AMERICAN ECONOMIC LIBERTIES PROJECT

April 15, 2024

The Honorable Merrick Garland
Attorney General
U.S. Department of Justice
950 Pennsylvania Avenue NW
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The Honorable Jonathan Kanter
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Antitrust Division
U.S. Department of Justice
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Dear Attorney General Garland and Assistant Attorney General Kanter,

We write to request that the Department of Justice ("DOJ") investigate Apple, Inc. ("Apple") for illegal monopolization as a buyer over the semiconductor industry and over global electronics supply chains more generally, going beyond the case the DOJ already filed against Apple. We specifically request that the DOJ examine Apple's recently reported exclusive dealing arrangements with Taiwan Semiconductor Manufacturing Company ("TSMC") to exclusively buy TSMC's entire output of the most advanced silicon chips.[1]

Apple, the largest buyer of electronics components in the world, has long been known to use its power to demand exclusive deals with suppliers, squeeze prices below the level of profitability, and lock up the capacity of suppliers in order to prevent competitors from using them. The net effect of these practices was to push a large fraction of the electronics supply chain abroad in search of lower costs, contributing to the shortages experienced during the pandemic and necessitating the massive public expenditure of the 2022 CHIPS Act to subsidize the reshoring of silicon chip fabrication.[2]

The DOJ recently filed a major antitrust action against Apple for its monopolization in the final market for smartphones, using practices like blocking messaging across operating systems and blocking the functionality of competing apps, all to maintain dominance of the iPhone.[3] However, Apple's conduct as a buyer in electronic components and semiconductor

[1] Wayne Ma, "How Apple Will Save Billions of Dollars on Chips for New iPhone," The Information, August 7, 2023, https://www.theinformation.com/articles/how-apple-will-save-billions-of-dollars-on-chips-for-new-iphone.
[2] Todd Achilles, Erik Peinert, and Daniel Rangel, "Restoring and Reshoring: CHIPS Implementation for a Competitive Semiconductor Industry," American Economic Liberties Project, February 2024, https://www.economicliberties.us/wp-content/uploads/2024/02/20240117-AELP-IndPolSeries-CHIPS-Paper_v4-1.pdf.
[3] David McCabe and Tripp Mickle, "U.S. Sues Apple, Accusing It of Maintaining an iPhone Monopoly," New York Times, March 21, 2024, https://www.nytimes.com/2024/03/21/technology/apple-doj-lawsuit-antitrust.html.

markets represents an entirely different but related category of illegal monopolization that also cements the company's dominance in smartphones, but has furthermore had pernicious effects on global electronics and chip supply chains, working conditions around the world, and competition in high-tech American and global markets. It warrants a follow-on investigation and potential enforcement action, potentially in conjunction with the Federal Trade Commission ("FTC"), as the semiconductor industry falls within the FTC's traditional division of enforcement areas,[4] and Section 5 of the FTC Act gives the FTC additional authorities that DOJ does not have.

Apple, TSMC, and Global Electronics Supply Chains

Founded in 1976, Apple is the world's largest company by market capitalization, coming in at over $2.7 trillion as of March 2024.[5] Apple makes a variety of consumer electronics, including personal computers, laptops, phones, tablets, watches, and headphones. Particularly with the launch of the iPhone in 2007, however, Apple has been the dominant seller of smartphones globally, accounting for half of smartphone sales globally.[6] Apple earns effectively 100% of the profits for smartphones globally, as Android manufacturers generally either earn nothing or take losses.[7] Within these markets, however, Apple primarily specializes in the design, software, logistics management, and sales of all of these consumer electronics, generally not directly manufacturing or assembling its products in-house.

Accordingly, Apple is one of the largest buyers of electronic components in the world. When narrowed to semiconductor chips, Apple is the world's largest buyer, purchasing a full 11% of chips globally in 2022 by value, amounting to $67 billion worth of semiconductors.[8] Already a massive sum, Apple's power as a buyer is higher when we consider the narrower subset of chips for the phones and computers that Apple buys.

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[4] See Appendix A of Memorandum of Agreement between the Federal Trade Commission and the Antitrust Division of the United States Department of Justice Concerning Clearance Procedures for Investigations, March 5, 2002, available at: https://www.justice.gov/sites/default/files/atr/legacy/2007/07/17/10170.pdf (with the FTC being responsible for computer hardware such as semiconductor chips).

[5] YCharts, "Apple Market Cap: 2.708T for March 19, 2024," https://ycharts.com/companies/AAPL/market_cap (accessed March 19, 2024).

[6] Felix Richter, "Apple in the Smartphone Market: Win Where It Matters," May 5, 2023, https://www.statista.com/chart/29925/apples-share-of-the-global-smartphone-market/.

[7] Andrew Orr, "Apple collects nearly all of the profit in the worldwide smartphone market," Apple Insider, February 3, 2023, https://appleinsider.com/articles/23/02/03/apple-collects-nearly-all-of-the-profit-in-the-worldwide-smartphone-market.

[8] Press Release, "Gartner Says Top 10 Semiconductor Buyers Decreased Chip Spending by 7.6% in 2022," Gartner, February 6, 2023, https://www.gartner.com/en/newsroom/press-releases/2023-02-06-gartner-says-top-10-semiconductor-buyers-decreased-chip-spending-by-seven-percent-in-2022#:~:text=All%20top%20ten%20companies%20in,2022%20(see%20Table%201).&text=HP%20Inc.&text=Apple%20remained%20at%20the%20top,fourth%20year%20in%20a%20row.

With this negotiating power, Apple has long demanded the lowest prices and the thinnest margins from its suppliers. At times when its own sales declined, Apple has unilaterally cut both the prices paid and order volume to suppliers to maintain Apple's high profits.[9] With thin margins, poor working conditions proliferate. For well over a decade now, we have seen intermittent news of horrifying conditions in factories for Apple suppliers such as Foxconn,[10] where suicides among workers have been common at various points in recent years.[11]

Capital markets are well aware that Apple is predatory as a buyer, with financial analysts referring to an "Apple risk discount" for suppliers to the smartphone maker, in order to account for the risk to a business that Apple will suddenly switch to a different supplier or unilaterally demand price cuts or expensive changes to product design.[12] For example, PortalPlayer lost an majority of its sales overnight when Apple switched suppliers for its iPods in 2006,[13] forcing the company to sell to Nvidia a few months later.[14] Imagination Technologies was an Apple supplier until 2017, when Apple ended their contract after years of poaching Imagination's top employees.[15] Imagination's valuation collapsed.[16] Describing being an Apple supplier as a "deal with the devil," one analyst said that suppliers "know you are going to pay a price for it, whether it is getting left behind completely or squeezed on your profits."[17]

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[9] Kif Leswing, "Apple is squeezing suppliers to keep its profits high, says analyst," Yahoo Finance, August 9, 2016, https://finance.yahoo.com/news/apple-squeezing-suppliers-keep-profits-184905105.html; Eva Dou, "Apple Squeezes Parts Suppliers to Protect Margins," Wall Street Journal, September 1, 2016, https://www.wsj.com/articles/apple-squeezes-parts-suppliers-to-protect-margins-1472713073; Matt Egan, "Apple's iPhone suppliers are getting crushed," CNN Business, July 22, 2015, https://money.cnn.com/2015/07/22/investing/apple-iphone-supplier-stocks/index.html.

[10] Jay Green, "Labor activists call on Apple to stop squeezing suppliers," CNET, April 11, 2022, https://www.cnet.com/tech/tech-industry/labor-activists-call-on-apple-to-stop-squeezing-suppliers/.

[11] Brian Merchant, "Life and death in Apple's forbidden city," The Guardian, June 18, 2017, https://www.theguardian.com/technology/2017/jun/18/foxconn-life-death-forbidden-city-longhua-suicide-apple-iphone-brian-merchant-one-device-extract.

[12] Tim Bradshaw, "The blessing and curse of being an Apple supplier," Financial Times, April 7, 2017, https://www.ft.com/content/3d49b76a-1b76-11e7-a266-12672483791a.

[13] Mark LaPedus, "PortalPlayer dealt setback at Apple," EETimes, April 20, 2006, https://www.eetimes.com/updated-portalplayer-dealt-setback-at-apple/.

[14] Donna Fuscaldo, "Nvidia to Acquire iPod Chip Maker PortalPlayer Inc.," Wall Street Journal, November 7, 2006, https://www.wsj.com/articles/SB116282273197714421.

[15] Kif Leswing, "One of Apple's most important technology partners is suffering a brain drain — to Apple," Business Insider, October 13, 2016, https://www.businessinsider.com/apple-poaches-imagination-technologies-coo-2016-10.

[16] BBC News, "Imagination Technologies' shares plunge after Apple ends contract," April 3, 2017, https://www.bbc.com/news/business-39476898.

[17] Tim Bradshaw, "The blessing and curse of being an Apple supplier," Financial Times, April 7, 2017, https://www.ft.com/content/3d49b76a-1b76-11e7-a266-12672483791a.

Opposite Apple's role as a buyer, Taiwan Semiconductor Manufacturing Company ("TSMC") is the world's leading "pure-play foundry," a type of company that fabricates silicon chips on behalf of other companies that design them. Founded in 1987, TSMC is the dominant industry leader in the fabrication of the most advanced silicon chips. TSMC accounts for approximately 58% of the sales for all silicon chip foundries,[18] and it likely accounts for a much higher share of profits. As industry leader, TSMC sells to a variety of top chip and electronics companies, including AMD, Nvidia, Qualcomm, Sony, and Broadcom, but Apple is still by far its largest customer, accounting for 25% of TSMC's revenue.[19]

Apple's Illegal Conduct

Beyond the allegations contained in the DOJ's recent lawsuit, Apple has also maintained its dominance in the smartphone market through antitrust violations in its relationships and exclusive dealings with suppliers. Most recently, it appears that Apple has entered into an exclusive deal with TSMC that provides Apple with extremely preferential pricing conditions and excludes all other buyers from buying the most advanced chips from TSMC. This amounts to an illegal exclusive deal between a monopolist and a monopsonist.

The deal involves the chips made with a 3nm process node, TSMC's currently most advanced manufacturing process. When buying chips from a foundry such as TSMC, a buyer will pay for both working and defective "dies," which are the sections cut from silicon wafers to make into chips. However, as first reported by *EE Times*, for TSMC's 3nm chips, Apple will be paying only for the working dies.[20] Given that TSMC's fabrication process was only yielding around 70% successful dies, this amounts to a 30% price discount for Apple.[21] Apple was the only buyer able to demand that TSMC suffer the entire cost of failed dies. While Intel had also committed to using TSMC's 3nm process, it must pay for the full cost of any failed dies.[22]

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[18] Press Release, "Top 10 Foundries Experience 7.9% QoQ Growth in 3Q23, with a Continued Upward Trend Predicted for Q4," TrendForce, December 6, 2023, https://www.trendforce.com/presscenter/news/20231206-11949.html.

[19] Anton Shilov, "Analyst estimates Nvidia is now TSMC's second largest customer accounting for 11% of revenue in 2023," Tom's Hardware, March 1, 2024, https://www.tomshardware.com/tech-industry/analyst-estimates-nvidia-is-now-tsmcs-second-largest-customer-accounting-for-11-of-revenue-in-2023#:~:text=%22TSMC's%20Top%2010%20customers%20accounted,probably%20stay%20the%20foundry's%20No.

[20] Alan Patterson, "TSMC's 3-nm Push Faces Tool Struggles," EE Times, April 25, 2023, https://www.eetimes.com/tsmcs-3-nm-push-faces-tool-struggles/.

[21] Andrew Cunningham, "Report: Apple buys every 3 nm chip that TSMC can make for next-gen iPhones and Macs," Ars Technica, August 7, 2023, https://arstechnica.com/gadgets/2023/08/report-apple-is-saving-billions-on-chips-thanks-to-unique-deal-with-tsmc/.

[22] Wayne Ma, "How Apple Will Save Billions of Dollars on Chips for New iPhone," The Information, August 7, 2023, https://www.theinformation.com/articles/how-apple-will-save-billions-of-dollars-on-chips-for-new-iphone.

Even more concerningly, as reported by *The Information*, as part of this deal and on top of the favorable pricing, Apple was purchasing 100% of TSMC's output of 3nm chips for a year, making all other buyers, including Intel, wait in line behind it.[23] Exclusive dealing arrangements, where a supplier or buyer agrees to only do business with the other, violate the Sherman Act when they "foreclose" other competitors from either accessing the market or from procuring inputs that are essential to compete by placing "enough outlets, or sources of supply, in the hands of a single firm (or small group of firms) to make it difficult for new, potentially competing firms to penetrate the market."[24]

Moreover, for an exclusive deal to violate Section 5 of the FTC Act, there is no requirement to prove foreclosure.[25]

Nonetheless, this deal does foreclose competition and undermine competitive markets. As the world's leading foundry with a majority market share, TSMC's competitors are likely unable to even produce 3nm chips or their equivalents at scale. Other manufacturers producing next-generation phones to compete with the iPhone are necessarily left using less advanced chips, blocked from these inputs by Apple's exclusive deal that it extorted through its outsized buyer power.

Beyond this deal, Apple's broader supply chain practices are chock full of illegal exclusive dealings. All of this unfairly advantages Apple over its competitors, harming competition and American consumers. To the best of public knowledge, Apple's supplier agreements are full of exclusivity and confidentiality provisions that serve multiple anticompetitive purposes for the smartphone giant. Often framed as necessary to maintain media secrecy for upcoming product launches, these contract provisions also harm competition by blocking competitors from using the same suppliers and preventing suppliers from searching for alternative buyers with whom to do business.

One of the few publicly available examples is Apple's contract with GT Advanced Technologies ("GT"), an Apple supplier that went bankrupt in 2014, but which had been making synthetic sapphire glass for Apple products.[26] In its bankruptcy proceedings, GT released sections of its supplier contract, which revealed that Apple had demanded absolute confidentiality (with a $50 million penalty payable to Apple with any violation), that Apple owned the manufacturing facility and the capital equipment but merely leased it to GT, that GT would be fined $77 million for even slightly late deliveries, and that GT would pay Apple

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[23] Wayne Ma, "How Apple Will Save Billions of Dollars on Chips for New iPhone," The Information, August 7, 2023, https://www.theinformation.com/articles/how-apple-will-save-billions-of-dollars-on-chips-for-new-iphone.

[24] *Interface Group, Inc. v. Mass. Port Auth.*, 816 F.2d 9, 11 (1st Cir. 1987). See also *Tampa Elec. Co. v. Nashville Coal Co.*, 365 U.S. 320, 327 (1961).

[25] *L.G. Balfour Co. v. Fed. Trade Comm'n*, 442 F.2d 1, 19-20 (7th Cir. 1971) ("no such proof [of foreclosure] is necessary in an exclusive dealing contract case under Section 5.")

[26] Jim Edwards, "Apple Is Waging An 'Unusual And Unprecedented' Battle To Keep Its Secrets In A $1.5 Billion Bankruptcy Case," Business Insider, October 15, 2014, https://www.businessinsider.com/apple-and-gt-advanced-technologies-bankruptcy-case-2014-10.

over half a million dollars if GT supplied any sapphire to anyone else.[27] As was reported, "GT's entire sapphire business depended entirely on meeting Apple's standards and deadlines, inside a factory Apple owned, using Apple's equipment."

While GT's contract terms are the most prominent that are publicly available, there is nothing to indicate that their supplier contract was anything other than typical for Apple, and there is every reason to believe that Apple has participated in the exact same practices across its entire supply chain of hundreds of suppliers globally.[28] For example, one supplier told Reuters anonymously in 2010 that, Apple "wants unique size and specifications," in addition to its confidentiality demands, and "that means we won't be able to use a common platform or rework those components to serve other clients. And if there's any inventory left, it cannot be used any other way."[29] In other words, Apple designs its contracts with suppliers such that it is essentially impossible for the supplier to sell in any significant volume to any other buyer, trapping them in a dependent relationship with Apple.

These more general practices likewise violate the antitrust laws. Particularly as a dominant buyer like Apple, prohibiting suppliers from selling to anyone else—explicitly through contract provisions and implicitly through extreme specification standards, confidentially agreements, and punitive penalties—is a violation of both the Sherman Act and FTC Act.

Authority and Investigation

Both the DOJ and FTC have clear authority to investigate, and if appropriate bring an enforcement action, even though much of this conduct has occurred abroad, whether in Taiwan or elsewhere. Antitrust has long had the authority to enforce against prohibited conduct abroad when it affected the domestic American market. Even when occurring abroad, violations of the Sherman Act and the FTC Act remain enforceable under American law if the violations "have a direct, substantial, and reasonably foreseeable effect … on trade or commerce which is not trade or commerce with foreign nations, or on import trade or import commerce with foreign nations."[30]

The law is enforceable against Apple in this context for several reasons. First, the products in question—phones, tablets, laptops, and other consumer electronics—are all part of an import trade into the United States. Second, Apple competes for sales with many of the same smartphone OEMs that had been systematically disadvantaged as a result of its upstream anticompetitive and monopolistic conduct, such that this conduct does have a direct, substantial, and reasonably foreseeable effect on domestic commerce.

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[27] Jim Edwards, "Internal Apple Documents Show How Strict And Punitive Its Contracts Can Be," Business Insider, October 17, 2014, https://www.businessinsider.com/apple-supplier-contracts-and-confidentiality-documents-2014-10.

[28] Apple Supplier List of Fiscal Year 2022, available at: https://www.apple.com/supplier-responsibility/pdf/Apple-Supplier-List.pdf (accessed March 19, 2024).

[29] James Pomfret and Kelvin Soh, "For Apple suppliers, loose lips can sink contracts," Reuters, February 17, 2010, https://www.reuters.com/article/idUSTRE61G3XA/.

[30] 15 U.S. Code § 45(a)(3); 15 U.S. Code § 6a.

Furthermore, the Federal Trade Commission has brought similar extraterritorial cases for exclusive dealing under Section 5 before. In 2000, the Commission reached a judgment against Mylan for exclusive contracts that it had made with the foreign suppliers of a critical ingredient for generic pharmaceuticals, which it used to cut off its competitors' ability to produce the final drug and compete in the U.S. market.[31] Whether in the U.S. or abroad, Apple's procurement and supply chain tactics of locking up suppliers, like TSMC, serve the same purpose of excluding competitors. They therefore violate the Sherman Act and the FTC Act.

Conclusion

Apple is a dangerously powerful monopsony that has used its dominant position to wreak havoc on the world's supply chains by continuously, and illegally, squeezing suppliers for lower and lower prices with unfair, exclusive terms. This has undermined competition in markets for silicon chips and other electronics components as well as allowed Apple to extend those advantages to the final markets for smartphones. We request that the DOJ investigate Apple's recent exclusive dealing with TSMC and their exclusive dealing practices with suppliers more generally.

Sincerely,

American Economic Liberties Project
Center for Public Environmental Oversight
Demand Progress Education Fund
Freedom BLOC
Institute for Local Self-Reliance
Main Street Alliance
NextGen Competition
The Tech Oversight Project
X-Lab

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[31] Mylan Laboratories, Inc., Cambrex Corporation, Profarmaco S.R.I., and Gyma Laboratories of America, Inc., https://www.ftc.gov/legal-library/browse/cases-proceedings/9810146-mylan-laboratories-inc-cambrex-corporation-profarmaco-sri-gyma-laboratories-america-inc.

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