Before the U.S. China Economic and Security Review Commission,<sup>39</sup> an industry expert testified, "the ability to produce integrated circuits is now a widespread commercial prospect, with military meeting its needs through off-the-shelf procurement rather than through designing chips for special military applications."<sup>40</sup>

Although China (and other potentially hostile regimes) would be able to produce adequate military technology with readily available, past-generation semiconductors,<sup>41</sup> the cutting edge 0.13-micron semiconductors<sup>42</sup> manufactured in China's leading foundries are essential for critical defense technology such as synthetic aperture radar, electronic warfare, and image compression and processing.<sup>43</sup> On a broader scale, policy analysts predict, "advantages will go to states that have a strong commercial technology sector and develop effective ways to link these capabilities to their national defense industrial base."<sup>44</sup> Observing China's ominous military modernization,<sup>45</sup> in the U.S. and Taiwan, anxiety abounds<sup>46</sup> as the tiny circuitry of 12-inch, sub-0.18-micron semiconductor chips<sup>47</sup> manufactured in China's foundries propels technology into the next generation and

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38. Micron Technology, Inc., *supra* note 36.

39. The U.S.-China Economic and Security Review Commission was created in 2000 by the Floyd D. Spence National Defense Authorization Act for 2001 § 1238, Pub. L. No. 106-398, 114 Stat. 1654A-334 (2000) (22 U.S.C. § 7002 (2001)) to "monitor, investigate, and to report to Congress an annual report on the national security implications of the bilateral trade and economic relationship between the United States and the People's Republic of China, and to provide recommendations, where appropriate, to Congress for legislative and administration action. U.S.-China Security Review Commission, *United States-China Economic and Security Review Commission Charter available at* <http://www.uscc.gov/act.htm> (last visited July 30, 2003).

40. *Hearings on US-China, supra* note 2, at 1121 (prepared statement of the Semiconductor Equipment and Materials International).

41. For instance, the U.S. Air Force's new F-22 tactical fighters use 0.8-micron chips, technology which is four generations behind current industry standards. *Export Controls, supra* note 3, at 16.

42. In 2002, the width of state-of-the-art semiconductors was 0.13 microns (the width of human hair is about 100 microns). The industry plans to deliver 0.09 micron chips in 2004, and Intel already produced such technology. The primary benefit of the decrease in width is the ability to add more transistors to the chip, thus improving processing speed and overall performance. See SEMICONDUCTOR INDUSTRY ASSOCIATION, THE INTERNATIONAL TECHNOLOGY ROADMAP FOR SEMICONDUCTORS 31-32 (2001), available at <http://public.itrs.net/> (last visited July 30, 2003). See also John Dodge, *Let' Get Small*, BIO-IT WORLD, Aug. 13, 2002, available at [http://www.bio-itworld.com/archive/081302/horizons\\_small.html](http://www.bio-itworld.com/archive/081302/horizons_small.html) (last visited July 30, 2003). See also *Export Controls, supra* note 3, at 13-20.

43. See LIEBERMAN, *supra* note 27, at 1.

44. CTR. FOR STRATEGIC & INT'L STUDIES, *Computer Technology and National Security, in* COMPUTER EXPORTS AND NATIONAL SECURITY IN A GLOBAL ERA – NEW TOOLS FOR A NEW CENTURY I (2001), available at [http://www.csis.org/tech/pubs/0106b\\_Lewis.pdf](http://www.csis.org/tech/pubs/0106b_Lewis.pdf) (last visited July 2, 2003). In China, the majority of its semiconductor foundries are partnerships between foreign investors and the Chinese government. See *Export Controls, supra* note 3, at 12.

45. See generally ANNUAL REPORT, *supra* note 3.

46. See, e.g., LIEBERMAN, *supra* note 27, at 10 ("We are being confronted by one of the greatest transfers of critical defense technologies ever organized by another government.")

47. 12-inch refers to the diameter of the computer chips, while 0.18 micron refers to the width of the chip. In 2001, 0.18-micron was considered to be state-of-the-art, and three Chinese foundries are now capable of meeting such specifications. See, e.g., *Export Controls, supra* note 3, at 10.



transforms commercial and military capabilities.<sup>48</sup>

### *B. U.S. Export Administration Regulations*

*Where there is real and credible evidence that the export of dual-use items threatens our national security, we must act to combat that threat. No company wants to see its name in the headlines of the Los Angeles Times or some other newspaper as the source of some critical item or technology that facilitated an act of terrorism.*

-Kenneth Juster, U.S. Under Secretary of Commerce for Export Administration<sup>49</sup>

To “minimize transfers of technology that could contribute to potentially threatening modernization efforts, the U.S. requires licenses for exports of goods with conceivable military applications.<sup>50</sup> At the conclusion of World War II, Congress enacted the Export Control Act (ECA) of 1949 which directed the Commerce Department to impose export controls on goods in short supply or goods affecting national security and foreign policy.<sup>51</sup> After the ECA expired in 1969 the Export Administration Act of 1969 filled the void, and the act was eventually updated and amended to become the Export Administration Act (EAA) of 1979.<sup>52</sup> The EAA expired on August 20, 1994 and without a permanent EAA, President Clinton invoked his authority under the International Emergency Economic Powers Act<sup>53</sup> to reauthorize the Export Administration Regulations (EAR) of the EAA.<sup>54</sup> Since Clinton’s initial Executive Order, there have been seven failed attempts to enact a permanent EAA, obliging the President to annually invoke emergency orders and reauthorize export administration regulations that are based on statutory authority that “has not been comprehensively revised or overhauled in [twenty-three] years.”<sup>55</sup>

As stipulated in the statutory authority of the EAR, export control policies are

48. See generally *Export Controls*, supra note 3.

49. *BIS Chief Juster Reveals Export Control and Security Priorities for 2003*, MANAGING EXPORTS, July 2002, available at [http://www.bxa.doc.gov/news/2002/KJusterUWKeynoteCA04\\_16\\_02.htm](http://www.bxa.doc.gov/news/2002/KJusterUWKeynoteCA04_16_02.htm) (last visited Nov. 30, 2003).

50. *Hearings on US-China*, supra note 2, at 950 (prepared statement of Lisa Bronson, Deputy Under Secretary of Defense for Technology Security Policy and Counter proliferation).

51. U.S. Bureau of Industry and Security, *History of Export Controls*, at <http://bxa.fedworld.gov/mission.html> (last visited Aug. 6, 2003).

52. The Export Administration Act of 1979, Pub. L. 96-72, 93 Stat. 503 (50 U.S.C. app. § 2401).

53. 50 U.S.C. § 1702.

54. Exec. Order No. 12,924, 59 Fed. Reg. 162 (Aug. 19, 1994).

55. Most recently, the proposed Export Administration Act of 2003, H.R. 55, 108<sup>th</sup> Cong. (2003) (the House version of S. 149, 107<sup>th</sup> Cong. (2001)), which aimed to streamline the export control review process and decontrol items readily available from foreign sources, was introduced on January 7, 2003. Since being referred to the House Committee on International Relations, no action has been taken on H.R. 55. See generally Kenneth I. Juster, Under Secretary of Commerce, Bureau of Industry and Security, Keynote Address (Oct. 10, 2002), available at <http://www.bxa.doc.gov/news/2002/ken2u@update02.htm> (last visited July 30, 2003) [hereinafter Juster].

intended to encourage free trade with all countries, "except those with which such trade has been determined by the President to be against the national interest."<sup>56</sup> Exercising his power to delegate responsibilities for such determinations,<sup>57</sup> the President entrusts the Commerce Department's Bureau of Industry and Security (formerly known as the Bureau of Export Administration) to administer and enforce export controls.<sup>58</sup> In accordance with Executive Order 12,981,<sup>59</sup> the Bureau of Industry and Security then consults with the Departments of State, Defense, and Energy, and the Arms Control and Disarmament Agency upon receiving applications for export licenses.<sup>60</sup> As a full partner in the interagency export license review process,<sup>61</sup> the Department of Defense in particular is reputed to favor national security interests over the commercial interests of U.S. exporters when considering export licenses.<sup>62</sup> According to Lisa Bronson, Deputy Under Secretary of Defense for Technology Security Policy and Counterproliferation, as it relates to China, export licenses are denied only if they make a "direct and significant" or "material" contribution to China's military capabilities.<sup>63</sup> Nonetheless, in the likely scenario of a conflict between economic and national security interests, Vann H. Van Diepen, Acting Deputy Assistant Secretary of State for Nonproliferation, affirms, "export controls must uphold U.S. national security and foreign policy"<sup>64</sup>

Acting without strict guidelines for permissible exports, the governmental agencies approve or disapprove export licenses on a case-by-case basis.<sup>65</sup> Although export controls regulate exports of dual-use technologies to every country in the world, the level of control that is exerted depends, in part, on destination of the export.<sup>66</sup> Accordingly few licenses are required when exporting a dual-use good to a NATO ally that is also a member of a nonproliferation regime, while a virtual embargo is imposed on exports to Iraq, Libya, and Iran.<sup>67</sup> Meanwhile, most

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56. 50 U.S.C. § 2402(1) (2003).

57. 50 U.S.C. § 2403(e) (2003).

58. See U.S. Bureau of Industry and Security, Policies and Regulations, at <http://www.bxa.doc.gov/policiesandregulations/index.htm#ear> (last visited July 10, 2003).

59. Exec. Order No. 12,981, 60 Fed. Reg. 236 (Dec. 5, 1995).

60. See Corr, *supra* note 12, at 469-71.

61. See *Hearings on US-China*, *supra* note 2, at 949 (prepared statement of Lisa Bronson, Deputy Under Secretary of Defense for Technology Security Policy and Counter proliferation).

62. See Corr, *supra* note 12, at 470 ("As may be expected, the Defense Department takes a conservative, security-oriented posture, and is much less concerned with the effect of license denials on U.S. exporters.").

63. *Hearings on US-China*, *supra* note 2, at 950 (prepared statement of Lisa Bronson, Deputy Under Secretary of Defense for Technology Security Policy and Counter proliferation). See also 15 C.F.R. § 742.4(b)(2) (2003).

64. *Hearings on US-China*, *supra* note 2, at 1034 (prepared statement of Vann H. Van Diepen, Acting Deputy Assistant Secretary of State for Nonproliferation) ("[I]nvariably, China will be the center of semiconductor manufacturing.").

65. *Hearings on US-China*, *supra* note 2, at 949 (prepared statement of Lisa Bronson, Deputy Under Secretary of Defense for Technology Security Policy and Counter proliferation).

66. See *Hearings on US-China*, *supra* note 2, at 956 (prepared statement of James J. Jochum, Assistant Secretary of Commerce for Export Administration).

67. *Id.*

exports to China require licenses.<sup>68</sup> As mandated by the EAR, the Bureau of Industry and Security also considers foreign availability of the relevant good when reviewing applications for export licenses.<sup>69</sup> However, even if the technology is widely available from foreign competitors, the approval of an export license is still not a guarantee. Following the ambiguous case-by-case policy, Lisa Bronson maintains, “no single factor is going to be the only reason that we make a decision on a license.”<sup>70</sup>

As part of the interagency review process, when a U.S. corporation applies for an export license to sell dual-use technology to a Chinese company Commerce officials endeavor to determine whether sales to the particular Chinese importer would endanger national security.<sup>71</sup> As of 2001, nineteen entities in China were considered national security threats and thus exports to those entities are prohibited,<sup>72</sup> while licenses to export to non-banned entities are granted on the aforementioned case-by-case basis. To gain greater insight into the risks posed by specific Chinese importers, the Bureau of Industry and Security negotiated an end-use visit arrangement with China in July 1998.<sup>73</sup> With China’s consent, the Bureau of Industry and Security conducted forty-two end-use checks in China in 2001,<sup>74</sup> but there are still over 700 outstanding checks.<sup>75</sup> The Chinese government ultimately retains the authority to determine whether the Commerce Department is permitted to conduct on-site end-use checks so it nearly impossible to accurately determine whether an exported good will be applied to civilian or military use.<sup>76</sup>

To accommodate technological advances in the early 1990s, the U.S. relaxed high-tech export controls in 1995, believing that it would boost the domestic economy, which in turn would enhance national security.<sup>77</sup> Since then, the direction of export control policies has reversed course, and regulations on dual-use exports have become more restrictive.<sup>78</sup> Beginning in October 1998, Congress recognized that the military’s role in the interagency export license review process had been “significantly and improperly reduced over the years, and a new Pentagon position was created to specifically monitor transfers of dual-use

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68. *Id.*

69. 50 U.S.C. § 2403(c) (2003). *See also* 15 C.F.R. § 768.1 (2003).

70. *See Hearings on US-China, supra* note 2, at 981 (Panel I Discussion and Questions and Answers).

71. *See, e.g., Export Controls, supra* note 3, at 23.

72. *See Hearings on US-China, supra* note 2, at 964 (Panel I Discussion and Questions and Answers).

73. *See Hearings on US-China, supra* note 2, at 985 (prepared statement of Michael J. Garcia, Assistant Secretary, Office of Export Enforcement, Department of Commerce).

74. *Id.*

75. *Export Controls, supra* note 3, at 28.

76. *See Hearings on US-China, supra* note 2, at 985-86 (prepared statement of Michael J. Garcia, Assistant Secretary, Office of Export Enforcement, Department of Commerce).

77. *See* Jeff Gerth and Eric Schmitt, *Chinese Said to Reap Gains of U.S. Export Policy Shift*, N.Y. TIMES, Oct. 19, 1998, at A1 (stating that after amendments in 1995, more than \$1.9 billion in annual trade with China that was previously under government scrutiny was removed, and after the policy change \$3 billion in dual-use semiconductor technology was exported to China from 1995-1998).

78. *See Corr, supra* note 12. *See also* Leopold, *supra* note 31, at 92.

technology into China.<sup>79</sup> Startled by reports that exported technology was abetting Chinese military modernization, former CIA director James Woolsey bemoaned, "what's particularly troubling is that the massive decontrol in the last few years of the export of dual-use technology in general, and specifically to China, has made it almost impossible for the U.S. to monitor where such technology has gone much less exercise control over it."<sup>80</sup> Similar concerns resurfaced during the government's Spring 2003 review of defense trade policy.<sup>81</sup> Regarding China as a potential future adversary with a military that is being strengthened by sophisticated semiconductors and international investors, Rep. Dana Rohrabacher (R-CA) argued, "we need to put heavy restrictions on those countries that could be potential enemies, like communist China."<sup>82</sup>

In spite of Export Administration Regulations, between 1988 and 1998, the Commerce Department approved over \$15 billion in dual-use exports to China, some of which "went directly to China's leading nuclear, missile, and military sites – the main vertebrae in China's strategic backbone."<sup>83</sup> In 2001, the Bureau of Industry and Security received over 1,300 applications from U.S. exporters seeking to sell more dual-use technology to China; of those applications, 936 were approved, thirty were denied, and 325 were returned to the applicants for more information.<sup>84</sup> Although over 70% of dual-use export license applications are initially approved, the bureaucratic regulations inhibit the business plans of all potential exporters of ephemeral technology: the average processing time for an application to export a dual-use good to China was seventy-two days in 2002.<sup>85</sup> Adding to the burdens for U.S. exporters, approved licenses ordinarily contain numerous restrictions for the exporters, such as prohibiting re-exporting the item or using the item in a manner not specified in the license application.<sup>86</sup>

### C. Multilateral Export Control Agreements

In addition to domestic dual-use export restrictions, throughout the Cold War, the U.S. and its allies vigilantly enforced the rules of the Coordinating Committee for Multilateral Export Controls (CoCom), which blocked transfers of dual-use technologies to the Communist Bloc.<sup>87</sup>

Since all members encountered a common threat (the Warsaw Pact and

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79. Gerth and Schmitt, *supra* note 77 at A14.

80. *Id.*

81. See Dennis Kennelly & Ben Stone, *Bush Team Reviewing Defense Trade Policy*, NAT'L DEF Apr. 1, 2003, at 48.

82. Puzanghera, *supra* note 9, at 1.

83. *Hearings on US-China*, *supra* note 2, at 1072 (prepared Statement of Gary Milhollin, Director, Wisconsin Project on Nuclear Arms Control).

84. *Hearings on US-China*, *supra* note 2, at 957 (prepared statement of James J. Jochum, Assistant Secretary of Commerce for Export Administration).

85. Juster, *supra* note 55.

86. See, e.g., *Hearings on US-China*, *supra* note 2, at 957 (prepared statement of James J. Jochum, Assistant Secretary of Commerce for Export Administration).

87. See, e.g., Corr, *supra* note 12, at 450-455.

China) and a common objective (undermining the Warsaw Pact and hindering Chinese technological advancement) CoCom was relatively successful in achieving its goals.<sup>88</sup> As the Cold War ended and the perceived security threats subsided, however, the U.S. and Europe curtailed export controls, and CoCom was officially disbanded in March 1994.<sup>89</sup>

After CoCom dissolved, the 1996 Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Technologies attempted to fill the void and “contribute to regional and international security and stability by promoting transparency and greater responsibility in transfers of conventional arms and dual-use goods and technologies.”<sup>90</sup> Signed by thirty-three countries including Japan and most of Western Europe, parties to the Arrangement pledged to impose strict export controls to limit transfers of sensitive dual-use goods and technologies for military end-use.<sup>91</sup> However, unlike CoCom, the Wassenaar Arrangement is not legally binding, so countries are permitted to devise independent export administration policies without breaching international law.<sup>92</sup>

Using the Wassenaar Arrangement’s open forum for coordinating international exports of dual-use technology, members agree to report denials of export licenses to other members within sixty days.<sup>93</sup> Once countries are notified that another country denied a certain export, under Wassenaar Arrangement provisions, countries are still allowed to approve a license for an identical item and thus ‘undercut’ the original country that denied the license.<sup>94</sup> The only restriction on ‘undercutting’ is that if a country approves an export that was prevented by another country within three years, the country granting the export license must inform all other members within sixty days of the issuance of the license.<sup>95</sup> Rather than promoting international security, the result of such reporting mechanisms can be counterproductive; the country denying an export license essentially notifies all other members of a sales opportunity.<sup>96</sup>

Contrary to CoCom, the Wassenaar Arrangement is also not specifically

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88. See generally DEFENSE SCIENCE BOARD (DSB) TASK FORCE ON GLOBALIZATION AND SECURITY, FINAL REPORT OF THE DEFENSE SCIENCE BOARD TASK FORCE ON GLOBALIZATION AND SECURITY 26 (1999), available at <http://www.acq.osd.mil/dsb/globalization.pdf> (last visited June 10, 2003) [hereinafter DSB FINAL REPORT].

89. See, e.g., Wassenaar Arrangement Secretariat, History of the Wassenaar Arrangement, at <http://www.wassenaar.org/docs/History.html> (last visited Aug. 1, 2003).

90. The Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies, July 12, 1996, art. I(1), available at <http://www.wassenaar.org/docs/IE96.html> (last visited Nov. 30, 2003) [hereinafter The Wassenaar Arrangement].

91. *Id.* at art. I(3).

92. *Id.* at art. II(4); See also Broadbent, *supra* note 1, at 50.

93. The Wassenaar Arrangement, *supra* note 90, at art. V(3); See also *Hearings on US-China*, *supra* note 2, at 969-70 (Panel I Discussion and Questions and Answers).

94. The Wassenaar Arrangement, *supra* note 90, at art. II(4) (“Notification of a denial will not impose an obligation on other Participating States to deny similar transfers.”).

95. *Id.*

96. Jamil Jaffer, *Strengthening the Wassenaar Export Control Regime*, 3 CHI. J. INT’L L. 519, 522 (2002).

directed to prevent technology transfers to certain regimes,<sup>97</sup> and the Arrangement is thus weakened by the “absence of a single large threat and lack of agreement over the nature and seriousness of the smaller threats.”<sup>98</sup> Even if member countries recognize the military value of certain dual-use technologies, those countries are not obligated to acknowledge the international security threat posed by exporting the item to a country such as China.<sup>99</sup> According to the U.S. General Accounting Office, “The U.S. is the only member that considers the relationship between semiconductor manufacturing and military end uses sufficiently critical and considers China’s acquisition of this technology a potential threat to regional or international security.”<sup>100</sup> Furthermore, while the Bureau of Industry and Security maintains a list of entities for which no dual-use exports are permitted,<sup>101</sup> the Wassenaar Arrangement does not contain such lists and “it is the sovereign decision of each country as to whether or not it makes a particular export.”<sup>102</sup>

Ultimately, as the U.S. Bureau of Industry and Security admits, the Wassenaar Arrangement merely “provides a venue in which governments can consider collectively the implications of various transfers on their international and regional security interests.”<sup>103</sup> Given its lack of enforceable provisions and flawed reporting mechanisms, the Wassenaar Arrangement is at best a “chat society,”<sup>104</sup> and at worst, it is a preposterous system by which countries apprise other members of willing buyers to which they refused to sell.<sup>105</sup>

### III. THE MODERN PLIGHT OF EXPORT CONTROLS

#### A. *International Undercutting*

*While the United States still has a large semiconductor production equipment base, China can obtain all major types of semiconductor equipment from non-U.S. sources in Japan and Europe.*

-George Scalise, President, Semiconductor Industry Association<sup>106</sup>

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97. See *Hearings on US-China*, *supra* note 2, at 968 (Panel I Discussion and Questions and Answers).

98. DSB FINAL REPORT, *supra* note 88, at 26.

99. See *Export Controls*, *supra* note 3, at 19.

100. *Id.* at 17.

101. See *supra* text accompanying note 72.

102. *Hearings on US-China*, *supra* note 2, at 970, 973 (Panel I Discussion and Questions and Answers). See also *The Wassenaar Arrangement*, *supra* note 90, art. II(3).

103. U.S. Bureau of Industry and Security, Wassenaar FAQs, § 8, at <http://www.bis.doc.gov/wassenaar/WASSFAQs.html> (last visited Aug. 7, 2003).

104. Richard Read, *U.S. Trade, Security Interests Clash over Technology Exports to China*, THE OREGONIAN, Feb. 3, 2003, at A7, available at LEXIS, News Library, OREGNN File.

105. See *supra* text accompanying note 96.

106. See generally *Hearings on US-China*, *supra* note 2, at 1032 (prepared statement of George

Besides U.S. corporations, Japanese and European competitors produce and sell the equipment, chemicals, gases, and films necessary for producing advanced semiconductors.<sup>107</sup> Boosted by international investors and suppliers and an accelerating demand from technology companies,<sup>108</sup> six new semiconductor foundries in China are expected to begin producing 0.18-micron chips in 2003 and two others are progressing toward the production of 0.13-micron chips,<sup>109</sup> although U.S. exporters report a ban on transfers to China of the equipment necessary for producing those chips.<sup>110</sup> Two of China's leading foundries, SMIC and GSMC,<sup>111</sup> openly flaunt technology that is reportedly prohibited or delayed by U.S. export controls epitomizing the ineffectiveness of restrictions on U.S. exporters.<sup>112</sup>

According to Shanghai's Semiconductor Manufacturing International Corporation (SMIC), swiftly acquiring cutting-edge processing systems is not an obstacle in the production of advanced chips.<sup>113</sup> SMIC CEO Richard Chang reveals, "our solution is to import a lot of equipment from Europe. .the export license usually takes from one week to two weeks for a European government. For the USA, it's case by case. Sometimes it's three months, but the longest we have experienced is six months."<sup>114</sup> After its attempt to import equipment from Applied Materials Inc. (Santa Clara, California) was thwarted by U.S. export controls in 2001, SMIC simply imported the identical technology from a company in Sweden to construct its first plant.<sup>115</sup> In 2002, to produce its next generation 0.13-micron chips, SMIC imported equipment from ASML Co. of the Netherlands.<sup>116</sup> Most recently, German company Infineon Technologies reached an agreement with SMIC to transfer its 0.11-micron technology and expertise to SMIC in exchange for an agreement from SMIC to only use the equipment to produce chips for

Scalise, President, Semiconductor Industry Association).

107. *See Id.* at 1032-1033.

108. The China market for semiconductor equipment was \$4 billion in 2001 and an estimated \$7 billion in 2003. By 2010, China is expected to become the second largest market for semiconductors. *See, e.g., Hearings on US-China, supra* note 2, at 1121 (prepared statement of the Semiconductor Equipment and Materials International).

109. *See* LaPedus and Fuller, *supra* note 25, at 4. *See also SMIC to Complete 12" Silicon Wafer Plants in Shanghai and Beijing*, SINOCAS, Apr. 9, 2003, available at LEXIS, News Library, CURNWS File.

110. *See TI To Buy More Chinese-Made Products, supra* note 25. *See also Export Controls, supra* note 3, at 3 (discussing U.S. efforts to keep China two generations behind industry standards); *See also* Semiconductor Equipment and Materials International, *supra* note 29, at 1121.

111. SMIC and GSMC are China's newest and most advanced semiconductor foundries, and both are wholly foreign owned. *See Export Controls, supra* note 3, at 12.

112. Mike Clendenin, *China Foundry Turns to Europe for Advanced Chip Gear* ELEC. ENG. TIMES, Dec. 6, 2001, at 1, available at <http://www.eetimes.com/semi/news/OEG20011206S0044> (last visited Aug. 25, 2003).

113. *Export Controls, supra* note 3, at 12.

114. Mike Clendenin, *supra* note 112, at 1.

115. *See* Read, *supra* note 104. *See also Hearings on US-China, supra* note 2, at 1122 (prepared statement of the Semiconductor Equipment and Materials International) (discussing SMIC's plans to buy 50% of its equipment from U.S. sources, which were amended due to the bureaucratic delays experienced by U.S. exporters).

116. *SMIC Unveils 0.13-Micron Chip Technology*, TAIWAN ECON. NEWS, Dec. 17, 2002, available at LEXIS, News Library, ALLASI File.

Infinion.<sup>117</sup> Monitoring the success of SMIC's initial facilities, the Chinese government recently asked SMIC to construct a facility in Beijing and to complete it within thirteen months.<sup>118</sup>

In addition to SMIC, Grace Semiconductor Manufacturing Corporation (GSMC) is rapidly developing advanced semiconductor manufacturing capabilities.<sup>119</sup> Overlooking U.S. suppliers encumbered by archaic export controls, GSMC Vice Chairman Nasa Tsai divulges, "think how bad the Japanese economy is they love to sell."<sup>120</sup> Facing domestic economic pressures, Japan amended its export regulations in 2001 to ease constraints on shipments of 0.18-micron technology to China.<sup>121</sup> Relying on semiconductor manufacturing equipment imported from Oki Electric Industry of Japan, GSMC is currently capable of producing for 0.15-micron chips and plans to begin producing 0.13-micron chips in 2004.<sup>122</sup>

The unimpeded growth of SMIC and GSMC exemplifies the futility of unilateral U.S. export controls; James Lewis of the Center for Strategic and International Studies (CSIS) observes, "all other major suppliers – the Netherlands, Germany and Japan – have told the U.S. that they will not block equipment sales to China, and "they have repeatedly questioned the contribution of semiconductor manufacturing equipment to military capabilities and proliferation and ask whether there is still any strategic rationale for controlling these items."<sup>123</sup> In addition to their skepticism regarding the dangers posed by dual-use exports, European and Asian governments harbor far less suspicion of China's military modernization than U.S. officials.<sup>124</sup> Illustrating the irrelevance of U.S. export controls in the twenty-first century, in the mid 1990s, Russia, China, India, and Israel routinely complained to the State Department that U.S. export controls unfairly damaged their economies; now such complaints are rare, implying that countries can easily acquire computing power elsewhere.<sup>125</sup>

### B. U.S. Economic Losses

When U.S. companies such as Applied Materials Inc., the world's largest

117. *Infinion to Transfer 0.11-Micron Technology to SMIC*, SINOCAST, Apr. 2, 2003, available at LEXIS, News Library, ALLASI File.

118. Loh Hui Yin, *SMIC's Technology, Speed Impress China*, BUS. TIMES (Singapore), Feb. 10, 2003, available at LEXIS, News Library, ALLASI File.

119. Craig Smith, *China Finds Ways to Beat Chip Limits*, N.Y. TIMES, May 6, 2002, at C4.

120. *Id.*

121. See Mike Clendenin, *China's Fabs Eye A Rule Change*, ELEC. ENG. TIMES, Aug. 27, 2001, at 96.

122. Jack Robertson, *China Fab to Launch with Advanced Technology*, ELEC. ENG. TIMES, Oct. 29, 2002, at 1.

123. Lewis, *supra* note 7, at 1022.

124. See generally *Hearings on US-China*, *supra* note 2, at 1042 (prepared statement of Kathleen A. Walsh, Senior Associate, Henry L. Stinson Center).

125. See generally *Hearings on US-China*, *supra* note 2, at 1117-18 (prepared statement of James Lewis, Director, Technology Policy, Center for Strategic and International Studies).



producer of semiconductor equipment,<sup>126</sup> are undercut by foreign suppliers, besides failing to prevent China from developing advanced technologies, the policies undermine U.S. economic interests.<sup>127</sup> Mocking superannuated U.S. export controls on semiconductor manufacturing equipment, SMIC executive Joseph Xie explains, “we love to do business with the U.S., but we can’t wait forever Europe and Japan are getting the business.”<sup>128</sup> With Asia accounting for 60% of sales from U.S. semiconductor equipment suppliers and China becoming Asia’s largest recipient of new semiconductor manufacturing investment,<sup>129</sup> U.S. exporters of the equipment are disadvantaged relative to their foreign competitors.

When the U.S. vigorously scrutinized dual-use exports during the Cold War, U.S. companies generally accepted the restrictions, since few developed countries possessed advanced technologies,<sup>130</sup> and the U.S. maintained a large commercial and technological edge over the countries that did possess those technologies.<sup>131</sup> Moreover, the military applicability of technology was generally unmistakable in the 1970s, and therefore military goods could be differentiated from commercial goods.<sup>132</sup> Now, almost all IT products can be considered dual-use goods. A semiconductor equipment manufacturers association insists, “semiconductor manufacturing equipment and materials are indistinguishable from other types of generic manufacturing equipment whose export would be restricted only as part of a comprehensive economic embargo, not for reasons of national security”<sup>133</sup>

Since the U.S. Commerce Department operates on a more restrictive export control system than foreign governments,<sup>134</sup> and China is thus able to acquire advanced dual-use technology from foreign sources, high-tech executives argue that the only effect of U.S. controls is that it “interferes with our companies’ ability to succeed internationally”<sup>135</sup> Without substantial changes to streamline the interagency process for reviewing dual-use export licenses, the Semiconductor Industry Association worries, “U.S. companies will increasingly fall behind in this crucial market, and, by extension, the global market.”<sup>136</sup> Forecasting similar dire

126. *Export Controls*, *supra* note 3, at 13.

127. *See supra* text accompanying notes 120-21.

128. Smith, *supra* note 119, at C4.

129. *See also Hearings on US-China*, *supra* note 2, at 1119, 1121-22 (prepared statement of the Semiconductor Equipment and Materials International).

130. *See generally Export Controls*, *supra* note 3, at 5-6 (“U.S. Companies created and dominated the semiconductor equipment and materials industries until the early 1980s, when Japan increased investment and Japanese companies gained a greater market share in several critical equipment and materials industries.”).

131. Corr, *supra* note 12, at 452.

132. *See generally Hearings on US-China*, *supra* note 2, at 1031 (prepared statement of George Scalise, President, Semiconductor Industry Association) (“Most IT products are purely civilian items, which cannot, for these purposes, be distinguished from civilian applications such as automobiles.”).

133. *See generally Hearings on US-China*, *supra* note 2, at 1121 (prepared statement of Semiconductor Equipment and Materials International).

134. *See supra* text accompanying note 120. *See also* Walsh, *supra* note 124.

135. Gerth and Schmitt, *supra* note 77, at A14.

136. *See generally Hearings on US-China*, *supra* note 2, at 1034 (prepared statement of George Scalise, President, Semiconductor Industry Association). *See also* Clendenin, *supra* note 121.

long term consequences of export controls on dual-use technology, Denis Simon of the Rensselaer Polytechnic Institute in New York reckons, "the last thing we want to do is treat China as a technological adversary and have them get technology from elsewhere, and then find we're locked out of that system."<sup>137</sup>

In 2001, China accounted for 1,300 of the 11,000 export applications submitted to the Commerce Department,<sup>138</sup> and virtually all of the applications were for dual-use goods.<sup>139</sup> Since corporations are unlikely to apply for an export license unless they are confident that their request will be approved,<sup>140</sup> between 1997 and 2000, the dollar value of denied export licenses was only 0.4-0.5% of the total value of the semiconductor equipment exported to China.<sup>141</sup> Nonetheless, economic losses from denied licenses represent only a fraction of the cost to U.S. corporations, since processing delays also compel Chinese companies to import technology from non-U.S. sources.<sup>142</sup> According to studies conducted by the Institute for International Economics and the U.S. Import-Export Bank, the total annual cost of unnecessary domestic export controls for the U.S. economy is somewhere between \$10 billion and \$40 billion.<sup>143</sup>

#### IV PROSPECTS AND IMPLICATIONS OF STRATEGIC FREE TRADE AGREEMENTS

##### A. Trade and Investment Diversion Theory

*Free-trade agreements deviate from the multilateral principle of nondiscrimination, and they can divert trade from more efficient to less efficient but favored import producers.*

-Daniel Griswold, Cato Institute<sup>144</sup>

Bilateral free trade agreements disregard the nondiscrimination principles of the World Trade Organization (WTO),<sup>145</sup> but provisions of the WTO Charter grant exceptions for WTO members to negotiate bilateral agreements that explicitly favor some countries over others. Establishing the "most favored nation"

137 Read, *supra* note 104.

138. See generally *Hearings on US-China*, *supra* note 2, at 965 (Panel I Discussions and Questions and Answers).

139. See, e.g., Leopold, *supra* note 31, at 92.

140. See, e.g., *Export Controls*, *supra* note 3, at 27.

141. *Id.* Between 1997 and 2000, the U.S. Government reviewed almost \$1.6 billion in semiconductor manufacturing equipment and materials licenses.

142. See *supra* text accompanying notes 118-21. See also *Hearings on US-China*, *supra* note 2, at 1122 (prepared statement of Semiconductor Equipment and Materials International).

143. Broadbent, *supra* note 1, at 51.

144. Griswold, *supra* note 16, at 1.

145. See UPALI Wickramasinghe, *Preferential Trade Agreements and the WTO* (Paper prepared for the Conference on *Follow up to UNCTAD X South Asian Perspective*, August 1-4, 2000) available at <http://www.lawnet.lk/articles/pdf/article6.pdf> (last visited July 10, 2003).

(MFN)<sup>146</sup> principle, Article I of the WTO Charter (the General Agreement on Tariffs and Trade 1947 as amended in 1994) stipulates, “any advantage, favour, privilege or immunity granted by any contracting party to any product originating in or destined for any other country shall be accorded immediately and unconditionally to the like product originating in or destined for the territories of all other contracting parties.”<sup>147</sup> However, Article XXIV(5) contains an exception for countries to form free trade agreements and thus violate the MFN principle provided that the agreements a) do not raise barriers to trade for non-contracting parties, b) barriers to trade between contracting parties do not become more restrictive, and c) interim agreements for FTAs include a plan for forming FTAs “within a reasonable length of time.”<sup>148</sup> Between 1948 and the Uruguay Round of 1994, WTO members negotiated only 124 free trade agreements under the Article XXIV exception.<sup>149</sup> Interest in FTAs sharply accelerated after the Uruguay Round, however, as over 130 such agreements have been announced since 1995, an average of over 15 per year.<sup>150</sup>

Although FTAs are legally compatible with the WTO Charter, economists challenge the WTO’s sanguine assumption that FTAs promote global economic welfare.<sup>151</sup> In his seminal analysis of customs unions in 1950,<sup>152</sup> economist Jacob Viner hypothesized that the global economic outcome of FTAs is dependent on whether beneficial “trade creation” or inefficient “trade diversion” prevails.<sup>153</sup> First, Viner recognized the constructive possibilities of trade creation; by eliminating trade barriers and thus removing market distortions, the agreements promote a shift in the locus of production from high cost points to low cost points within the trade area.<sup>154</sup> At the same time, Viner warned of the negative, inefficient effects of trade diversion that arise when the reduced trade barriers prompt one party to the agreement to import from the other party rather than a more efficient

146. *Id.* Since GATT was designed as an economic arrangement, the Charter sought to de-politicize trade by ensuring non-discriminatory trade policies among members.

147. General Agreement on Tariffs and Trade, Oct. 30, 1947 art. I(1), T.I.A.S. No. 1700, 50 U.N.T.S. 188, art. I(1).

148. *Id.* art. XXIV(5). See also Sungjoon Cho, *Breaking the Barrier Between Regionalism and Multilateralism*, 42 HARV INT’L L. J. 419 (2001).

149. Wickramasinghe, *supra* note 145, at 3. During the Uruguay Round (UR), the WTO recognized the value of FTAs in advancing the free trade principles of the WTO and reaffirmed that FTAs must not damage parties outside of the agreement.

150. Griswold, *supra* note 16, at 3.

151. Wickramasinghe, *supra* note 145, at 5. (Reaffirming the WTO’s position, 1995 Secretariat study contends, “Regional and multilateral integration initiatives are compliments rather than alternatives in the pursuit of more open trade.”).

152. Customs unions are slightly different than free trade agreements in that members conduct free trade between themselves and maintain common tariffs to parties outside of the agreement, while FTAs allow parties to establish their own trade policies regarding tariffs for countries not included in the agreement. See, e.g., Cooper, *supra* note 15, at 2.

153. See generally JACOB VINER, THE CUSTOMS UNIONS ISSUE (1950), reprinted in TRADING BLOCS: ALTERNATIVE APPROACHES TO ANALYZING PREFERENTIAL TRADE AGREEMENTS 105 (Jagdish Bhagwati et al. eds., 1999).

154. *Id.* at 107

third party<sup>155</sup> Given the complexity of specific agreements, studies attempting to determine whether trade creation or trade diversion dominates have generally yielded inclusive results or groundless speculation.<sup>156</sup> Despite Viner's venerated trade creation/trade diversion theory, which suggests that preferential free trade agreements among WTO members are sometimes inefficient for the global economy "from a political viewpoint, whether a regional trade bloc results in a net economic benefit to the world economy may be of little consequence."<sup>157</sup>

Overlooking the potential negative global consequences of trade diversion, countries eyeing the political and economic gains of trade creation are driving the proliferation of FTAs.

Even if inefficient global trade diversion results, FTAs advance American economic interests by creating a level playing field for U.S. exporters that are disadvantaged by FTAs that do not include the United States.<sup>158</sup> For instance, proponents of the U.S.-Chile FTA<sup>159</sup> argue that U.S. exporters are disadvantaged relative to Canadian exporters that do not encounter tariffs under the Canada-Chile FTA.<sup>160</sup> From a homeland security perspective, since September 11, the Bush administration has regarded FTAs and the formation of open markets as the optimal long-term strategy for combating international terrorism.<sup>161</sup> Adding to the myriad potential domestic economic and political gains of trade creation, FTAs spur market-based reforms in developing countries and thereby open markets for U.S. firms,<sup>162</sup> establish a template for broader free trade negotiations,<sup>163</sup> and provide a "safety valve" for the multilateral trade negotiations of the WTO that often become "long, tortuous, and uncertain."<sup>164</sup>

Although trade diversion is considered an inefficient outcome of free trade agreements for the global economic system, for national security reasons, countries accrue domestic benefits when FTAs divert trade from the most efficient producers.<sup>165</sup> Given the enormous construction costs of semiconductor

155. *Id.* See also Cooper, *supra* note 15, at 9

156. Richard H. Steinberg, *Antidotes to Regionalism: Responses to Trade Diversion Effects of the North American Free Trade Agreement*, 29 STAN. J INT'L L. 315, 321 (1993).

157. *Id.* at 322.

158. See Griswold, *supra* note 16, at 5.

159. The U.S.-Chile FTA was signed in June 2002 and, once implemented, will eliminate bilateral trading barriers between the U.S. and Chile. See U.S. Trade Representative, United States and Chile Sign Historic Free Trade Agreement (June 6, 2003), at <http://www.ustr.gov/releases/2003/06/03-37.pdf> (last visited July 30, 2003).

160. See Cooper, *supra* note 15, at 3. See also Canada-Chile Free Trade Agreement, Dec. 5, 1996, Can.-Chile, 36 I.L.M. 1067 (1997).

161. See, e.g., *Security Issues Fuel U.S. Drive for Free Trade Agreements*, AFR. NEWS, Apr. 2, 2003, available at LEXIS, News Library, CURNWS File.

162. See, e.g., Griswold, *supra* note 16, at 6.

163. See *Id.* at 5. See also Cooper, *supra* note 15, at 6.

164. Griswold, *supra* note 16, at 4. See also Cooper, *supra* note 15, at 4.

165. According to David Ricardo's famous theory of comparative advantage, global economic efficiency is maximized when each country produces the product in which it has comparative advantage. With trade liberalization and free trade between all countries, all participants theoretically improve economic efficiency and consumer welfare. See, e.g., Steinberg, *supra* note 156, at 319.

manufacturing facilities and the industry's unpredictable market trends, U.S. computer and electronics companies will likely continue outsourcing manufacturing to foundries that mass-produce computer chips.<sup>166</sup> However, by manipulating the flow of foreign direct investment and trade via FTAs,<sup>167</sup> the U.S. could theoretically influence China's attractiveness as a base for semiconductor production. Insofar as developing countries "signal to the rest of the world that they are serious about embracing global competition" when they sign an FTA with the U.S.,<sup>168</sup> FTAs cultivate stable economic policies and construct substitutes for international investors seeking to build foundries that can support the world's technology corporations. According to a survey conducted by the Bureau of Business Research at American International College, "political stability is the most important factor American companies consider when locating operations abroad."<sup>169</sup> Currently the political instability and economic uncertainty that pervades much of the developing world discourages foreign investment,<sup>170</sup> while China's ambitious, state-based economic plans engender confidence in foreign investors.<sup>171</sup>

Besides diverting foreign investment by supporting market reforms and stabilizing political agendas in developing countries, FTAs restructure U.S. tariff schedules and consequently provide incentives for U.S. companies to import from some countries over others. Since the U.S. accounts for approximately only 20% of China's exports,<sup>172</sup> the effect of revamping tariffs on China's high-tech exporting centers would likely not be as great as the effect of promoting political stability elsewhere.<sup>173</sup> Nonetheless, when tariffs on high-tech goods imported from FTA partners are eliminated, it enhances the attractiveness of importing from the FTA partner relative to China, even if China is the world's most efficient producer of the imported good.<sup>174</sup> In the long run, the political and economic effects of

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166. Building a new foundry costs up to \$2 billion (semiconductor equipment accounts for 80% of the cost). U.S. technology companies reduce costs and thus become more competitive in the global market by outsourcing, and U.S. equipment suppliers gain access to markets with reduced export restrictions. See generally *Hearings on US-China*, *supra* note 2, at 1121-22 (prepared statement of Semiconductor Equipment and Materials International).

167. Cf. Matthew W. Barrier, *Regionalization: The Choice of a New Millennium*, 9 CURRENTS: INT'L TRADE L.J. 25 (2000) (Free trade agreements have been "[o]ne of the principal factors that has accelerated the globalization or transnational extension of FDI markets.").

168. Griswold, *supra* note 16, at 5.

169. In *Locating Overseas, Stability Tops List*, 87 CHRISTIAN SCI. MONITOR 8 (1995).

170. See, e.g., Carlos Lozada, *Latin America*, FOREIGN POL'Y, Mar.-Apr. 2003, at 18.

171. See, e.g., LIEBERMAN, *supra* note 27, at 3. See also *Export Controls*, *supra* note 3, at 11.

172. U.S. CENTRAL INTELLIGENCE AGENCY, THE WORLD FACTBOOK (2002), available at <http://www.cia.gov/cia/publications/factbook/geos/ch.html#Econ> (last visited July 20, 2003).

173. Investors consider many factors besides tariffs, such as political stability, economic stability, labor force, and environmental conditions. See generally Edward Crenshaw, *Foreign Investment as Dependent Variable: Determinants of Foreign Investment and Capital Penetration in Developing Nations, 1967-1978*, 69 SOC. FORCES 1169 (1991).

174. According to NAFTA rules of origin, for example, for an item to become duty-free, a minimum percentage of the content must be produced in the FTA region, with the exact percentage depending on the type of good. The alternative to meeting rules of origin requirements is for exporters to accept MFN provisions without meeting the rules of NAFTA. In 2000, the average tariff on

FTAs with developing countries may induce foreign investors to establish high-tech manufacturing bases in a country with which the U.S. has an FTA rather than a potential adversary. With high-tech investments reaching strategic FTA partners, advanced technology would not be as accessible to militaries of countries targeted by dual-use technology export controls,<sup>175</sup> and U.S. technology corporations would not be hindered by unilateral export controls that favor their foreign competitors.<sup>176</sup>

### *B. Diversionary Effects of NAFTA*

As an extension to the 1988 free trade agreement with Canada,<sup>177</sup> in 1993 Congress approved the North American Free Trade Agreement (NAFTA) that will eliminate tariffs on trade among the United States, Canada, and Mexico by 2008.<sup>178</sup> As East Asian government officials express concern that trade and investment is being diverted from Asia to Mexico, United States Trade Representative (USTR)<sup>179</sup> Robert Zoellick proclaims, "We are creating competition in liberalization with the United States at the center of a network of initiatives."<sup>180</sup> Bolstered by NAFTA, Mexico is indeed institutionalizing its market reforms, but high-tech investment diversion is minimal, given Mexico's relatively unskilled labor pool and underdeveloped infrastructure.<sup>181</sup> Nonetheless, Mexico's actions since NAFTA's implementation on January 1, 1994 underscore the potential for FTAs to generate the economic and political stability that foreign investors demand.<sup>182</sup>

By reinforcing Mexico's dedication to market reforms, NAFTA creates a more predictable business environment, reduces investment risk, and ultimately encourages foreign direct investment.<sup>183</sup> After decades of restricting foreign access

NAFTA goods was 0.28% compared to the U.S. average MFN tariff of 4.08%. See generally OLIVIER CADOT, ET AL., WORLD BANK, *ASSESSING THE EFFECT OF NAFTA'S RULES OF ORIGIN* 9-15 (2002).

175. China's modernization program, in particular, depends on attracting foreign investment to develop "pockets of excellence, where advances in technology are leveraged for benefits in potential military conflicts. *Hearings on US-China*, *supra* note 2, at 949 (prepared statement of Lisa Bronson, Deputy Under Secretary of Defense for Technology Security Policy and Counter proliferation).

176. See, e.g., *Hearings on US-China*, *supra* note 2, at 1028 (prepared statement of George Scalise, President, Semiconductor Industry Association). See also *supra* text accompanying note 120.

177. Free Trade Agreement, Jan. 2, 1988, U.S.-Can., 27 I.L.M. 281 (entered into force Jan. 1, 1989).

178. North American Free Trade Agreement, Dec. 17, 1992, Can.-Mex.-U.S., 32 I.L.M. 605 (1993) Annex 302.2.

179. The USTR is the principal trade negotiator and policy advisor of the United States and is responsible for developing trade policy to benefit economic growth. U.S. Trade Representative, *About USTR*, at <http://www.ustr.gov/about-ustr/index.shtml> (last visited Aug. 11, 2003).

180. USTR Robert B. Zoellick, Speech on NAFTA Before the National Foreign Trade Council 8 (July 26, 2001), transcript available at [http://www.ustr.gov/speech-test/zoellick/zoellick\\_7.PDF](http://www.ustr.gov/speech-test/zoellick/zoellick_7.PDF) (last visited July 10, 2003) [hereinafter Zoellick].

181. See generally Kathryn L. McCall, *What is Asia Afraid Of? The Diversionary Effect of NAFTA Rules of Origin on Trade Between the United States and Asia*, 25 CAL. W. INT'L L.J. 389, 415 (1995).

182. See Griswold, *supra* note 16, at 5.

183. See Chiang-feng Lin, *Investment in Mexico: A Springboard Toward the NAFTA Market - An Asian Perspective*, 22 N.C. J. INT'L L. & COM. REG. 73, 118 (1996).

to domestic markets, Mexico initiated a series of economic reforms between 1988 and 1994 during the presidency of Carlos Salinas de Gortari.<sup>184</sup> As a U.S. educated economist, Salinas' central economic strategy involved attracting foreign investment and, after failing to secure Japanese and European investment, he recognized that the U.S. was the most promising source of such investment.<sup>185</sup> To advance his free market ideology during his term, Salinas eliminated the budget deficit, privatized Mexico's banks, eliminated trade barriers ahead of GATT timelines, and signed NAFTA.<sup>186</sup>

Only a few weeks after Ernesto Zedillo succeeded Salinas as president in December 1994, an economic and political crisis erupted, challenging Mexico's novel commitment to maintaining an open economy.<sup>187</sup> With banks already floundering due to dangerously low reserves,<sup>188</sup> the assassination of presidential candidate Luis Donaldo Colosio extended the financial quagmire to the political arena, and \$10 billion gushed out of Mexico's economy within four weeks.<sup>189</sup> When Zedillo reacted by allowing the peso to devalue on December 20, 1994<sup>190</sup> an additional \$70 billion was transferred out of Mexico over the following twenty months, triggering alarm and panic among foreign investors and political leaders.<sup>191</sup> Investors recalled that when Mexico encountered an economic crisis in 1981,<sup>192</sup> the government reacted by imposing protectionist tariffs of 100% on American goods and enforcing strict licensing regulations.<sup>193</sup> During the 1994-1995 crisis, however, there was "every indication that the country would not help itself by trying to reverse gears and return to the government-controlled economy that [had] already failed in generating prosperity and healthy distribution of income."<sup>194</sup> Rather than resorting to the protectionist measures of the past, Mexico negotiated a \$51 billion support package from the U.S. and international financial institutions, allowed its exchange rate to float to promote macroeconomic stability and imposed strict reserve rate requirement on banks.<sup>195</sup> After eighteen months,

184. Mexico's 1917 constitution limited foreign ownership of Mexican resources, Mexico nationalized U.S. owned railroads and oil wells in the 1930s, and along with most of the region in the "lost decade" of the 1980s, Mexico futilely attempted to protect inefficient industries. PETER WINN, *AMERICAS: THE CHANGING FACE OF LATIN AMERICA AND THE CARIBBEAN* 488 (2d ed. 1999).

185. *Id.*

186. See, e.g., Sergio Sarmiento, *Mexico Inevitable Transformation*, 20 WASH. Q. Autumn 1997, at 130.

187. *Id.* at 131.

188. See generally Francisco Gil-Diaz, *The Origins of Mexico 1994 Financial Crisis*, 17 CATO J., Winter 1998, at <http://www.cato.org/pubs/journal/cj17n3-14.html> (last visited Nov. 18, 2003).

189. Sarmiento, *supra* note 186, at 131.

190. After the peso was devalued, inflation and interest rates skyrocketed, thereby exacerbating the economic mayhem. See Gil-Diaz, *supra* note 188.

191. Sarmiento, *supra* note 186, at 132.

192. After the oil boom ended in the 1980s, Mexico was left with one of the largest foreign debts in the world. By 1982, Mexico could not pay its foreign debts, causing foreign loans to cease and the economy to collapse. WINN, *supra* note 184, at 220.

193. U.S. Trade Representative, *NAFTA Overview*, ¶ 4, at <http://www.ustr.gov/regions/whemisphere/overview.shtml> (last visited Nov. 21, 2003).

194. Sarmiento, *supra* note 186, at 137. See also Griswold, *supra* note 16, at 5.

195. See World Bank, *Crisis Management: Mexico 1994-1995* (2001), at

Mexico resumed its pattern of economic growth,<sup>196</sup> and Ernesto Zedillo recognized, "NAFTA has been crucial in transforming Mexico into one of the world's biggest exporting powers."<sup>197</sup>

Aside from fostering economic stability and a more secure investment environment, as a comparison between the 1981 and 1994 financial crises illustrates, NAFTA's reductions in tariffs make Mexico a more attractive place from which to export to the United States.<sup>198</sup> When negotiations for NAFTA were promulgated in 1991, East Asian leaders immediately recognized that that agreement handicaps firms outside of the U.S., Canada, and Mexico.<sup>199</sup> Since NAFTA promotes diversion of trade and investment from East Asia, political leaders forecasted decay for the export-driven East Asian economies,<sup>200</sup> most notably, the Association of East Asian Nations (ASEAN)<sup>201</sup> estimated that NAFTA would induce a \$2 billion drop in ASEAN exports to the United States.<sup>202</sup> Since investors would have an incentive to relocate factories to Mexico, Japan's Ministry of International Trade and Industry projected an annual diversion of \$10 billion in foreign direct investment from East Asia to Mexico for 1995-2001.<sup>203</sup>

Given the complexity of NAFTA, as it addresses not only trade but also technical standards, environmental issues, labor rights, and intellectual property,<sup>204</sup> economic studies of trade and investment diversion are imperfect and would depend on untenable counterfactual theories.<sup>205</sup> For producers of sensitive advanced technologies, however, Mexico's substandard technological infrastructure may erode the incentive to transfer investment from East Asia to Mexico.<sup>206</sup> Between 1998 and 2002, U.S. imports of semiconductors from Mexico remained steady at around \$900 million, while U.S. imports of semiconductors from China rose from \$486 million to \$729 million.<sup>207</sup> On a macro scale, meanwhile, total imports from Mexico rose from \$95 billion to \$135 billion between 1998 and 2002,<sup>208</sup> and annual FDI inflows into Mexico averaged \$11.7

[http://www1.worldbank.org/finance/assets/images/Crisis\\_Man.pdf](http://www1.worldbank.org/finance/assets/images/Crisis_Man.pdf) (last visited Nov. 21, 2003).

196. *Id.*

197. Zoellick, *supra* note 180, at 5.

198. *See, e.g.*, McCall, *supra* note 181, at 411.

199. *See* Jisu Kim, *Impact of the North American Free Trade Agreement on East Asia: A Korean Perspective*, 8 AM. U. J. INT'L L. & POL'Y 681, 888 (1993).

200. McCall, *supra* note 181, at 390.

201. The Association of Southeast Asian Nations (ASEAN) is a group of ten Asian countries that aims to accelerate economic growth and promote regional peace and stability through political dialogue and cooperation. ASEAN Secretariat, *Overview: Association of Southeast Asian Nations*, at <http://www.aseansec.org/64.htm> (last visited July 30, 2003).

202. McCall, *supra* note 181, at 413.

203. *Id.* at 413.

204. *See* Steinberg, *supra* note 156, at 321.

205. *See* Gary Hufbauer and Jacqueline McFadyen, *Proceedings of the Canada-United States Law Institute Conference: NAFTA Revisited: Judging NAFTA*, 23 CAN.-U.S. L. J. 15, 14-15 (1997).

206. *See* McCall, *supra* note 181, at 415.

207. *U.S. Census Bureau Foreign Trade Statistics: U.S. Imports from Mexico 1998-2002*, available at <http://www.census.gov/foreign-trade/statistics/product/enduse/imports/c2010.html> (last visited Jan. 26, 2004) [hereinafter *U.S. Imports from Mexico*].

208. *U.S. Census Bureau Foreign Trade Statistics: U.S. Imports from China 1998-2002*, available



billion from 1994 to 2002, which is over three times the average annual amount of Mexico's FDI during the seven years prior to the agreement.<sup>209</sup>

While it remains possible that Mexico would have tripled its annual FDI inflows without NAFTA and that very little of that investment was diverted from China's expanding economy, NAFTA is succeeding in bolstering Mexico's evolving market oriented policies and supporting the efficient use of Mexico's capital resources.<sup>210</sup> As USTR Robert Zoellick observes, NAFTA is effective in "creating a more stable and predictable environment for investment and leading foreign capital toward more productive and efficient uses."<sup>211</sup> Over time, such foreign investment is expected to upgrade Mexico's infrastructure and industries, and, in turn, boost Mexico's educational system to equip the country's workforce with the technological skills necessary for competing in the high-tech global economy.<sup>212</sup>

### C. The U.S. Jordan Free Trade Agreement

*With a commitment to free trade legislation and a competitive and open trading environment, we have an unbeatable proposition for investors.*

-Dr. Bassem Awadallah, Jordan Minister of Planning<sup>213</sup>

While NAFTA, with its inclusion of Mexico, is likely diverting investment in low-skilled manufacturing,<sup>214</sup> the U.S.-Jordan Free Trade Agreement promises to also divert high tech investments.<sup>215</sup> Signed on October 24, 2000 and enacted on December 17 2001, the U.S.-Jordan FTA rewards Jordanian King Abdullah II's commitment to developing a high-tech economy and stimulates foreign investment in Jordan's budding technology sectors by eliminating tariff and non-tariff barriers to bilateral trade in virtually all industrial goods and agricultural products

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at <http://www.census.gov/foreign-trade/statistics/product/enduse/imports/c5700.html> (last visited Jan. 26, 2004).

209. *U.S. Imports from Mexico*, *supra* note 208.

210. After NAFTA, Mexico was inspired to sign its own free trade agreements with Chile, the European Union, Israel, Bolivia, Columbia, Venezuela, Nicaragua, El Salvador, Guatemala, Honduras, Costa Rica, and Uruguay. See generally Secretary of Economics, National Development Plan 2001-2006, at <http://www.economia.gov.mx/?P=1317> (last visited Nov. 9, 2003). See also *supra* text accompanying notes 207-9 (More efficient use of capital resources is illustrated by the reaction to the 1994-1995 economic crisis.).

211. Zoellick, *supra* note 180, at ¶ 6.

212. Peter F Romero, Assistant Secretary for Western Hemisphere Affairs, Remarks to Inter-American Development Bank Santiago, Chile (Mar. 19, 2001) transcript available at <http://www.state.gov/p/wha/rls/rm/2001/1785.htm>

213. *Experts Assert 'Enormous Potential for Investment in Jordan*, AME INFO – ME COMPANY NEWSWIRE, Jan. 20, 2003, available at LEXIS, News Library, CURNWS File.

214. See, e.g., McCall, *supra* note 181, at 415.

215. Agreement Between the United States of America and the Hashemite Kingdom of Jordan on the Establishment of Free Trade Area, Oct. 24, 2000, U.S.-Jordan, 2000 U.S.T. LEXIS 160 [hereinafter U.S.-Jordan Free Trade Agreement].

within 10 years.<sup>216</sup> As it draws investment into Jordan, the FTA supports Jordanian King Abdullah II's fundamental strategic goal to "shift Jordan's economy from one of dependence on foreign aid to one of self-reliance."<sup>217</sup>

Building on the economic reforms of his father King Hussein, since assuming the throne in 1999, King Abdullah II has aggressively trumpeted an economic strategy that focuses on "integration of the private sector into the industrial policymaking framework, export expansion through increased competitiveness, and the facilitation of private sector driven growth, which [ensures] that Jordan's legal and regulatory policies [match] requirements for global economic participation."<sup>218</sup> By opening most sectors to 100% foreign ownership, reducing inflation from 25.6% in 1989 to 1.8% in 2001, and implementing strategies to support Jordan's nascent technology sectors, Jordan is creating "the necessary environment to allow [Jordan's] businesses and citizens to utilize [the] international agreements in the new knowledge-based global economy"<sup>219</sup> At a January 2003 economic conference, Director of the Economic and Development Division of Jordan's Royal Hashemite Court Dr. Khaled Al Wazani assured investors, "today's message is clear Jordan is open for business."<sup>220</sup>

Since opening markets to U.S. investors, Jordan has attracted capital and technological expertise from powerful U.S. high-tech corporations. Recognizing the enormous potential in Jordan, Intel CEO Craig Barrett sponsored an Internet laboratory at the University of Jordan in October 2002<sup>221</sup> and urged the Kingdom to become "the model for the whole region in the IT sector."<sup>222</sup> Similarly, Cisco announced a \$1 million investment in Jordan's High Tech Fund to expand the "Connecting Jordanians" program, which aims to connect every Jordanian school, college, university, and IT community center on a high-speed broadband network by 2005.<sup>223</sup> Additionally Oracle donated \$2 million in software to Jordanian universities.<sup>224</sup> Finally, Sun Microsystems unveiled plans to establish a "business incubator" with Cisco, Oracle, and local investors to educate and support emerging

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216. *Id.* at Annex 2.1.

217. King Abdullah II, *Heir Jordan: One State Story of Economic Transformation*, 24 HARV INT'L REV Winter 2003, at 17

218. *Id.* at 15. See also EMBASSY OF JORDAN, POLITICAL AND SOCIO-ECONOMIC DEVELOPMENT: BUILDING A NEW MODEL, at <http://www.jordanembassyus.org/new/aboutjordan/er2.shtml> (last visited July 30, 2003).

219. Abdullah II, *supra* note 217, at 15-17 (for example, in 1999 Jordan launched the REACT Initiative: Regulatory Framework, Enabling Environment, Advancement Programs, Capital and Finance, Human Resource Development).

220. *Experts Assert 'Enormous Potential for Investment in Jordan*, *supra* note 213.

221. John Mason, *Intel Brings its Cool Silicon to the Hot Sands of Jordan*, ELECTRONIC ENGINEERING TIMES, Oct. 7, 2002, at 26.

222. Baker, *supra* note 19 See also *Intel Says Jordan IT Sector Holds Promise*, REUTERS, June 17, 2001, available at <http://www.intaj.net/news/readnews.cfm?id=137> (last visited July 8, 2003).

223. Francesca Cinaci, *Jordan's First IT Forum Ends with Challenging 'to do List*, JORDAN TIMES, Mar. 26, 2000, available at <http://www.jordanembassyus.org/03262000002.htm> (last visited July 8, 2003).

224. *Id.*

Jordanian technology companies.<sup>225</sup>

As U.S. corporations eagerly contribute to Jordan's high-tech aspirations, Jordan's high-tech sectors are also enticing non-U.S. international investors. In February 2003, Jordan and Switzerland launched the Swiss-Jordanian Business-to-Business platform "Trado, a platform that facilitates trade between the IT sectors of Jordan and Switzerland by creating a website for business contacts."<sup>226</sup> Additionally, in January 2003 King Abdullah II welcomed Volker Jung, President of the Board of Directors of German technology company Siemens, to explore investment opportunities in telecommunications, information technology, and energy.<sup>227</sup> During his visit, Jung praised King Abdullah II's dedication to the IT sector and his innovative educational reforms.<sup>228</sup>

With Jordan's bold economic reforms and the incentive of a free trade agreement, total U.S. imports from Jordan skyrocketed from \$16 million in 1998 to \$412 million in 2002 and imports of semiconductors crept from \$0 in 2001 to \$39,000 in 2002.<sup>229</sup> Underscoring the success of Jordan's investment initiatives, after attracting \$60 million in foreign direct investment in 2001, the Kingdom is now projecting FDI inflows of \$150 million in 2004.<sup>230</sup> Summarizing Jordan's extraordinary growth in trade and investment, in June 2003, USTR Robert Zoellick declared, "Jordan is an excellent example of how trade can drive economic reforms and growth, creating jobs, prosperity, and hope."<sup>231</sup>

#### D. Prospects of Additional Free Trade Agreements

##### 1 The U.S.-Singapore Free Trade Agreement

On January 15, 2003, the USTR concluded negotiations on a free trade agreement with Singapore,<sup>232</sup> a city-state that is precipitously losing high-tech investors to China's explosive markets. Typifying the abrupt decline of Singapore's semiconductor sector, after importing \$3.31 billion in semiconductors

225. *Id.* The consulting services are available for companies fewer than four years old with fewer than 50 employees. Services are free for the first year with an annual fee thereafter.

226. Information Technology Association of Jordan, *Trado Launch Culminates the Jordan-Swiss IT Partnership* (Feb. 2, 2003), at <http://www.intaj.net/news/readnews.cfm?id=633> (last visited July 8, 2003).

227. *Jordan's King Holds Talks with Siemens Chief*, BBC MONITORING MID. E. POL., Jan. 5, 2003, available at LEXIS, News Library, BBCMIR File.

228. *Id.*

229. U.S. Census Bureau *Foreign Trade Statistics: U.S. Imports from Jordan 1998-2002*, available at <http://www.census.gov/foreign-trade/statistics/product/enduse/imports/c5110.html> (last visited Jan. 26, 2004).

230. Mason, *supra* note 222, at 26.

231. Jeffrey Sparshott, *Free Trade Seen as Boon to MidEast*, WASH. TIMES, June 21, 2003, at C11.

232. United States-Singapore Free Trade Agreement, May 6, 2003, U.S.-Sing., available at [http://www.mti.gov.sg/public/PDF/CMT/FTA\\_USSFTA\\_Agreement\\_Final.pdf](http://www.mti.gov.sg/public/PDF/CMT/FTA_USSFTA_Agreement_Final.pdf) (last visited July 2, 2003);

See e.g., U.S. TRADE REPRESENTATIVE, QUICK FACTS: THE U.S.-SINGAPORE FREE TRADE AGREEMENT (2003), at <http://www.ustr.gov/new/fta/Singapore/final/factsheet.pdf> (last visited July 2, 2003).

from Singapore in 2000, the U.S. only imported \$1.27 billion in semiconductors in 2002.<sup>233</sup> By eliminating most tariffs immediately upon entry into force, phasing out the remaining tariffs over three to ten years, and committing Singapore to enact a law regulating anti-competitive business practices,<sup>234</sup> the USTR expects the FTA to fortify Singapore's faltering high-tech sectors and "provide a secure, predictable legal framework for U.S. investors operating in Singapore."<sup>235</sup>

While Hong Kong is allowing its high-tech production facilities to migrate to Mainland China, Singapore is battling valiantly to avoid a "manufacturing exodus."<sup>236</sup> In an attempt to retain its fourteen semiconductor manufacturing plants and facilitate the construction of new factories, in 2001 the government began implementing a proactive economic strategy that includes setting aside sixty hectares of land in northern Singapore for semiconductor factories and constructing a new facility to produce high-grade purified water for the plants.<sup>237</sup> The allure of China's market continues to threaten such ambitions, however in March 2003, Singapore's Chartered Semiconductor Manufacturing Corporation announced that it is closing its oldest plant in Singapore and exploring investment opportunities in China to produce cutting-edge chips.<sup>238</sup>

For a government and economy that is highly dependent on foreign investors for capital and technology the economic tide could be disastrous; Singapore's post-independence political-economic strategy has relied on the state's ability to leverage its full-service industrial parks to attract export processing plants of foreign high-tech corporations.<sup>239</sup> The prospect of exporting goods from those industrial parks to the United States tariff-free would invariably enhance the attractiveness of investing in Singapore. Already, Barry Sim of Singapore's Economic Development Board (EDB), a government agency that promotes foreign investment, maintains, "we have all the elements of a global semiconductor industry in place in Singapore. .chip-making is suitable for Singapore because it isn't labor intensive, and it requires highly skilled and educated workers."<sup>240</sup> The FTA with the United States will add one more attractive element to Singapore's semiconductor industry and support the small city-state that "not only practices free trade but ardently promotes its within every audience of its economic

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233. *U.S. Census Bureau Foreign Trade Statistics: U.S. Imports from Singapore 1998-2002*, available at <http://www.census.gov/foreign-trade/statistics/product/enduse/imports/c5590.html> (last visited Jan. 26, 2004).

234. United States-Singapore Free Trade Agreement, *supra* note 232, art. 2.2, art. 12.1(1), art. 12.2(1).

235. U.S. TRADE REPRESENTATIVE, *FREE TRADE WITH SINGAPORE: AMERICA'S FIRST FREE TRADE AGREEMENT WITH ASIA 4* (2002), at [http://www.ustr.gov/regions/asia-pacific/2002-12-13-singapore\\_facts.pdf](http://www.ustr.gov/regions/asia-pacific/2002-12-13-singapore_facts.pdf) (last visited July 18, 2003).

236. See Bruce Einhorn, *Singapore Sticks With its Chip Program*, BUS. WK. ONLINE, Nov. 5, 2001, LEXIS, News Library, BWONL File.

237. *Id.*

238. See Lee, *supra* note 23.

239. See Christopher M. Dent, *Singapore Foreign Economic Policy: The Pursuit of Economic Security*, 23 CONTEMPORARY SE. ASIA. J. INT'L & STRATEGIC AFF ¶ 8 (2001), at Academic Search Premier.

240. Einhorn, *supra* note 236.

diplomacy”<sup>241</sup>

## 2. The U.S.-Central American Free Trade Agreement (CAFTA)

While the U.S.-Singapore FTA could revitalize Singapore’s fleeing semiconductor manufacturing industry negotiations for a trade agreement with Central America could boost nascent high-tech sectors in a manner paralleling the U.S.-Jordan FTA. On January 8, 2003, USTR Robert Zoellick announced the commencement of negotiations on a free trade agreement with five Central American countries: Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua.<sup>242</sup> At a press conference, Zoellick pronounced, “This FTA will reinforce free-market reforms in the region. The growth stimulated by trade and the openness of an agreement will help deepen democracy, the rule of law, and sustainable development.”<sup>243</sup>

The five Central American countries in the envisaged U.S.-Central American Free Trade Agreement (CAFTA) have been liberalizing their economies over the past ten years, and now none of those countries imposes a tariff higher than 10%.<sup>244</sup> After the region was devastated by civil wars and economic mayhem in the 1980s, the five Central American members are all embryonic democracies that are rapidly expanding their economic freedoms.<sup>245</sup> An FTA would reward the region’s political and economic progress,<sup>246</sup> advance further reforms, and allay the region’s escalating skepticism of the market economy and the non-interventive state.<sup>247</sup>

Among the Central American high-tech industries included in the proposed U.S.-CAFTA, Costa Rica’s developing industries exhibit the most potential for attracting high-tech foreign investment. After imposing tariffs on computers of 133%, Costa Rica’s government slashed tariffs on high-tech products to 10% in the mid 1980s.<sup>248</sup> Since then, Intel Corporation opened a \$370 million semiconductor manufacturing facility in San Jose, Costa Rica, and Intel’s Pentium computer chips have passed coffee and bananas as Costa Rica’s leading export.<sup>249</sup> Following

241. Dent, *supra* note 239.

242. U.S. TRADE REPRESENTATIVE, UNITED STATES AND CENTRAL AMERICAN NATIONS LAUNCH FREE TRADE AGREEMENT NEGOTIATIONS (Jan. 8, 2003), at <http://www.ustr.gov/releases/2003/01/03-01.htm> (last visited July 24, 2003).

243. *Id.*

244. *How to Trade Up*, THE ECONOMIST, Feb. 15, 2003, at 36.

245. Griswold, *supra* note 16, at 12. See also U.S. TRADE REPRESENTATIVE, FREE TRADE WITH CENTRAL AMERICA I (2003), at <http://www.ustr.gov/regions/whemisphere/camerica/2003-01-08-cafta-facts.PDF> (last visited July 31, 2003) (“Oppression, violence, and dictators on both the left and right have given way to commitment to democracy in Latin America.”).

246. Griswold, *supra* note 16, at 12.

247. Cf. WINN, *supra* note 184, at 603 (In Latin America, “there are growing doubts that the neoliberal market economy and non-interventive state are capable of redressing fundamental problems of inequality and environmental degradation.”).

248. See Geri Smith, *Who Says the Chips Are Down? Despite A Slump, Costa Rica Sees a Bright Future in Technology*, BUS. WK. INT’L EDITIONS: LATIN AMERICA, Sept. 3, 2001, at 26.

249. *Id.* Intel’s investment is so substantial that national income accounts in Costa Rica are

Intel's leadership, over 140 locally owned software development companies have arisen in Costa Rica, and those companies now export \$50 million in high-tech goods.<sup>250</sup> Validating the advancements in Costa Rica's high-tech industries, in 2002 the U.S. imported \$448 million in semiconductors from Costa Rica, up from a mere \$41 million in 1998.<sup>251</sup> Reiterating his country's commitment to supporting international investors and upholding a dedication to global trade, after an economic downturn in 2001, General Director of the Costa Rican Investment Board Anabel Gonzalez conceded, "the only way for a small economy like ours to advance is to integrate with the world economy for better or worse."<sup>252</sup> An FTA with the United States would foster Costa Rica's integration with the world economy and present incentives for more international investors to employ Costa Rica high-tech industries.

## V CONCLUSION: DUAL USE FTAS

*Nations are deeply interested in the use of information technologies to gain asymmetric advantage over the U.S. Export controls do nothing to help manage this risk, as they cannot catch the technologies involved.*

-Center for Strategic and International Studies (CSIS) Panel Report<sup>253</sup>

China's state-sponsored technological ascendancy continues to vex defense officials in the twenty-first century<sup>254</sup> but U.S. export controls are incapable of counteracting the investment incentives proffered by China's government.<sup>255</sup> Fundamentally the unilateral policy framework underlying export controls established during the Cold War is inappropriate for an economy that demands a global perspective, and China is easily overcoming the burden of U.S. export controls to develop a thriving semiconductor production base upon which it can modernize the People's Liberation Army and attain an asymmetric edge in military conflict.<sup>256</sup> In today's global economy, there are few, if any dual-use technologies

sometimes calculated with and without Intel. *See also* Lozada, *supra* note 170, at 20.

250. Smith, *supra* note 248.

251. *U.S. Census Bureau Foreign Trade Statistics: U.S. Imports from Costa Rica from 1998-2002*, available at <http://www.census.gov/foreign-trade/statistics/product/enduse/imports/c2230.html> (last visited Jan. 26, 2004).

252. Smith, *supra* note 248.

253. CTR. FOR STRATEGIC & INT'L STUDIES, *supra* note 44, at 5.

254. *See supra* text accompanying note 44; *see also* Leopold, *supra* note 31.

255. *See* LIEBERMAN *supra* note 27; *see also* *Export Controls*, *supra* note 3, at 15 (discussing China's manufacturing capabilities, including the ability to produce custom-made integrated circuits that are not subject to foreign export controls).

256. *See generally* *Export Controls*, *supra* note 3 (describing how development of advanced semiconductor facilities improves China's military industrial base by enabling China, for example, to enhance current and future weapons systems); *see also* CTR. FOR STRATEGIC & INT'L STUDIES, *supra* note 44, at 5 (stating that export controls fail to manage the risk presented to United States national security by other nations interested in using information technology to gain an advantage over the United States).

in which the U.S. is the sole possessor, necessitating an entirely new paradigm for defense trade policy.<sup>257</sup> Whereas global competition defeats myopic attempts to mitigate national security risks through dual-use export controls, FTAs afford the opportunity to leverage that competition to nourish viable substitutes for international high-tech investors in strategically chosen regions.

By undercutting U.S. export controls and sanctioning sales of advanced semiconductor manufacturing equipment to China, the policies of foreign governments have “rendered many U.S. controls on exports to China essentially unilateral, thus neutralizing their utility as constraints on Chinese acquisition of dual-use technology.”<sup>258</sup> Since those archaic export controls are essentially unilateral, besides failing to moderate national security concerns, they provide competitive advantages for non-U.S. companies that are not subject to draconian high-tech export controls. Ultimately, the dual-use export control system that once succeeded during the Cold War, is now not only detrimental to U.S. technological corporate interests, but it is also ineffective for addressing national security concerns.

While U.S. export controls fail to deter foreign investors from establishing sophisticated semiconductor production facilities in China,<sup>259</sup> free trade agreements foster the growth of alternate destinations for their investment. After NAFTA, Mexico tripled its annual FDI inflows,<sup>260</sup> and after the U.S.-Jordan FTA, Jordan tripled its projected inflows of FDI.<sup>261</sup> Whether the foreign investment flowing into Mexico and Jordan would have otherwise reached China to augment the Chinese government’s modernization efforts is impossible to prove through economic analysis,<sup>262</sup> but the existence of an FTA undoubtedly engenders investor confidence in those countries.<sup>263</sup> The negotiated U.S.-Singapore FTA could deliver similar results and resuscitate Singapore’s semiconductor industry by offering investors an incentive for constructing export centers in Singapore rather than China.<sup>264</sup> Similarly the proposed FTA with Costa Rica would buttress Costa Rica’s nascent high-tech industry and thereby nourish another alternate for international high-tech investors.<sup>265</sup>

In contrast to the defunct unilateral perspective of export controls, by negotiating and implementing FTAs with strategically chosen partners, the U.S. operates on the now relevant global perspective to elevate competition for China’s

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257. See *supra* Part III(A) (discussing various Japanese and European companies that have supplied China with materials necessary to produce advanced semiconductors); see also *supra* text accompanying notes 129.

258. See *supra* Part IV(A).

259. DSB FINAL REPORT, *supra* note 88 at 26.

260. See *Export Controls*, *supra* note 3 at 12. (Providing statistics concerning the ownership of China’s existing semiconductor foundries. All existing foundries are either partnership between foreign investors and the Chinese government or 100% foreign owned.)

261. *Id.*

262. Mason *supra* note 221.

263. See Steinberg, *supra* note 156, at 320-322.

264. See *supra* text accompanying note 173; See *supra* Part IV(D)(1).

265. See *supra* Part IV(D)(2).

burgeoning semiconductor sector and promote substitutes for international investors. As a foreign trade policy, FTAs thus appropriately protect the economic interests of U.S. corporations<sup>266</sup> and simultaneously divert the foreign investment upon which China's military transformation depends.<sup>267</sup>

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266. *See supra* text accompanying notes 165–166.

267. *See supra* text accompanying notes 28 and 175.