Fluid End Blocks from China, Germany, India, and Italy

Investigation Nos. 701-TA-632-635 and
731-TA-1466 and 731-TA-1468 (Final)

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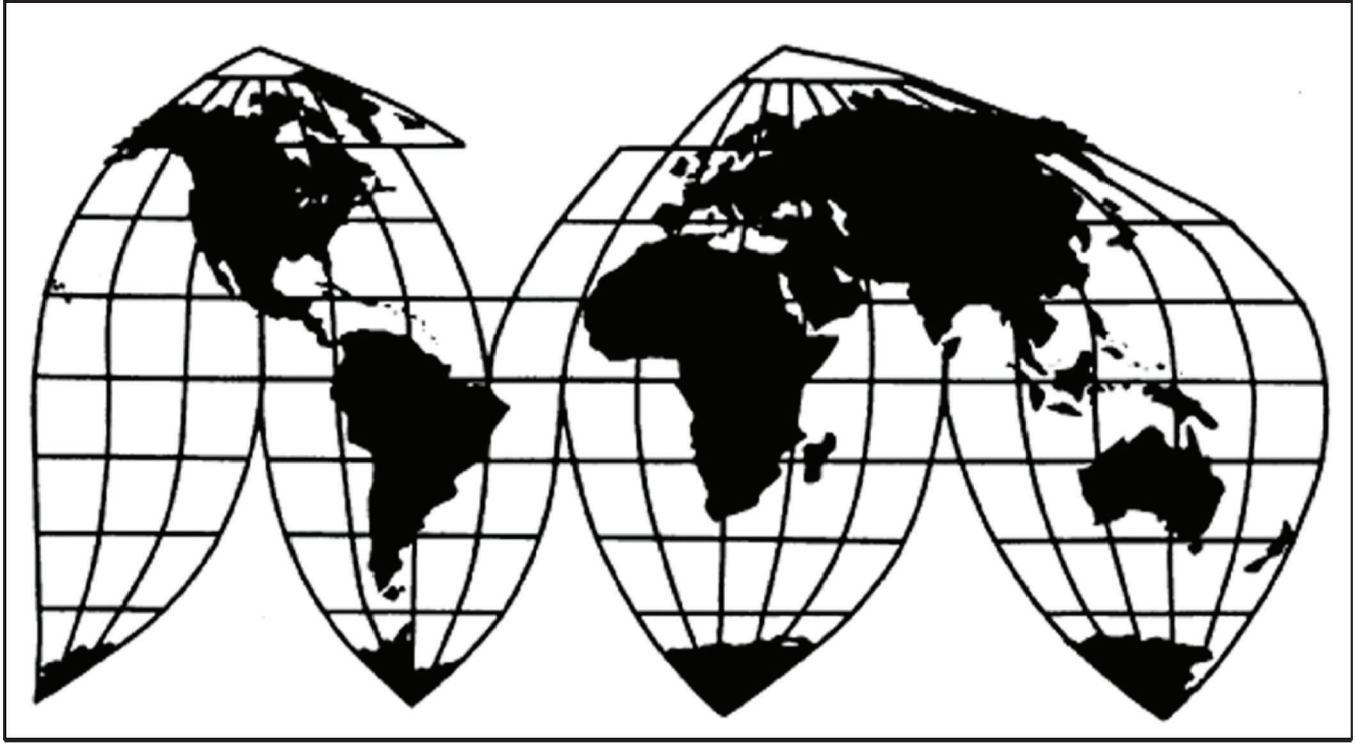
U.S. International Trade Commission



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January 2021

CONTENTS

Page

CONTENTS

Page

CONTENTS

Page

CONTENTS

Page

CONTENTS

Page

Appendixes

Note.—Information that would reveal confidential operations of individual concerns may not be published. Such information is identified by brackets in confidential reports and is deleted and replaced with asterisks (***) in public reports.

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 701-TA-632-635 and 731-TA-1466 and 731-TA-1468 (Final)

Fluid End Blocks from China, Germany, India, and Italy

DETERMINATIONS

On the basis of the record[1] developed in the subject investigations, the United States International Trade Commission ("Commission") determines, pursuant to the Tariff Act of 1930 ("the Act"), that an industry in the United States is materially injured by reason of imports of fluid end blocks from China, Germany, India, and Italy that have been found by the U.S. Department of Commerce ("Commerce") to be subsidized by the respective governments of those countries and imports of fluid end blocks from Germany and Italy that have been found by Commerce to be sold in the United States at less than fair value ("LTFV"). Imports of fluid end blocks are provided for in subheadings 7218.91.00, 7218.99.00, 7224.90.00, 7326.19.00, 7326.90.86, and 8413.91.90 of the Harmonized Tariff Schedule of the United States.

BACKGROUND

The Commission instituted these investigations effective December 19, 2019, following receipt of petitions filed with the Commission and Commerce by Ellwood City Forge Company, Ellwood Quality Steels Company, and Ellwood National Steel Company, Ellwood City, Pennsylvania; A. Finkl & Sons, Chicago, Illinois; and FEB Fair Trade Coalition, Cleveland, Ohio. The final phase of the investigations was scheduled by the Commission following notification of preliminary determinations by Commerce that imports of fluid end blocks from China, Germany, India, and Italy were subsidized within the meaning of section 703(b) of the Act (19 U.S.C. 1671b(b)) and imports from Germany and Italy sold at LTFV within the meaning of 733(b) of the Act (19 U.S.C. 1673b(b)).[2] Notice of the scheduling of the final phase of the

[1] The record is defined in § 207.2(f) of the Commission's Rules of Practice and Procedure (19 CFR 207.2(f)).

[2] Commerce issued negative preliminary and final determinations of sales at LTFV with regard to fluid end blocks from India (85 FR 44517, July 23, 2020, and 85 FR 80003, December 11, 2020).

Commission's investigations and of a public hearing to be held in connection therewith was by publishing the notice in the *Federal Register* on August 24, 2020 (85 FR 52151). In light of the restrictions on access to the Commission building due to the COVID–19 pandemic, the Commission conducted its hearing through written testimony and video conference on December 1, 2020. All persons who requested the opportunity were permitted to participate.

Views of the Commission

Based on the record in the final phase of these investigations, we determine that an industry in the United States is materially injured by reason of imports of fluid end blocks ("FEBs") from China, Germany, India, and Italy that the U.S. Department of Commerce ("Commerce") has found to be subsidized by the respective governments of those countries and imports of FEBs from Germany and Italy that Commerce has found to be sold in the United States at less than fair value.

I. Background

Ellwood City Forge Company, Ellwood Quality Steels Company, Ellwood National Steel Company (collectively, "Ellwood"), and A. Finkl & Sons ("Finkl"), U.S. producers of FEBs, and the FEB Fair Trade Coalition, an *ad hoc* coalition whose members include the Forging Industry Association, Ellwood, and Finkl (collectively, "Petitioners"), filed the petitions in these investigations on December 19, 2019.[1] Representatives for Ellwood and Finkl appeared at the hearing accompanied by counsel and submitted testimony.[2] Petitioners submitted prehearing[3] and posthearing briefs,[4] as well as final comments.[5]

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[1] The petitions sought imposition of countervailing duties on imports of FEBs from China, Germany, India, and Italy, and imposition of antidumping duties on imports of FEBs from Germany, India, and Italy. The Commission terminated the antidumping investigation on FEBs from India following Commerce's final negative dumping determination. *Fluid End Blocks from India: Termination of Investigation*, 85 Fed. Reg. 83104 (Dec. 21, 2020).

[2] In light of the restrictions on access to the Commission building due to the COVID-19 pandemic, the Commission conducted the hearing through video teleconference and written testimony, as set forth in procedures provided to the parties and announced on its website.

[3] Letter from Jack A. Levy, Cassidy Levy Kent (USA) LLP, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy: Prehearing Brief on Behalf of the FEB Fair Trade Coalition, Ellwood Group, and Finkl Steel (Nov. 17, 2020) ("Petitioners' Prehearing Brief").

[4] Letter from Jack A. Levy, Cassidy Levy Kent (USA) LLP, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy: Posthearing Brief on Behalf of the FEB Fair Trade Coalition, Ellwood Group, and Finkl Steel (Dec. 10, 2020) ("Petitioners' Posthearing Brief").

[5] Letter from Jack A. Levy, Cassidy Levy Kent (USA) LLP, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy: Final Comments on Behalf of the FEB Fair Trade Coalition, Ellwood Group, and Finkl Steel (Dec. 30, 2020) ("Petitioners' Final Comments").

Several respondent entities participated in the final phase of these investigations. Representatives for Cogne Acciai Speciali S.p.A. and Cogne Specialty Steel USA, Inc. (collectively "Cogne"), respectively a producer and importer of FEBs from Italy, Metalcam S.p.A. ("Metalcam"), a producer and importer of FEBs from Italy, and Schmeidewerke Groditz GmbH ("SWG"), a producer and importer of FEBs from Germany, appeared at the hearing accompanied by counsel and submitted testimony. In addition, counsel for Lucchini Mame Forge S.p.A. ("Lucchini"), a producer and importer of FEBS from Italy, appeared at the hearing and submitted testimony. A representative for ST9 Gas + Oil LLC ("ST9"), a purchaser of FEBs, appeared at the hearing and submitted testimony in opposition to the petitions.

Cogne, Metalcam, Officina Meccanica Roselli S.r.l. ("Roselli"), a toll finisher of FEBs from Italy, SWG, and Bharat Forge Limited ("Bharat"), a producer and importer of FEBs from India, submitted a joint prehearing brief.[6] Cogne, Metalcam, and Roselli submitted a joint posthearing brief[7] and final comments,[8] while SWG and Bharat submitted individual posthearing briefs.[9] BGH Edelstahl Siegen GmbH ("BGH"), a producer and importer of FEBs

[6] Letter from Douglas J. Heffner, Faegre Drinker Biddle & Reath LLP, Lizbeth R. Levinson, Fox Rothschild LLP, Chunlian Yang, Alston & Bird LLP, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy: Joint Respondents' Prehearing Brief (Nov. 17, 2020) ("Joint Respondents' Prehearing Brief").

[7] Letter from Douglas J. Heffner, Faegre Drinker Biddle & Reath LLP, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy USITC Inv. Nos. 701-TA-632-635 & 731-TA-1466-1468 (Final): Cogne Acciai Speciali S.p.A., Cogne Specialty Steel USA, Inc., Metalcam S.p.A., and Officina Meccanica Roselli S.r.l. Post-Hearing Brief and Answers to Commissioner Questions (Dec. 10, 2020) ("Cogne, Metalcam, and Roselli's Posthearing Brief").

[8] Letter from Douglas J. Heffner, Faegre Drinker Biddle & Reath LLP, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy USITC Inv. Nos. 701-TA-632-635 & 731-TA-1466-1468 (Final): Final Comments of Cogne Acciai Speciali S.p.A., Cogne Specialty Steel USA, Inc., Metalcam S.p.A., and Officina Meccanica Roselli S.r.l. (Dec. 30, 2020) ("Cogne, Metalcam, and Roselli's Final Comments").

[9] Letter from Lian Yang, Alston & Bird LLP, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy: Letter in Lieu of Post-Hearing Brief of Schmiedewerke Groditz GmbH (Dec. 10, 2020) ("SWG's Posthearing Brief"); Letter from Lizbeth R. Levinson, Fox Rothschild LLP, to the Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy: Inv. Nos. 701-TA-632-635 and 731-TA-1466-1468 (Final): Posthearing Brief (Dec. 10, 2020) ("Bharat's Posthearing Brief").

from Germany, submitted prehearing[10] and posthearing briefs.[11] Lucchini submitted prehearing[12] and posthearing briefs[13] and final comments.[14] In addition, the European Union ("EU") and the Government of Italy submitted nonparty written statements in opposition to the imposition of duties.[15]

U.S. industry data are based on the questionnaire responses of six U.S. forger/finishers and eight U.S. toll finishers.[16] The six U.S. forger/finishers' questionnaire responses account for

[10] Letter from J. Kevin Horgan, deKieffer & Horgan PLLC, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy; Inv. Nos. 701-TA-632-635 and 731-TA-1466-1468 (Final): Pre-Hearing Brief of BGH Edelstahl Siegen GmbH (Nov. 17 2020) ("BGH's Prehearing Brief").

[11] Letter from J. Kevin Horgan, deKieffer & Horgan PLLC, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy; Inv. Nos. 701-TA-632-635 and 731-TA-1466-1468 (Final): Post-Hearing Brief of BGH Edelstahl Siegen GmbH (Dec. 10 2020) ("BGH's Posthearing Brief").

[12] Letter from Robert L. LaFrankie, Crowell & Moring LLP, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy, Inv. Nos. 701-TA-632-635 and 731-TA-1466-1468 (Final): Lucchini Pre-Hearing Brief (Nov. 17, 2020) ("Lucchini's Prehearing Brief").

[13] Letter from Robert L. LaFrankie, Crowell & Moring LLP, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy, Inv. Nos. 701-TA-632-635 and 731-TA-1466-1468 (Final): Lucchini Post-Hearing Brief (Dec. 10, 2020) ("Lucchini's Posthearing Brief").

[14] Letter from Robert L. LaFrankie, Crowell & Moring LLP, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy, Inv. Nos. 701-TA-632-635 and 731-TA-1466-1468 (Final): Lucchini's Final Comments (Dec. 30, 2020) ("Lucchini's Final Comments").

[15] Letter from Sibylle Zitko, Delegation of the European Union to the United States, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from inter alia Germany and Italy: EU written submission (Dec. 10, 2020) ("EU Statement"); Letter from Lamberto M. Moruzzi, Embassy of Italy, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy: Government of Italy Statement (Dec. 10, 2020). ("Italy Statement").

[16] Confidential Report, Memorandum INV-SS-146 (Dec. 18, 2020), as revised by Memorandum INV-SS-153 (Dec. 28, 2020) ("CR") and Public Report ("PR"), *Fluid End Blocks from China, Germany, India, and Italy,* Inv. Nos. 701-TA-632-635 and 731-TA-1466, 731-TA-1468 (Final), USITC Pub. 5152 (Jan. 2021) at I-5. U.S. forger/finishers produce the FEB forging and perform some or all of the following six finishing steps: (1) milling of one or more flat surfaces; (2) contour machining to custom shapes or dimensions; (3) drilling or boring holes; (4) heat treating; (5) painting, varnishing, or coating; and (6) threading. *Id*. U.S. toll finishers perform only finishing steps under a tolling agreement with U.S. forger/finishers, U.S. importers, and/or U.S. purchasers of FEBs. *Id*.

all known 2019 U.S. production of FEBs in forged form and the eight U.S. toll finishers' questionnaire responses account for at least one-third of all U.S. toll finishing of FEBs in 2019.[17]

U.S. import data are based on the questionnaire responses of 20 U.S. importers, representing more than 80 percent of imports of FEBs from subject and nonsubject sources in 2019, including *** percent of U.S. imports from China, *** percent of U.S. imports from Germany,[18] *** U.S. imports from India, and *** percent of U.S. imports from Italy.[19] Imports from nonsubject sources comprised less than three percent of the total quantity of imports reported in U.S. importer questionnaires during January 2017 through June 2020, the period of investigation ("POI").[20]

Foreign industry data are based on the questionnaire responses of nine firms,[21] accounting for approximately *** percent of overall production of FEBs in China,[22] *** percent of overall production of FEBs in Germany,[23] *** of overall production of FEBs in India,[24] and *** percent of overall production of FEBs in Italy.[25]

II. Domestic Like Product

A. In General

In determining whether an industry in the United States is materially injured or threatened with material injury by reason of imports of subject merchandise, the Commission

[17] CR/PR at I-5. Some firms perform finishing operations on the FEBs they purchase or import prior to consuming them internally to produce out-of-scope downstream products. Five of these "FEM producers/OEM finishers" completed a U.S. producer questionnaire. The data reported by these five FEM producers/OEM finishers are not presented in the Commission's report, however, as they are inconsistent and incomplete as a result of the operations of these firms, which produce (and in many cases utilize) downstream out-of-scope products, and virtually never commercially sell FEBs. CR/PR at III-1 n.2.

[18] *Derived* from CR/PR at Tables IV-2, VII-3, and the U.S. export coverage estimate of *** percent at CR/PR VII-7, n.13.

[19] CR/PR at I-5, IV-1.

[20] CR/PR at IV-1, Table IV-2.

[21] CR/PR at I-5,

[22] CR/PR at VII-3.

[23] CR/PR at VII-7.

[24] CR/PR at VII-12.

[25] CR/PR at VII-16 to VII-17.

first defines the "domestic like product" and the "industry."[26] Section 771(4)(A) of the Tariff Act of 1930, as amended ("the Tariff Act"), defines the relevant domestic industry as the "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[27] In turn, the Tariff Act defines "domestic like product" as "a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation."[28]

By statute, the Commission's "domestic like product" analysis begins with the "article subject to an investigation," *i.e.*, the subject merchandise as determined by Commerce.[29] Therefore, Commerce's determination as to the scope of the imported merchandise that is subsidized and/or sold at less than fair value is "necessarily the starting point of the Commission's like product analysis."[30] The Commission then defines the domestic like product in light of the imported articles Commerce has identified.[31] The decision regarding the appropriate domestic like product(s) in an investigation is a factual determination, and the Commission has applied the statutory standard of "like" or "most similar in characteristics and

[26] 19 U.S.C. § 1677(4)(A).

[27] 19 U.S.C. § 1677(4)(A).

[28] 19 U.S.C. § 1677(10).

[29] 19 U.S.C. § 1677(10). The Commission must accept Commerce's determination as to the scope of the imported merchandise that is subsidized and/or sold at less than fair value. *See*, *e.g.*, *USEC, Inc. v. United States*, 34 Fed. App'x 725, 730 (Fed. Cir. 2002) ("The ITC may not modify the class or kind of imported merchandise examined by Commerce."); *Algoma Steel Corp. v. United States,* 688 F. Supp. 639, 644 (Ct. Int'l Trade 1988), *aff'd*, 865 F.3d 240 (Fed. Cir.), *cert. denied*, 492 U.S. 919 (1989).

[30] *Cleo Inc. v. United States*, 501 F.3d 1291, 1298 (Fed. Cir. 2007); *see also Hitachi Metals, Ltd. v. United States*, Case No. 19-1289, slip op. at 8-9 (Fed. Circ. Feb. 7, 2020) (the statute requires the Commission to start with Commerce's subject merchandise in reaching its own like product determination).

[31] *Cleo*, 501 F.3d at 1298 n.1 ("Commerce's {scope} finding does not control the Commission's {like product} determination."); *Hosiden Corp. v. Advanced Display Mfrs.,* 85 F.3d 1561, 1568 (Fed. Cir. 1996) (the Commission may find a single like product corresponding to several different classes or kinds defined by Commerce); *Torrington Co. v. United States*, 747 F. Supp. 744, 748–52 (Ct. Int'l Trade 1990), *aff'd*, 938 F.2d 1278 (Fed. Cir. 1991) (affirming the Commission's determination defining six like products in investigations where Commerce found five classes or kinds).

uses" on a case-by-case basis.[32] No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.[33] The Commission looks for clear dividing lines among possible like products and disregards minor variations.[34]

B. Product Description

Commerce defined the imported merchandise within the scope of these investigations as:

> The products covered by this investigation are forged steel fluid end blocks (fluid end blocks), whether in finished or unfinished form, and which are typically used in the manufacture or service of hydraulic pumps.
>
> The term ''forged'' is an industry term used to describe the grain texture of steel resulting from the application of localized compressive force. Illustrative forging standards include, but are not limited to, American Society for Testing and Materials (ASTM) specifications A668 and A788.
>
> For purposes of this investigation, the term ''steel'' denotes metal containing the following chemical elements, by weight: (i) Iron greater than or equal to 60 percent; (ii) nickel less than or equal to 8.5 percent; (iii) copper less than or equal to 6 percent; (iv) chromium greater than or equal to 0.4 percent, but less than or equal to 20 percent; and (v) molybdenum greater than or equal

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[32] *See*, *e.g.*, *Cleo Inc. v. United States*, 501 F.3d 1291, 1299 (Fed. Cir. 2007); *NEC Corp. v. Department of Commerce*, 36 F. Supp. 2d 380, 383 (Ct. Int'l Trade 1998); *Nippon Steel Corp. v. United States*, 19 CIT 450, 455 (1995); *Torrington Co. v. United States*, 747 F. Supp. 744, 749 n.3 (Ct. Int'l Trade 1990), *aff'd*, 938 F.2d 1278 (Fed. Cir. 1991) ("every like product determination 'must be made on the particular record at issue' and the 'unique facts of each case'"). The Commission generally considers a number of factors, including the following: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) customer and producer perceptions of the products; (5) common manufacturing facilities, production processes, and production employees; and, where appropriate, (6) price. *See Nippon*, 19 CIT at 455 n.4; *Timken Co. v. United States*, 913 F. Supp. 580, 584 (Ct. Int'l Trade 1996).

[33] *See*, *e.g.*, S. Rep. No. 96-249 at 90-91 (1979).

[34] *Nippon*, 19 CIT at 455; *Torrington*, 747 F. Supp. at 748-49; *see also* S. Rep. No. 96-249 at 90-91 (Congress has indicated that the like product standard should not be interpreted in "such a narrow fashion as to permit minor differences in physical characteristics or uses to lead to the conclusion that the product and article are not 'like' each other, nor should the definition of 'like product' be interpreted in such a fashion as to prevent consideration of an industry adversely affected by the imports under consideration.").

to 0.15 percent, but less than or equal to 3 percent. Illustrative steel standards include, but are not limited to, American Iron and Steel Institute (AISI) or Society of Automotive Engineers (SAE) grades 4130, 4135, 4140, 4320, 4330, 4340, 8630, 15–5, 17–4, F6NM, F22, F60, and XM25, as well as modified varieties of these grades.

The products covered by this investigation are: (1) Cut-to-length fluid end blocks with an actual height (measured from its highest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), an actual width (measured from its widest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), and an actual length (measured from its longest point) of 11 inches (279.4 mm) to 75 inches (1,905.0 mm); and (2) strings of fluid end blocks with an actual height (measured from its highest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), an actual width (measured from its widest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), and an actual length (measured from its longest point) up to 360 inches (9,144.0 mm).

The products included in the scope of this investigation have a tensile strength of at least 70 KSI (measured in accordance with ASTM A370) and a hardness of at least 140 HBW (measured in accordance with ASTM E10).

A fluid end block may be imported in finished condition (*i.e.,* ready for incorporation into a pump fluid end assembly without further finishing operations) or unfinished condition (*i.e.,* forged but still requiring one or more finishing operations before it is ready for incorporation into a pump fluid end assembly). Such finishing operations may include: (1) Heat treating; (2) milling one or more flat surfaces; (3) contour machining to custom shapes or dimensions; (4) drilling or boring holes; (5) threading holes; and/or (6) painting, varnishing, or coating.

Excluded from the scope of this investigation are fluid end block assemblies which (1) include (a) plungers and related housings, adapters, gaskets, seals, and packing nuts, (b) valves and related seats, springs, seals, and cover nuts, and (c) a discharge flange and related seals, and (2) are otherwise ready to be mated with the ‘‘power end’’ of a hydraulic pump without the need

for installation of any plunger, valve, or discharge flange components, or any other further manufacturing operations.[35]

FEBs are steel forgings that are a component of fluid end modules ("FEMs"), which are incorporated into hydraulic pumps used for drilling or hydraulic fracturing (sometimes referred to as "fracking") in the oil and gas industry.[36] Some FEBs are incorporated into mud pumps, which use lower pressures and primarily pump water or a mud mixture.[37]

FEBs are made from stainless steel ("SS") or non-stainless alloy steel ("NSS").[38] Many FEB producers experiment with different steel chemistries in an effort to improve FEB hardness, toughness, strength, and machinability.[39] The FEBs are used in FEMs that pressurize fluid pumped into an oil and gas well for hydraulic fracturing.[40] The pressures involved at the fluid end of FEMs, where the FEBs are situated, and project site characteristics dictate the chemical and manufacturing specifications for FEBs.[41] FEM and pump manufacturers have multiple pump models and therefore multiple FEB designs, which can be proprietary.[42]

Unfinished FEBs are typically sold to original equipment manufacturers ("OEMs") of hydraulic pumps or FEM manufacturers, which may perform further machining and finishing processes and incorporate the FEB into an FEM or hydraulic pump, which is then sold to third parties involved in oil and gas exploration and production.[43] Alternatively, unfinished FEBs can be sold to vertically integrated hydraulic pump manufacturers engaged in oil and gas

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[35] *Forged Steel Fluid End Blocks from the People's Republic of China: Final Affirmative Countervailing Duty Determination*, 85 Fed. Reg. 80020, 80022 (Dec. 11, 2020); *Forged Steel Fluid End Blocks from the Federal Republic of Germany: Final Affirmative Countervailing Duty Determination*, 85 Fed. Reg. 80011, 80013 (Dec. 11, 2020); *Forged Steel Fluid End Blocks from India: Final Affirmative Countervailing Duty Determination*, 85 Fed. Reg. 79999, 80000 (Dec. 11, 2020); *Forged Steel Fluid End Blocks from Italy: Final Affirmative Countervailing Duty Determination*, 85 Fed. Reg. 80022, 80024 (Dec. 11, 2020); *Forged Steel Fluid End Blocks from the Federal Republic of Germany: Final Determination of Sales at Less Than Fair Value*, 85 Fed. Reg. 80018, 80019-20 (Dec. 11, 2020); *Forged Steel Fluid End Blocks from Italy: Final Determination of Sales at Less Than Fair Value*, 85 Fed. Reg. 79996, 79998 (Dec. 11, 2020).

[36] *See* CR/PR at I-14, I-17.

[37] CR/PR at I-17.

[38] CR/PR at I-15.

[39] CR/PR at I-15 to I-16.

[40] *See* CR/PR at I-14, I-16, II-1.

[41] *See* CR/PR at I-16.

[42] CR/PR at I-16, I-18 to I-19.

[43] CR/PR at I-17.

exploration and production, which are also capable of further processing and finishing FEBs.[44] Forgers or toll finishers can conduct certain or all finishing operations necessary to transform unfinished FEBs into finished FEBs that are ready to be directly incorporated into FEMs.[45]

The life span of an FEB depends on several factors, including use,[46] maintenance, and the geographic characteristics of the project site.[47] FEBs in fracking pumps have particularly limited life spans because of fatigue cracking and abrasions that may cause a pump to fail in as little as 100 to 500 hours of service, depending on various factors.[48] FEBs often require frequent replacement by pump producers and operators, which purchase FEBs to service a particular pump model.[49]

C. Analysis

Petitioners argue that the Commission should find a single domestic like product, coextensive with the scope of the investigations.[50] Respondents have not addressed the definition of the domestic like product in the final phase of these investigations.

In its preliminary determinations, the Commission defined a single domestic like product, coextensive with the scope.[51] The Commission first analyzed whether, under a semifinished product analysis, unfinished FEBs should be included in the same domestic like product as finished FEBs.[52] The Commission concluded that the information available indicated that all unfinished FEBs are dedicated to the production of finished FEBs and that there is no separate market for unfinished FEBs. Although the Commission acknowledged that unfinished FEBs undergo multiple finishing operations to become finished FEBs, which results in some

[44] CR/PR at I-17.

[45] *See* CR/PR at I-18 & n.48.

[46] Pumps may generate pressures as high as 20,000 PSI, with flow rates above 100 barrels per minute. CR/PR at I-17. Generally, mud pumps employ lower pressures than pumps used for hydraulic fracturing. *Id*.

[47] *See* CR/PR at I-17 n.42.

[48] CR/PR at I-17 & n.44.

[49] *See* CR/PR at I-17.

[50] Petitioners' Prehearing Brief at 9-15.

[51] *Fluid End Blocks from China, Germany, India, and Italy*, Inv. Nos. 701-TA-632-635 and 731-TA-1466-1468 (Preliminary), USITC Pub. 5017 (Feb. 2020) at 14 ("Preliminary Determinations"). In the preliminary phase, SWG argued that SS FEBs and NSS FEBs should be separate domestic like products. *Id.* at 9. Additionally, Bharat argued that finished FEBs and unfinished FEBs are "distinct" FEB products, although it did not specifically assert that they should be defined as separate domestic like products. *Id*.

[52] Preliminary Determinations, USITC Pub. 5017 at 10-12.

differences in characteristics and values, it found on balance that there was no clear dividing line between unfinished and finished FEBs.[53]

The Commission next analyzed whether, under the traditional six-factor like product analysis, SS FEBs and NSS FEBs should be separate domestic like products.[54] Although the Commission stated that the preliminary phase record was limited, it found that in light of the overlap in physical characteristics and uses, manufacturing facilities and production processes, channels of distribution, and interchangeability, there was no clear dividing line between SS FEBs and NSS FEBs that warranted defining them as separate domestic like products.[55]

The record in the final phase of these investigations concerning the uses and characteristics of finished, unfinished, SS, or NSS FEBs is not materially different from that in the preliminary phase.[56] In light of this and the lack of contrary argument in the final phase, we define a single domestic like product consisting of all FEBs, coextensive with the scope, for the same reasons set forth in the preliminary determinations.

III. Domestic Industry

The domestic industry is defined as the domestic "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[57] In defining the domestic industry, the Commission's general practice has been to include in the industry producers of all domestic production of the like product, whether toll-produced, captively consumed, or sold in the domestic merchant market.

These investigations raise the issue of whether domestic toll finishers' processing activities are sufficient to constitute domestic production.

A. Arguments of the Parties

Petitioners argue that the Commission should define the domestic industry as all U.S. producers of FEBs, including U.S. toll finishers.[58] They claim that toll finishing involves *** but sizeable capital expenditures and *** employment levels. They also assert that *** raw

[53] Preliminary Determinations, USITC Pub. 5017 at 12.
[54] Preliminary Determinations, USITC Pub. 5017 at 12-14.
[55] Preliminary Determinations, USITC Pub. 5017 at 14.
[56] *See generally* CR/PR at I-14 to I-22.
[57] 19 U.S.C. § 1677(4)(A).
[58] Petitioners' Prehearing Brief at 16.

materials account for a meaningful share of toll finishers' operations. Finally, they state that FEBs are highly engineered products, with forging imparting the key properties to FEBs, but finishing requiring specialized machinery and skilled employees, which adds significant value.[59]

Respondents do not address the definition of the domestic industry in the final phase of these investigations.

B. Sufficient Production-Related Activities Analysis

In deciding whether a firm qualifies as a domestic producer of the domestic like product, the Commission generally analyzes the overall nature of a firm's U.S. production-related activities, although production-related activity at minimum levels could be insufficient to constitute domestic production.[60] As discussed below, we conclude that U.S. toll finishers engage in sufficient production-related activities in the United States to qualify as domestic producers of FEBs.[61]

Source and Extent of Firm's Capital Investment. The capital expenditures of the six responding U.S. forger/finishers totaled $*** in 2017, $*** in 2018, and $*** in 2019; they were $*** in January-June (interim) 2019 and $*** in interim 2020.[62] Total capital expenditures for the eight responding U.S. toll finishers was higher than U.S. forger/finishers during two of the three full calendar years and one of the interim periods; they were $*** in 2017, $*** in 2018, $*** in 2019, $*** in interim 2019, and $*** in interim 2020.[63] The net assets of the six responding U.S. forger/finishers totaled $*** in 2017, $*** in 2018, and $***

[59] Petitioners' Prehearing Brief at 18-19.

[60] The Commission generally considers six factors: (1) source and extent of the firm's capital investment; (2) technical expertise involved in U.S. production activities; (3) value added to the product in the United States; (4) employment levels; (5) quantity and type of parts sourced in the United States; and (6) any other costs and activities in the United States directly leading to production of the like product. No single factor is determinative, and the Commission may consider any other factors it deems relevant in light of the specific facts of any investigation. *Crystalline Silica Photovoltaic Cells and Modules from China*, Inv. Nos. 701-TA-481 and 731-TA-1190 (Final), USITC Pub. 4360 at 12-13 (Nov. 2012).

[61] This is the same conclusion the Commission reached in the preliminary determinations. Preliminary Determinations, USITC Pub. 5017 at 17. In the preliminary phase, Petitioners did not express a position on the inclusion of finishers in the domestic industry, while the respondents that addressed the issue supported the inclusion of finishers in the industry. *Id*. at 15.

[62] CR/PR at Table VI-6.

[63] CR/PR at Table VI-6.

in 2019.[64] Total net assets for the eight responding U.S. toll finishers were considerably lower but substantial, at $*** in 2017, $*** in 2018, and $*** in 2019.[65]

Responding U.S. toll finishers estimated that the amount of capital investments needed, from a greenfield investment standpoint, to finish FEBs was between $***.[66] Capital investments required to perform finishing operations include ***.[67]

Technical Expertise. An FEB cannot be used as an FEM component without the application of a number of finishing steps once the metal form has been forged.[68] Seven of eight responding U.S. toll finishers reported that they mill one or more flat surfaces of FEBs, all eight reported that they contour machine FEBs to custom shapes or dimensions, seven reported that they drill or bore holes in FEBs, and six reported that they thread FEBs.[69]

Of the eight responding U.S. toll finishers, seven ranked the complexity and importance of their finishing operations as "most complex" (rank 5/5) or next-to-"most complex" (rank 4/5).[70] Certain U.S. toll finishers described the technical expertise required for their operations as ***.[71]

Value Added. According to *** responding U.S. toll finisher, contour machining adds *** percent, drilling or boring holes adds *** percent, threading adds *** percent, and milling flat surfaces adds *** percent to the total value of a fluid end block.[72] The Commission staff estimates the total value added by all responding U.S. toll finishers ranged from *** percent in 2017 to *** percent in 2019.[73]

Employment Levels. The number of production and related workers ("PRWs") reported by the six responding U.S. forger/finishers was 258 in 2017, 218 in 2018, and 150 in 2019; PRWs were 170 in interim 2019 and *** in interim 2020.[74] The eight responding U.S. toll finishers reported generally lower but comparable employment levels, with the number of PRWs at 191 in 2017, 233 in 2018, 127 in 2019, 118 in interim 2019, and *** in interim 2020.[75]

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[64] CR/PR at Table VI-8.
[65] CR/PR at Table VI-8.
[66] CR/PR at III-9.
[67] CR/PR at III-9.
[68] *See* CR/PR at I-18 n.48.
[69] CR/PR at Table III-1.
[70] *See* CR/PR at Table III-5.
[71] CR/PR at Table III-6.
[72] CR/PR at III-9.
[73] CR/PR at III-9.
[74] CR/PR at Table III-16.
[75] CR/PR at Table III-17.

Quantity and Type of Parts Sourced in United States. More than *** percent of toll finishing performed in the United States occurred on behalf of U.S. forger/finishers or U.S. purchasers of domestically sourced FEBs throughout the POI.[76]

Conclusion. The record in the final phase of these investigations indicates that substantial technical expertise is required to perform finishing operations for FEBs, which adds appreciable value to the finished FEBs. The record also indicates that U.S. toll finishers made appreciable capital investments and employed appreciable personnel, whether considered on an absolute basis or compared to U.S. forger/finishers. U.S. toll finishers also performed most of their toll finishing operations on domestically sourced FEBs. In light of these considerations, and the lack of any contrary party argument, we conclude that U.S. toll finishers engage in sufficient production-related activities in the United States to qualify as domestic producers of FEBs. We consequently define the domestic industry to include all U.S. producers of FEBs, including U.S. forger/finishers and U.S. toll finishers, within the scope definition.[77]

IV. Cumulation[78]

For purposes of evaluating the volume and effects for a determination of material injury by reason of subject imports, section 771(7)(G)(i) of the Tariff Act requires the Commission to cumulate subject imports from all countries as to which petitions were filed and/or

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[76] *Derived from* CR/PR at Table III-9.

[77] There are no related party issues in these investigations. No U.S. forger/finisher or U.S. toll finisher directly imported subject merchandise or is related to an exporter or importer of subject merchandise. *See* CR/PR at III-26, Table III-3. Nor did the toll finishers purchase the imported FEBs that they processed. *See* CR/PR at III-26.

[78] Pursuant to Section 771(24) of the Tariff Act, imports from a subject country of merchandise corresponding to a domestic like product that account for less than 3 percent of all such merchandise imported into the United States during the most recent 12 months for which data are available preceding the filing of the petition shall generally be deemed negligible. 19 U.S.C. §§ 1671b(a), 1673b(a), 1677(24).

Based on questionnaire data, subsidized subject imports from China accounted for *** percent, subsidized and dumped subject imports from Germany accounted for *** percent, subsidized subject imports from India accounted for *** percent, subsidized subject imports from Italy accounted for *** percent, and dumped subject imports from Italy accounted for *** percent of total U.S. imports of FEBs in the 12-month period (December 2018 to November 2019) preceding the filing of the petitions. CR/PR at Table IV-3. Because these percentages each exceed the 3 percent statutory threshold, we find that subject imports in each investigation are not negligible.

investigations self-initiated by Commerce on the same day, if such imports compete with each other and with the domestic like product in the U.S. market. In assessing whether subject imports compete with each other and with the domestic like product, the Commission generally has considered four factors:

(1) the degree of fungibility between subject imports from different countries and between subject imports and the domestic like product, including consideration of specific customer requirements and other quality related questions;

(2) the presence of sales or offers to sell in the same geographic markets of subject imports from different countries and the domestic like product;

(3) the existence of common or similar channels of distribution for subject imports from different countries and the domestic like product; and

(4) whether the subject imports are simultaneously present in the market.[79]

While no single factor is necessarily determinative, and the list of factors is not exclusive, these factors are intended to provide the Commission with a framework for determining whether the subject imports compete with each other and with the domestic like product.[80] Only a "reasonable overlap" of competition is required.[81]

[79] *See Certain Cast-Iron Pipe Fittings from Brazil, the Republic of Korea, and Taiwan*, Inv. Nos. 731-TA-278-280 (Final), USITC Pub. 1845 (May 1986), *aff'd*, *Fundicao Tupy, S.A. v. United States*, 678 F. Supp. 898 (Ct. Int'l Trade), *aff'd*, 859 F.2d 915 (Fed. Cir. 1988).

[80] *See*, *e.g.*, *Wieland Werke, AG v. United State*s, 718 F. Supp. 50 (Ct. Int'l Trade 1989).

[81] The Statement of Administrative Action (SAA) to the Uruguay Round Agreements Act (URAA), expressly states that "the new section will not affect current Commission practice under which the statutory requirement is satisfied if there is a reasonable overlap of competition." H.R. Rep. No. 103-316, Vol. I at 848 (1994) (*citing Fundicao Tupy, S.A. v. United States*, 678 F. Supp. at 902; *see Goss Graphic Sys., Inc. v. United States*, 33 F. Supp. 2d 1082, 1087 (Ct. Int'l Trade 1998) ("cumulation does not require two products to be highly fungible"); *Wieland Werke, AG*, 718 F. Supp. at 52 ("Completely overlapping markets are not required.").

A. Arguments of the Parties

Petitioners argue that the Commission should cumulate subject imports from all four subject countries for its analysis.[82] They argue that FEBs manufactured in the United States and imported from each of the four subject countries are fungible, sold in similar channels of distribution, and were simultaneously present in overlapping geographic markets throughout the United States.[83]

Respondents have not expressly argued against cumulation for the analysis of material injury in the final phase.

B. Analysis

The statutory threshold for cumulation is satisfied because Petitioners filed the antidumping and/or countervailing duty petitions with respect to each of the four subject countries on the same day, December 19, 2019.[84] Further, as discussed below, we find a reasonable overlap of competition in the U.S. market among FEBs produced in China, Germany, India, Italy, and the United States.[85]

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[82] Petitioners' Prehearing Brief at 19.

[83] Petitioners' Prehearing Brief at 22.

[84] None of the statutory exceptions to cumulation applies. *See* 19 U.S.C. § 1677(7)(G)(ii). We observe that Commerce has made final affirmative subsidy findings with respect to imports from all four subject countries -- China, Germany, India, and Italy -- but made final affirmative dumping findings only with respect to imports from Germany and Italy. Moreover, while Commerce found all subject imports from Italy to be subsidized, it found imports from one Italian exporter, Metalcam, not to be dumped. *See generally* CR/PR at Tables I-1 to I-5. Petitioners did not seek imposition of antidumping duties on FEBs from China. As indicated above, Commerce made a final negative antidumping duty determination with respect to FEBs from India. *Forged Steel Fluid End Blocks from India: Final Negative Determination of Sales at Less than Fair Value*, 85 Fed. Reg. 80003 (Dec. 11, 2020).

Consequently, any decision to cumulate imports in these investigations will involve "cross-cumulating" dumped imports with subsidized imports. We have previously explained why we are continuing our longstanding practice of cross-cumulating. *See Polyethylene Terephthalate (PET) Resin from Canada, China, India, and Oman,* Inv. Nos. 701-TA-531-532 and 731-TA-1270-1273 (Final), USITC Pub. 4604 at 9-11 (April 2016); *Circular Welded Carbon-Quality Steel Pipe from India, Oman, the United Arab Emirates, and Vietnam*, Inv. Nos. 701-TA-482 to 484 (Final), USITC Pub. 4362 at 12 n.59 (Dec. 2012); *Softwood Lumber from Canada*, Inv. Nos. 701-TA-414 and 731-TA-928 (Final), USITC Pub. 3509 at 29-31 (May 2009); *Bingham & Taylor v. United States*, 815 F.2d 982 (Fed. Cir. 1987).

[85] The Commission cumulated all subject imports in the preliminary determinations. Preliminary Determinations, USITC Pub. 5017 at 20.

Fungibility. All U.S. forger/finishers and most importers and purchasers reported that the domestic like product and subject imports from each of the four subject countries are "always" interchangeable and that subject imports from all four subject countries are "always" interchangeable with each other.[86] Additionally, the vast majority of responding purchasers indicated that domestically produced FEBs and FEBs from each of the four subject countries "always" met minimum quality specifications.[87]

Purchasers were asked to compare the domestic like product and subject imports from the four subject countries on 17 purchasing factors. At least half of responding purchasers reported that the domestic like product was comparable to subject imports from China on 16 of 17 factors,[88] that the domestic like product was comparable to subject imports from Germany on 14 of 17 factors,[89] that the domestic like product was comparable to subject imports from India on seven of 17 factors,[90] and that the domestic like product was comparable to subject imports from Italy on 16 of 17 factors.[91] At least half of responding purchasers reported that subject imports from all four subject countries were comparable with each other on all 17 factors.[92]

The record also indicates substantial overlap in the types of FEBs sold in the U.S. market. In 2019, *** U.S. shipments by U.S. forger/finishers, *** U.S. shipments of subject imports from Germany, and *** U.S. shipments of subject imports from China and Italy were unfinished

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[86] *See* CR/PR at Table II-12.

[87] *See* CR/PR at Table II-13.

[88] At least half of responding purchasers reported that the domestic like product was inferior on price (*i.e.,* higher priced) compared to subject imports from China. *See* CR/PR at Table II-11.

[89] At least half of responding purchasers reported that the domestic like product was superior on availability and delivery time compared to subject imports from Germany. An equal number of responding purchasers reported that the domestic like product was superior, comparable, or inferior (one each) on price compared to subject imports from Germany. *See* CR/PR at Table II-11.

[90] At least half of responding purchasers reported that the domestic like product was inferior on discounts offered, finishing ability, price, product consistency, product range, quality meets industry standards, and steel type compared to subject imports from India. An equal number of responding purchasers reported that the domestic like product was superior, comparable, or inferior (one each) on availability, delivery terms, and delivery time compared to subject imports from India. *See* CR/PR at Table II-11.

[91] An equal number of responding purchasers reported that the domestic like product was superior or comparable (four each), and two reported that the domestic like producer was inferior, on delivery time compared to subject imports from Italy. *See* CR/PR at Table II-11.

[92] *See* CR/PR at Table II-11.

FEBs.[93] Although not a majority, a substantial share (*** percent) of U.S. shipments of subject imports from India in 2019 were also unfinished FEBs.[94] Moreover, in 2019, the *** of U.S. shipments of U.S. forger/finishers, *** U.S. shipments of subject imports from Germany, India, and Italy, and a substantial proportion (*** percent) of U.S. shipments of subject imports from China were for hydraulic fracturing pump applications.[95]

Channels of Distribution. U.S. producers and importers of subject merchandise from each subject country reported that all or almost all of their U.S. commercial shipments went to OEMs throughout the POI.[96]

Geographic Overlap. The domestic like product and imports from each of the four subject countries were sold in the Northeast, Central Southwest, and Mountain regions.[97] In addition, the domestic like product and imports from China and Italy were sold in the Midwest region, and the domestic like product and imports from China, India, and Italy were sold in the Pacific Coast region.[98] For both U.S. forger/finishers and importers, sales were concentrated in the Central Southwest region.[99]

Simultaneous Presence in Market. Imports from each subject country entered the U.S. market during each year and interim period of the POI.[100] During the most recent 24 months of the POI, subject imports from China entered the United States in 22 months, subject imports from Germany entered in 21 months, subject imports from India entered in 22 months, and

[93] *See* CR/PR at Table IV-4.

[94] CR/PR at Table IV-4. The share of U.S. shipments of subject imports from India that were unfinished FEBs was even *** earlier in the POI, at *** percent in 2017 and *** percent in 2018. CR/PR at Table D-1.

[95] *See* CR/PR at Table IV-5.

[96] *See* CR/PR at Table II-2. U.S. producers reported that between *** percent of their U.S. shipments went to OEMs during each full year and interim period of the POI. *Id.* Importers of subject merchandise from China, Germany, and India reported that *** of their U.S. shipments went to OEMs, except in 2019 when *** percent of U.S. shipments of subject merchandise from Germany went to OEMs. *Id.* Importers of subject merchandise from Italy reported that between *** percent of their U.S. shipments went to OEMs during each full year or interim period during the POI. *Id*.

[97] *See* CR/PR at Table II-3.

[98] *See* CR/PR at Table II-3.

[99] *See* CR/PR at Table II-3.

[100] *See* CR/PR at Table IV-2.

subject imports from Italy entered in every month.[101] The domestic like product was present during each year and interim period of the POI.[102]

Conclusion. Responses by market participants concerning the interchangeability and comparability of products from different sources, as well as the presence of overlapping product types, indicate there is sufficient fungibility between the domestic like product and imports from each of the four subject countries and among the subject imports from all four subject countries to satisfy the reasonable overlap standard.[103] The domestic like product and subject imports from all four countries share overlapping channels of distribution because they were all sold almost entirely to OEMs, their sales were concentrated in the Central Southwest region, and they were simultaneously present in the U.S. market. In light of these considerations, we analyze subject imports from China, Germany, India, and Italy on a cumulated basis for our analysis of whether an industry in the United States is materially injured by reason of subject imports.

V. Material Injury by Reason of Subject Imports

Based on the record in the final phase of this investigation, we find that an industry in the United States is materially injured by reason of cumulated subject imports of FEBs from China, Germany, India, and Italy.

A. Legal Standards

In the final phase of antidumping and countervailing duty investigations, the Commission determines whether an industry in the United States is materially injured or threatened with material injury by reason of the imports under investigation.[104] In making this determination, the Commission must consider the volume of subject imports, their effect on prices for the domestic like product, and their impact on domestic producers of the domestic

[101] *See* CR/PR at Table IV-6.

[102] *See* CR/PR at Tables III-12 and III-13.

[103] We recognize that U.S. shipments of subject imports from India in 2019 were *** NSS FEBs. Given the substantial percentage of U.S. shipments of the domestic like product and imports from each subject country other than Germany that were NSS FEBs over the POI, however, as well our finding in the preliminary phase that SS FEBs and NSS FEBs can be used interchangeably, the record demonstrates sufficient fungibility for the reasonable overlap standard. *See* CR/PR at Table IV-4; Preliminary Determinations, USITC Pub. 5017 at 13.

[104] 19 U.S.C. §§ 1671d(b), 1673d(b).

like product, but only in the context of U.S. production operations.[105] The statute defines "material injury" as "harm which is not inconsequential, immaterial, or unimportant."[106] In assessing whether the domestic industry is materially injured by reason of subject imports, we consider all relevant economic factors that bear on the state of the industry in the United States.[107] No single factor is dispositive, and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[108]

Although the statute requires the Commission to determine whether the domestic industry is "materially injured or threatened with material injury by reason of" unfairly traded imports,[109] it does not define the phrase "by reason of," indicating that this aspect of the injury analysis is left to the Commission's reasonable exercise of its discretion.[110] In identifying a causal link, if any, between subject imports and material injury to the domestic industry, the Commission examines the facts of record that relate to the significance of the volume and price effects of the subject imports and any impact of those imports on the condition of the domestic industry. This evaluation under the "by reason of" standard must ensure that subject imports are more than a minimal or tangential cause of injury and that there is a sufficient causal, not merely a temporal, nexus between subject imports and material injury.[111]

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[105] 19 U.S.C. § 1677(7)(B). The Commission "may consider such other economic factors as are relevant to the determination" but shall "identify each {such} factor ... and explain in full its relevance to the determination." 19 U.S.C. § 1677(7)(B).

[106] 19 U.S.C. § 1677(7)(A).

[107] 19 U.S.C. § 1677(7)(C)(iii).

[108] 19 U.S.C. § 1677(7)(C)(iii).

[109] 19 U.S.C. §§ 1671d(b), 1673d(b).

[110] *Angus Chemical Co. v. United States*, 140 F.3d 1478, 1484-85 (Fed. Cir. 1998) ("{T}he statute does not 'compel the commissioners' to employ {a particular methodology}."), *aff'g,* 944 F. Supp. 943, 951 (Ct. Int'l Trade 1996).

[111] The Federal Circuit, in addressing the causation standard of the statute, observed that "{a}s long as its effects are not merely incidental, tangential, or trivial, the foreign product sold at less than fair value meets the causation requirement." *Nippon Steel Corp. v. USITC*, 345 F.3d 1379, 1384 (Fed. Cir. 2003). This was further ratified in *Mittal Steel Point Lisas Ltd. v. United States*, 542 F.3d 867, 873 (Fed. Cir. 2008), where the Federal Circuit, quoting *Gerald Metals, Inc. v. United States*, 132 F.3d 716, 722 (Fed. Cir. 1997), stated that "this court requires evidence in the record 'to show that the harm occurred "by reason of" the LTFV imports, not by reason of a minimal or tangential contribution to material harm caused by LTFV goods.'" *See also Nippon Steel Corp. v. United States*, 458 F.3d 1345, 1357 (Fed. Cir. 2006); *Taiwan Semiconductor Industry Ass'n v. USITC*, 266 F.3d 1339, 1345 (Fed. Cir. 2001).

In many investigations, there are other economic factors at work, some or all of which may also be having adverse effects on the domestic industry. Such economic factors might include nonsubject imports; changes in technology, demand, or consumer tastes; competition among domestic producers; or management decisions by domestic producers. The legislative history explains that the Commission must examine factors other than subject imports to ensure that it is not attributing injury from other factors to the subject imports, thereby inflating an otherwise tangential cause of injury into one that satisfies the statutory material injury threshold.[112] In performing its examination, however, the Commission need not isolate the injury caused by other factors from injury caused by unfairly traded imports.[113] Nor does the "by reason of" standard require that unfairly traded imports be the "principal" cause of injury or contemplate that injury from unfairly traded imports be weighed against other factors,

[112] SAA at 851-52 ("{T}he Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports."); S. Rep. 96-249 at 75 (1979) (the Commission "will consider information which indicates that harm is caused by factors other than less-than-fair-value imports."); H.R. Rep. 96-317 at 47 (1979) ("in examining the overall injury being experienced by a domestic industry, the ITC will take into account evidence presented to it which demonstrates that the harm attributed by the petitioner to the subsidized or dumped imports is attributable to such other factors;" those factors include "the volume and prices of nonsubsidized imports or imports sold at fair value, contraction in demand or changes in patterns of consumption, trade restrictive practices of and competition between the foreign and domestic producers, developments in technology and the export performance and productivity of the domestic industry"); *accord Mittal Steel*, 542 F.3d at 877.

[113] SAA at 851-52 ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports."); *Taiwan Semiconductor Industry Ass'n,* 266 F.3d at 1345 ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports ... . Rather, the Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports." (emphasis in original)); *Asociacion de Productores de Salmon y Trucha de Chile AG v. United States*, 180 F. Supp. 2d 1360, 1375 (Ct. Int'l Trade 2002) ("{t}he Commission is not required to isolate the effects of subject imports from other factors contributing to injury" or make "bright-line distinctions" between the effects of subject imports and other causes.); *see also Softwood Lumber from Canada*, Inv. Nos. 701-TA-414 and 731-TA-928 (Remand), USITC Pub. 3658 at 100-01 (Dec. 2003) (Commission recognized that "{i}f an alleged other factor is found not to have or threaten to have injurious effects to the domestic industry, *i.e*., it is not an 'other causal factor,' then there is nothing to further examine regarding attribution to injury"), *citing Gerald Metals,* 132 F.3d at 722 (the statute "does not suggest that an importer of LTFV goods can escape countervailing duties by finding some tangential or minor cause unrelated to the LTFV goods that contributed to the harmful effects on domestic market prices.").

such as nonsubject imports, which may be contributing to overall injury to an industry.[114] It is clear that the existence of injury caused by other factors does not compel a negative determination.[115]

Assessment of whether material injury to the domestic industry is "by reason of" subject imports "does not require the Commission to address the causation issue in any particular way" as long as "the injury to the domestic industry can reasonably be attributed to the subject imports."[116] The Commission ensures that it has "evidence in the record" to "show that the harm occurred 'by reason of' the LTFV imports," and that it is "not attributing injury from other sources to the subject imports." [117] The Federal Circuit has examined and affirmed various Commission methodologies and has disavowed "rigid adherence to a specific formula."[118]

The question of whether the material injury threshold for subject imports is satisfied notwithstanding any injury from other factors is factual, subject to review under the substantial

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[114] S. Rep. 96-249 at 74-75; H.R. Rep. 96-317 at 47.

[115] *See Nippon Steel Corp*., 345 F.3d at 1381 ("an affirmative material-injury determination under the statute requires no more than a substantial-factor showing. That is, the 'dumping' need not be the sole or principal cause of injury.").

[116] *Mittal Steel*, 542 F.3d at 876 &78; *see also id.* at 873 ("While the Commission may not enter an affirmative determination unless it finds that a domestic industry is materially injured 'by reason of' subject imports, the Commission is not required to follow a single methodology for making that determination ... {and has} broad discretion with respect to its choice of methodology.") *citing United States Steel Group v. United States*, 96 F.3d 1352, 1362 (Fed. Cir. 1996) and S. Rep. 96-249 at 75. In its decision in *Swiff-Train v. United States*, 793 F.3d 1355 (Fed. Cir. 2015), the Federal Circuit affirmed the Commission's causation analysis as comporting with the Court's guidance in *Mittal*.

[117] *Mittal Steel*, 542 F.3d at 873 (quoting from *Gerald Metals*, 132 F.3d at 722), 877-79. We note that one relevant "other factor" may involve the presence of significant volumes of price-competitive nonsubject imports in the U.S. market, particularly when a commodity product is at issue. In appropriate cases, the Commission collects information regarding nonsubject imports and producers in nonsubject countries in order to conduct its analysis.

[118] *Nucor Corp. v. United States*, 414 F.3d 1331, 1336, 1341 (Fed. Cir. 2005); *see also Mittal Steel*, 542 F.3d at 879 ("*Bratsk* did not read into the antidumping statute a Procrustean formula for determining whether a domestic injury was 'by reason' of subject imports.").

evidence standard.[119] Congress has delegated this factual finding to the Commission because of the agency's institutional expertise in resolving injury issues.[120]

B. Conditions of Competition and the Business Cycle

The following conditions of competition inform our analysis of whether there is material injury by reason of subject imports.

1. Demand Considerations

U.S. demand for FEBs is driven by demand for U.S.-produced downstream products, which primarily include hydraulic fracturing pumps, as well as mud pumps, cementing pumps, non-fracturing stimulation services, and saltwater disposal systems.[121] The largest purchasers of FEBs during the POI were ***, ***, and ***, which together accounted for *** percent of reported purchases from all sources during the POI.[122]

As discussed previously, FEBs are produced from stainless or non-stainless alloy steels.[123] Because FEBs are made to specific customer specifications, substitutes do not exist.[124] Both Petitioners and respondents indicate that the longer lifecycle of SS FEBs decreases the frequency with which purchasers need to replace SS FEBs, which has contributed to lower aggregate demand for FEBs.[125] Notably, U.S. forger/finishers' U.S. shipments of SS FEBs as a share of their total U.S. shipments increased overall during the POI, while their U.S.

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[119] We provide in our discussion below a full analysis of other factors alleged to have caused any material injury experienced by the domestic industry.

[120] *Mittal Steel*, 542 F.3d at 873; *Nippon Steel Corp*., 458 F.3d at 1350, *citing U.S. Steel Group*, 96 F.3d at 1357; S. Rep. 96-249 at 75 ("The determination of the ITC with respect to causation is ... complex and difficult, and is a matter for the judgment of the ITC.").

[121] CR/PR at II-9

[122] *Derived from* CR/PR at Table V-18. Combined, importer/purchasers *** imported *** percent of cumulated subject imports in 2019. *Derived from* CR/PR at Table IV-1. These two firms were also the largest importers of FEBs for internal use. CR/PR at V-20.

[123] CR/PR at I-15.

[124] CR/PR at II-12.

[125] *See* Petitioners' Prehearing Brief at 23; Cogne, Metalcam, and Roselli's Posthearing Brief at 4-5; Joint Respondents' Prehearing Brief at 5, 7.

shipments of NSS FEBs declined as a share of their total U.S. shipments.[126]

U.S. demand for FEBs depends on oil and gas market trends.[127] Natural gas prices, which had fluctuated earlier in the POI, declined from October 2019 to June 2020.[128] Oil prices, which peaked in 2018, dropped steeply between February and March 2020, coinciding with the beginning of the COVID-19 pandemic, but increased beginning in May 2020 to levels still below those prevailing earlier in the POI.[129] According to industry information reported by Petitioners, hydraulic fracturing horsepower declined by more than 50 percent from 2019 to 2020.[130]

Likewise, most firms reported a decrease in U.S. demand for FEBs since January 1, 2017.[131] U.S. forger/finisher *** reported that the U.S. market has seen significant softening of demand since 2018, while U.S. forger/finisher *** reported that the COVID-19 pandemic has impacted demand.[132] Importer/purchaser *** reported that the "price war between Saudi {Arabia} and Russia" resulted in a demand shock for FEBs at the beginning of 2020.[133]

Apparent U.S. consumption of FEBs declined throughout the POI, particularly towards its conclusion. Apparent U.S. consumption declined from *** units in 2017 to *** units in 2018, or by *** percent, and declined to *** units in 2019, which was *** percent lower than 2018, declining overall by *** percent from 2017 to 2019.[134]

2. Supply Considerations

The domestic industry was the largest source of supply of FEBs in the U.S. market in 2017 and 2018, and the second largest source of supply in 2019 and interim 2020. The two largest U.S. forger/finishers were Ellwood and Finkl, which jointly accounted for *** percent of

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[126] *See* CR/PR at Table D-1. Forger/finishers' U.S. shipments of SS FEBs as a share of their total U.S. shipments increased from *** percent in 2017 to *** percent in 2019; the share was higher in interim 2020, at *** percent, than in interim 2019, at *** percent. *Id.* Conversely, the share of forger/finishers' U.S. shipments that were NSS FEBs decreased from *** percent in 2017 to *** percent in 2019; the share was lower in interim 2020, at *** percent, than in interim 2019, at *** percent. *Id.*

[127] *See* CR/PR at II-10.

[128] CR/PR at II-10, Fig. II-1.

[129] CR/PR at II-10, Fig. II-2.

[130] CR/PR at II-10.

[131] *See CR*/PR at Table II-5.

[132] CR/PR at II-9.

[133] CR/PR at II-9.

[134] CR/PR at Tables IV-7, C-1. Apparent U.S. consumption was *** percent lower in interim 2020, when it was *** units, than in interim 2019, when it was *** units. *Id.*

domestic forging/finishing production in 2019.[135] The domestic industry's share of apparent U.S. consumption by quantity declined from *** percent in 2017 to *** percent in 2018 and to *** percent in 2019.[136]

Cumulated subject imports were the second largest source of supply of FEBs in 2017 and 2018, and became the largest source of supply in 2019 and interim 2020. Cumulated subject imports' share of apparent U.S. consumption by quantity rose from *** percent in 2017 to *** percent in 2018, and *** percent in 2019.[137]

Nonsubject imports were the smallest source of supply of FEBs in the U.S. market throughout the POI. Nonsubject imports' share of apparent U.S. consumption by quantity was *** percent in 2017, *** percent in 2018, and *** percent in 2019.[138] Reported sources of nonsubject imports were Mexico, the United Kingdom, Canada, Austria, and Korea.[139]

3. Substitutability and Other Conditions

FEBs are custom made to individual customer specifications.[140] Specifications can include steel chemistry, forging process, heat treatment properties, dimensions, and machining tolerances, as well as ranges of allowable levels of cleanliness, inclusions, hardness, and other factors that affect the manufacturing process.[141] The vast majority of responding purchasers indicated that domestically produced FEBs and FEBs from each of the four subject countries "always" met minimum quality specifications.[142] All U.S. forger/finishers and most responding importers and purchasers reported that the domestic like product and subject imports from each of the four subject countries are "always" interchangeable.[143] As previously discussed in section IV.B., at least half of responding purchasers reported that the domestic like product and

[135] *Derived from* CR/PR at Table III-2.

[136] CR/PR at Table IV-8. The domestic industry's share of apparent U.S. consumption by quantity was *** percent in interim 2019 and *** percent in interim 2020. *Id.*

[137] CR/PR at Table IV-8. Cumulated subject imports' share of apparent U.S. consumption by quantity was *** percent in interim 2019 and *** percent in interim 2020. *Id.*

[138] CR/PR at Table IV-8. Nonsubject imports' share of apparent U.S. consumption by quantity was *** percent in interim 2019 and *** percent in interim 2020. *Id.*

[139] CR/PR at II-8.

[140] *See* CR/PR at I-18, I-21 to I-22, II-12, III-25 n.17.

[141] CR/PR at I-18 nn.45-46, *id.* at I-19; *see also id.* at Table II-9.

[142] *See* CR/PR at Table II-13.

[143] *See* CR/PR at Table II-12.

subject imports from China, Germany, and Italy were comparable with respect to most purchasing factors.[144]

Twelve of 14 responding purchasers reported requiring suppliers to become certified or qualified in order to sell FEBs to their firm.[145] Two purchasers (***) reported that domestic suppliers had lost or failed to gain approved status, while 11 purchasers (including ***) reported no supplier certification failures.[146] Fluid end blocks are almost exclusively produced to order.[147]

In light of the foregoing, we find that the record supports that there is at least a moderate degree of substitutability between domestically produced FEBs and the cumulated subject imports. While questionnaire responses generally indicate that domestically produced FEBs and subject imports are interchangeable and comparable with respect to most purchasing factors, OEMs and pump manufacturers have their own custom fluid end block specifications for each corresponding fluid end module they produce[148] and fluid end blocks are almost exclusively produced to order.[149] This results in a large variety of product mix.[150] The degree of substitutability is higher for FEB products made to the same customer specification.[151]

We find that price is an important factor in purchasing decisions, although, as discussed below, quality and lead time/delivery are also important factors.[152] Quality, price/cost, and lead time/delivery were the most frequently cited top three purchasing factors by responding purchasers, with each of these factors cited a total of nine times as a top three purchasing factor.[153] Quality was the most frequently cited first-most important factor (cited four times),

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[144] *See* CR/PR at Table II-11.

[145] *See* CR/PR at Table II-9.

[146] *See* CR/PR at Table II-9. Ellwood disputes that it was disqualified by *** in mid-2019 and argues that ***. Petitioner's Prehearing Brief at 47-48; Petitioner's Posthearing Brief at II-35.

[147] CR/PR at II-12.

[148] *See* CR/PR at I-18 n.45, III-25 n.17, VI-1 n.2.

[149] CR/PR at II-12.

[150] CR/PR at VI-1.

[151] For example, in its importer questionnaire response, *** stated that its "fluid ends are highly engineered and made to *** specifications. Hence, fluid ends procured by *** which meet *** specifications are interchangeable with each other regardless of country of origin." *** U.S. Importer Questionnaire Response, EDIS Doc. # ***, at III-24.

[152] We discuss in section V.D. below respondents' contentions that subject imports were purchased principally for non-price reasons, as well as the assertions by certain purchasers, on which respondents rely, that they did not purchase subject imports on the basis of price.

[153] *See* CR/PR at Table II-7.

followed by price/cost (cited three times).[154] Lead time/delivery was the most frequently cited second-most important factor (cited five times).[155] Price/cost and all other factors were the most frequently cited third-most important factor (cited four times each).[156]

All or a majority of purchasers rated as "very important" the following purchasing factors: availability, delivery time, price, product consistency, quality meets industry standards, quality exceeds industry standards, reliability of supply, and steel type.[157] Market participants' responses varied regarding how often differences other than price were significant in sales of FEBs from the United States versus FEBs from subject sources.[158]

The primary raw material used to manufacture FEBs is stainless or non-stainless alloy steel.[159] Prices for steel bar of both types increased overall between January 2017 and September 2020, with net increases of *** percent and *** percent, respectively.[160] Stainless and non-stainless alloy steel became subject to a 25 percent *ad valorem* duty under section 232 of the Trade Expansion Act of 1962 in March 2018.[161] *** identified Section 232 duties on steel products as contributing to higher raw material costs.[162] Raw materials as a share of cost of goods sold ("COGS") fluctuated but decreased over the full years of the POI from *** percent in 2017 to *** percent in 2019.[163]

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[154] *See* CR/PR at Table II-7.

[155] *See* CR/PR at Table II-7.

[156] *See* CR/PR at Table II-7.

[157] *See* CR/PR at Table II-8.

[158] *See* CR/PR at Table II-14. At least half of U.S. producers said that non-price differences were "sometimes" significant in purchasing decisions between the domestic like product and subject imports. *See id.* By contrast, at least half of importers and purchasers said that non-price differences were "always" or "frequently" significant, except with respect to subject imports from Germany, where a majority of importers said that non-price differences were "sometimes" or "never" significant. *See id*.

[159] CR/PR at V-1.

[160] CR/PR at V-1, Fig. V-1.

[161] 19 U.S.C. § 1862. *See* CR/PR at I-13 & n17. FEBs from China have also been subject to duties under section 301 of the Trade Act of 1974 (19 U.S.C. § 2411) since September 2018. CR/PR at II-2. The effective dates and rates of these additional duties have varied depending upon the HTS classification under which the FEBs were entered. *Id.* at I-13 to I-14.

[162] CR/PR at I-13 n.19.

[163] CR/PR at Table VI-1. The ratio of raw materials to COGS was *** percent in interim 2019 and *** percent in interim 2020. *Id.*

U.S. forger/finishers and importers reported setting prices using mostly transaction-by-transaction negotiations.[164] U.S. forger/finishers and importers also reported selling the majority of their FEBs under short term contracts, with the remainder sold in the spot market.[165]

C. Volume of Subject Imports

Section 771(7)(C)(i) of the Tariff Act provides that the "Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States, is significant."[166]

The volume of cumulated subject imports decreased from 13,403 units in 2017 to 11,714 units in 2018 and 6,803 units in 2019.[167] However, U.S. commercial shipments of cumulated subject imports declined more slowly than apparent U.S. consumption; consequently, cumulated subject imports' share of apparent U.S. consumption by quantity increased from *** percent in 2017 to *** percent in 2018 and *** percent in 2019, for an overall increase of *** percentage points from 2017 to 2019.[168] The ratio of cumulated subject imports to U.S. production increased from 105.2 percent in 2017 to 117.8 percent in 2018 and 153.4 percent in 2019.[169]

Notwithstanding their declining absolute quantities, cumulated subject imports maintained a substantial and growing share of the U.S. market throughout the POI. Moreover, the ratio of cumulated subject imports to U.S. production was high and grew higher during each full year of the POI. We consequently find that the volume of cumulated subject imports is significant in absolute terms and relative to U.S. consumption and production, and that the increase in volume of cumulated subject imports relative to U.S. consumption and production is

[164] *See* CR/PR at Table V-1.

[165] *See* CR/PR at Table V-2.

[166] 19 U.S.C. § 1677(7)(C)(i).

[167] CR/PR at IV-3, Table IV-2. The volume of cumulated subject imports was lower in interim 2020, at 1,281 units, than in interim 2019, when it was 4,597 units. *Id.*

[168] CR/PR at Tables IV-8, C-1. Cumulated subject imports' market share was higher, by *** percentage points, in interim 2020 at *** percent, than interim 2019, when it was *** percent. *Id.*

[169] CR/PR at Table IV-2. The ratio of cumulated subject imports to U.S. production was lower in interim 2020, at *** percent, than in interim 2019, when it was *** percent. *Id.*

significant.[170]

D. Price Effects of the Subject Imports

Section 771(7)(C)(ii) of the Tariff Act provides that, in evaluating the price effects of the subject imports, the Commission shall consider whether

> (I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and
>
> (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.[171]

As explained above, the record indicates that the domestic like product and subject imports are at least moderately substitutable, although the degree of substitutability is higher when FEBs are made to the same customer specification. The record also indicates that price is an important consideration in purchasing decisions, together with quality and lead time.

The Commission collected quarterly pricing data for the total quantity and f.o.b. value of six pricing products shipped by U.S. producers and importers to unrelated U.S. customers

[170] We do not find that the volume of subject imports "virtually" vanished at the end of the POI. *See* Cogne, Metalcam, and Roselli's Posthearing Brief at 13; Joint Respondents' Prehearing Brief at 13-14. While the absolute volume of cumulated subject imports declined sharply after 2018, subject imports constituted a large and growing percentage of a smaller U.S. market. *See* CR/PR at Table IV-8.

[171] 19 U.S.C. § 1677(7)(C)(ii).

between January 2017 and June 2020.[172] Three U.S. producers and seven importers provided usable pricing data, with pricing data accounting for approximately *** percent of U.S. producers' U.S. shipments of FEBs in 2019, *** percent of U.S. shipments of subject imports from Germany in 2019, *** percent of U.S. shipments of subject imports from India in 2019,

[172] CR/PR at V-5. The six pricing products are:

Product 1.-- 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 7,300 and 7,550 lbs. Does not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Product 2.-- 17-4 Solid Quint. Quintuplex fluid end block that has been rough machined but not drilled, made of forged stainless steel, with a chromium content between 14.50% and 18.00%, a nickel content between 2.90% and 5.10%, and a net weight between 7,500 and 9,300 lbs. Does not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Product 3.-- 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 6,950 and 7,250 lbs. Does not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Product 4.-- 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, undergone additional machining and finishing but not in a fully finished condition, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 4,000 and 4,700 lbs.

Product 5.-- 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and finished machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 4,500 and 5,000 lbs.

Product 6.-- 4330mod Drilled Mud Pump Block. Fluid end block that has been drilled with no more than one hole per face, rough machined, made of forged alloy steel, with a chromium content between 0.65% and 1.00%, a nickel content between 1.60% and 2.05%, and a net weight between 3,100 and 3,300 lbs. Does not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.). CR/PR at V-6.

and *** percent of U.S. shipments of subject imports from Italy in 2019.[173] [174] Cumulated subject imports consisting of 4,118 units undersold the domestic like product in 28 of 41 (68.3 percent) quarterly comparisons, at margins ranging from 0.02 to 39.7 percent.[175] Cumulated subject imports consisting of 1,265 units oversold the domestic like product in 13 of 41 (31.7 percent) quarterly comparisons, at margins ranging from 1.9 to 96.1 percent.[176]

The Commission also obtained data concerning landed duty-paid values and quantities for imports of the same six pricing products for firms' internal use. Four importers provided usable import purchase cost data for products 1-5, with import purchase cost data accounting for *** percent of imports from Germany in 2019, *** percent of imports from India in 2017, and *** percent of imports from Italy in 2019.[177] Landed duty-paid costs for FEBs imported from subject countries consisting of 1,079 units were below the price of U.S.-produced FEBs in 14 of 24 (58.3 percent) quarterly comparisons, with an average price-cost differential of 9.8 percent.[178] Landed duty-paid costs for FEBs imported from subject countries consisting of

[173] CR/PR at V-7. No pricing data were reported for subject imports from China. *Id*.

[174] We find the pricing data coverage to be adequate in light of the characteristics of the product under investigation, in particular given that FEBs are made to individual customer specifications and come in a range of designs, chemical compositions, and other technical requirements. *See* CR/PR at I-18 n.45, III-25 n.17, VI-1 n.2.

We also note that pricing products 4 and 5, which were added in the final phase, were requested by respondents. *See* Letter from Douglas J. Heffner, Faegre Drinker Biddle & Reath LLP, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy USITC Inv. Nos. 701-TA-632-635 & 731-TA-1466-1468 (Final): Comments on Draft Questionnaires by Metalcam S.p.A. (May 20, 2020) at 2; Letter from Douglas J. Heffner, Faegre Drinker Biddle & Reath LLP, to Lisa R. Barton, Secretary, Re: Fluid End Blocks from China, Germany, India, and Italy USITC Inv. Nos. 701-TA-632-635 & 731-TA-1466-1468 (Final): Comments on Draft Questionnaires by Cogne Acciai Speciali S.p.A. and Cogne Specialty Steel USA, Inc. (May 20, 2020) at 2. The respondents could have proposed additional pricing products in their comments on the questionnaires, if they were aware of any that would likely have materially increased the number of pricing comparisons. They did not do so.

In any event, our underselling analysis does not rely exclusively on the pricing data. As we explain below, we have also considered purchase cost data, lost sales, and purchaser questionnaire responses of certain large purchasers.

[175] CR/PR at Table V-16.

[176] CR/PR at Table V-16.

[177] CR/PR at V-20; *derived from* CR/PR at Tables IV-2, V-9, V-13.

[178] *See* CR/PR at Table V-17.

1,019 units were above the price of U.S.-produced FEBs in the remaining ten (41.7 percent) quarterly comparisons, with an average price-cost differential of 54.5 percent.[179]

We requested that importers that imported subject merchandise for internal use provide additional estimated costs that are not included in the landed duty-paid values associated with their importing activities. Three importers reported that they incurred additional costs beyond landed duty-paid costs by importing FEBs directly rather than purchasing them from a U.S. producer or importer.[180] Two estimated the total additional costs incurred were *** and *** percent of the landed duty-paid value.[181] Reported costs included logistics and ocean freight (*** percent) and customs and port terminal fees (*** percent).[182] These additional costs were less than the *** percent average differential between landed duty-paid costs for the subject imports and prices for the domestic like product. Additionally, four importers estimated saving between *** percent by importing directly for internal use compared to purchasing from a U.S. producer.[183]

Information collected in response to lost sales allegations also supports a finding that cumulated subject imports were generally priced lower than the domestic like product. Of 15 responding purchasers, 12 reported that, since 2017, they had purchased cumulated subject imports instead of the domestic like product.[184] Six of these purchasers reported that the cumulated subject imports were priced lower than the U.S.-produced product.[185] Four of these six stated that price was the primary reason for their decision to purchase subject imports instead of U.S.-produced product.[186]

Throughout the POI the domestic industry lost market share to cumulated subject imports. Specifically, the domestic industry's market share decreased by *** percentage points from 2017 to 2019 and was *** percentage points lower in interim 2020 than in interim 2019.[187]

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[179] *See* CR/PR at Table V-17.

[180] CR/PR at V-20.

[181] CR/PR at V-20.

[182] CR/PR at V-20.

[183] CR/PR at V-21; *** U.S. Importer Questionnaire Response, EDIS Doc. # ***, at III-4c.

[184] CR/PR at Table V-20.

[185] CR/PR at Table V-20.

[186] CR/PR at Table V-20.

[187] *See* CR/PR at Table IV-8, C-1. The domestic industry's market share by quantity was *** percent in 2017, *** percent in 2018, *** percent in 2019, *** percent in interim 2019, and *** percent in interim 2020. *Id.*

In light of the foregoing, including quarterly pricing comparisons and purchase cost data showing that subject imports were generally less expensive than domestic products, as well as record evidence indicating the importance of price in purchasing decisions and showing that the domestic industry lost sales to subject imports due to price, we find that the underselling by subject imports was significant. Further, this underselling facilitated cumulated subject imports' significant *** percentage point increase in market share from 2017 to 2019 that led to a *** percentage point decrease in domestic producer market share, and a domestic producer market share that was *** percentage points lower in interim 2020 compared to interim 2019, while subject imports' market share was *** percentage points higher between the interim periods.[188]

The record does not support the contention that subject imports were purchased principally for non-price reasons, or the underlying premise that the domestic like product, meeting the same technical specifications, was appreciably inferior in quality to the subject imports.[189] A majority of responding purchasers reported that the domestic like product was comparable to imports from each subject country on the purchasing factor of "{q}uality exceeds industry standards."[190] Moreover, we observe that domestic producers held a steady to rising and substantial share of total U.S. shipments of SS FEBs during the POI;[191] if respondents' contention that U.S.-produced SS FEBs are substantively inferior in quality to subject imports of SS FEBS so as to even be dangerous reflected a view shared by a majority of purchasers,[192] we would not expect to see the U.S. producer shipments and market share with respect to these

[188] *See* CR/PR at Table IV-8, C-1.

[189] *See* Cogne, Metalcam, and Roselli's Posthearing Brief at 6-7; Lucchini's Posthearing Brief, Attachment at 8.

[190] *See* CR/PR at Table II-11. When asked about U.S. producers' ability to meet minimum qualify specifications, seven of 10 purchasers reported that domestically produced FEBs "always" meet minimum quality specifications, whereas one reported "usually," and two reported "sometimes." *Id.* at Table II-13.

[191] *See* CR/PR at Table IV-9. The domestic industry's share of the quantity of total U.S. shipments of SS FEBs by quantity was *** percent in 2017, *** percent in 2018, and *** percent in 2019; it was *** percent in interim 2019 and *** percent in interim 2020. *Id.*

[192] *See, e.g.,* Hearing Tr. at 117-118 (Poradek).

products that we do.[193]

Additionally, information in the record indicates that assertions by some purchasers, on which respondents rely,[194] are mixed on the degree to which lower prices of subject imports did not play a role in their purchasing decisions.

For example, while one firm emphasized the importance of its ability to source globally as well as the lower performance of U.S. producers in terms of quality, on-time delivery, capacity, and capability,[195] the firm also reported that price was a "very important" factor impacting its purchasing decisions, and that the domestic like product was higher priced than subject imports from China, India, and Italy.[196] The share of this firm's total purchases and imports of FEBs that consisted of U.S.-produced FEBs decreased by *** percentage points from 2017 to 2019, while the share that consisted of subject imports increased by the same

[193] We also observe that, despite its statements regarding the inferior quality, on-time delivery, capacity, and capability of U.S.-produced FEBs, *** continued to purchase U.S.-produced FEBs throughout the POI. *See* *** U.S. Purchaser Questionnaire Response, Worksheet, EDIS Doc. # 728913, at II-1a. *** specifically scored Ellwood's FEB product quality as *** based on *** own quality scoring system. *See* Petitioners' Posthearing Brief at II-23, Attachments C, D.

[194] Lucchini's Final Comments at 7; Cogne, Metalcam, and Roselli's Final Comments at 4-7; Cogne, Metalcam, and Roselli's Posthearing Brief at 8-9, Answers to Commissioner Questions at 15-23; Bharat's Posthearing Brief at 5; Joint Respondents' Prehearing Brief at 3-5; Lucchini's Prehearing Brief at 10-12.

[195] *See* *** U.S. Importers Questionnaire Response, EDIS Doc. # ***, at III-4a, III-4c. See also ***.

[196] *** U.S. Purchaser Questionnaire Response, Worksheet, EDIS Doc. # 728913, at III-26, IV-3.

amount.[197] The information *** provided indicates that price was one of several factors pertinent to its purchasing decisions.

Another firm (***) similarly indicated that lower subject import prices were pertinent to its purchasing decisions, notwithstanding certain non-price differences; specifically, *** "usually" purchased FEBs offered at the lowest price,[198] and lower price was a primary reason it purchased subject imports from China instead of the domestic like product.[199] This firm also reported that the domestic like product and imports from each subject country were "comparable" on the factors of "delivery time," "quality exceeds industry standards," and "reliability of supply,"[200] despite statements regarding better production capacity and on-time delivery of subject imports.[201]

Similarly, *** asserts that it purchased subject imports instead of the domestic like product as part of a "dual source strategy."[202] The firm further indicated that it *** purchased the lowest-price FEBs, and that differences other than price between FEBs produced in the United States and in subject countries were only "sometimes" a significant factor in its purchasing decisions with respect to FEBs from Germany and Italy.[203] *** also reported purchasing subject imports from China, Germany, and Italy instead of purchasing U.S.-produced FEBs, that the price of the imported product from China was lower, and that price was a

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[197] *See* CR/PR at Table V-18. We also note that *** was the only firm to report landed duty-paid costs for FEB imports of pricing products 1 and 5. *Compare* *** U.S. Importer Questionnaire Response, EDIS Doc. # ***, at III-3c, III-3d *with* CR/PR at Tables V-9, V-13. The vast majority of purchase cost data reported by all importers concerned product 1. CR/PR at Table V-17. *** landed duty-paid costs for FEB imports of pricing product 1 from subject sources, consisting of *** units, were below the price of U.S.-produced FEBs in *** of 15 (*** percent) quarterly comparisons, with an average price-cost differential of *** percent. *See id.*

Similarly, ***, which sold *** percent of its 2019 U.S. shipments of FEBs to ***, *see* *** Importer Questionnaire Response, EDIS Doc. # ***, at III-26, was the only firm to report quarterly pricing data for FEB imports of pricing product 1. *Compare id.* at III-2c *with* CR/PR at Table V-3. *** subject imports of pricing product 1 consisting of *** units undersold the domestic like product in *** of 11 (*** percent) quarterly comparisons, at margins ranging from *** to *** percent. *See* CR/PR at Table V-16.

[198] *See* *** U.S. Purchaser Questionnaire Response, EDIS Doc. # ***, at III-30.

[199] *See* *** U.S. Purchaser Questionnaire Response, EDIS Doc. # ***, at III-32.

[200] *See* *** U.S. Purchaser Questionnaire Response, EDIS Doc. # ***, at IV-3.

[201] *See* CR/PR at Table V-10; *** U.S. Importer Questionnaire Response, EDIS Doc. # ***, at III-4c.

[202] CR/PR at Table V-19; *** U.S. Purchaser Questionnaire Response, EDIS Doc. # ***, at II-2.

[203] *See* *** U.S. Purchaser Questionnaire Response, EDIS Doc. # ***, at III-30, IV-2.

primary reason for purchasing subject imports from China instead of the domestic like product.[204] Notwithstanding its purchase of subject imports instead of the domestic like product as part of a "dual source strategy," *** ranked price as a "very important" purchasing factor, along with eight other factors.[205] *** also reported an estimated savings of *** percent by importing subject imports directly for internal use compared to purchasing from a U.S. producer.[206] In light of this information, the record indicates that lower subject import prices also played a role in this purchaser's decisions to purchase subject imports.

Finally, we observe that ST9 provided documentation indicating that it had quality concerns with Ellwood's FEBs,[207] and a representative for ST9 testified that he contacted Ellwood by telephone in January 2020 to inform Ellwood that ST9 did not intend to continue purchasing FEBs from Ellwood due to these concerns.[208] Nevertheless, we also observe that, as late as December 2019, ST9 was negotiating with Ellwood for the purchase of FEBs on the basis of price.[209] Moreover, ST9 was a relatively small purchaser during the POI, accounting for only *** percent of total reported purchases of FEBs during the POI.[210] That ST9 may also have purchased subject imports from Italy instead of the domestic like product primarily for non-price reasons does not outweigh information in the record as a whole indicating that lower prices played a role in other, larger purchasers' decisions to obtain cumulated subject imports. Finally, Petitioners have placed on the record contemporaneous evidence during the POI of purchasers (including ***) using subject import prices as leverage in sales negotiations with domestic suppliers.[211]

We have also considered price trends for the domestic like product and subject imports during the POI. We observe that prices for domestically produced pricing products 1 and 2

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[204] *See* *** U.S. Importer Questionnaire Response, EDIS Doc. # ***, at III-32.

[205] *See* *** U.S. Purchaser Questionnaire Response, EDIS Doc. # ***, at III-26.

[206] *See* *** U.S. Importer Questionnaire Response, EDIS Doc. # ***, at III-4c.

[207] *See, e.g.,* Lucchini's Posthearing Brief at Exhibit 13. Ellwood disputes the validity of ST9's quality concerns, indicating that the FEBs in question fully met ST9's required specifications and that subsequent testing demonstrated ST9's concerns to be unfounded. *See* Petitioners' Posthearing Brief at I-6 to I-8, II-29 to II-33. ST9 appears to have acknowledged that Ellwood's FEBs met its specifications, but continues to maintain that Ellwood's FEBs fail more quickly than the FEBs purchased from Italian producers. Hearing Tr. at 187-190 (Podarek); Lucchini's Posthearing Brief, Attachment at 8.

[208] *See* Hearing Tr. at 158 (Podarek); Lucchini's Posthearing Brief, Attachment at 4.

[209] *See* Petitioners' Posthearing Brief at II-33, Attachments E-18 and E-19.

[210] CR/PR at Table V-18.

[211] Petitioners' Posthearing Brief at II-18 to II-19, Attachments A-1 through A-10.

were lower in the last quarters for which pricing data were reported than in in the first quarter of 2017.[212] In contrast, prices for the four other domestically produced pricing products did not experience downward trends.[213] Subject import pricing trends were also mixed: during the periods for which prices were reported, prices declined for pricing products 1 and 5 from India and pricing product 3 from Italy, as did purchase costs of pricing products 1 and 5 from Italy; by contrast, prices increased for pricing product 2 from Germany and pricing product 4 from Italy.[214] In light of the magnitude of the declines in prices for domestically produced pricing products 1 and 2, increases in prices for the remaining domestically produced pricing products, and declines in demand throughout the POI,[215] the record does not support a finding that the cumulated subject imports had significant price depressing effects.[216]

We have also considered whether the domestic industry was unable to obtain price increases, which otherwise would have occurred, due to the subject imports. U.S. forger/finishers' COGS-to-net sales ratio increased each year of the POI from *** percent in 2017 to *** percent in 2018 and *** percent in 2019.[217] Moreover, forger/finishers' ratios of direct labor and other factory costs to net sales increased overall during the full years of the POI

[212] CR/PR at Table V-15. The per-unit domestic price for pricing product 1 decreased by *** percent from $*** in the first quarter of 2017 to $*** in the second quarter of 2020, and the per-unit domestic price for pricing product 2 decreased by *** percent from $*** in the first quarter of 2017 to $*** in the last quarter of 2019. CR/PR at Tables V-3, V-4.

[213] CR/PR at Tables V-8, V-15.

[214] *See* CR/PR Table V-15.

[215] Apparent U.S. consumption declined overall by *** percent from 2017 to 2019; it *** percent lower in interim 2020 than in interim 2019. CR/PR at Tables IV-7, C-1.

[216] We also observe that, of the 15 responding purchasers, only one purchaser reported that U.S. producers had reduced prices in order to compete with lower-priced imports from subject countries. Ten purchasers reported that U.S. producers had not reduced prices to compete with lower-priced subject imports and ten reported that they did not know. *See* CR/PR at V-43.

[217] CR/PR at Table VI-1. Forger/finishers' COGS-to-net sales ratio was higher in interim 2020, at *** percent, than in interim 2019, at *** percent. *Id.* In analyzing price suppression, we have focused on data from the forger/finishers, since they are the entities that make commercial sales.

and were higher in interim 2020 than in interim 2019,[218] which is consistent with what would be expected during a period of reduced production and shipments, while their ratio of raw materials to net sales fluctuated but increased only slightly over the full years of the POI and was lower in interim 2020 than in interim 2019.[219] In light of the substantial declines in demand throughout the POI (culminating in a *** percent drop from 2017 to 2019 and an additional *** percent lower between the interim periods)[220] and the relatively stable ratio of raw materials-to-net sales, the record does not support a finding that prices for domestic products could have increased more than they did due to subject import competition. We consequently do not find that the cumulated subject imports, as opposed to other factors, prevented price increases that otherwise would have occurred to a significant degree.

In light of the foregoing, we find that cumulated subject imports significantly undersold the domestic like product and took sales and market share from the domestic industry. We consequently find that the cumulated subject imports had significant price effects.

[218] *See* CR/PR at Table VI-1. The direct labor-to-net sales ratio was the same in 2017 and 2018 at *** percent, before increasing to *** percent in 2019; it was higher, at *** percent, in interim 2020 than in interim 2019, when it was *** percent. *Id.*

The other factory costs-to-net sales ratio decreased slightly from *** percent in 2017 to *** percent in 2018, before increasing to *** percent in 2019; it was higher, at *** percent, in interim 2020 than in interim 2019, when it was *** percent. *Id.*

[219] *See* CR/PR at Table VI-1. The raw materials-to-net sales ratio increased from *** percent in 2017 to *** percent in 2018, before decreasing to *** percent in 2019; it was lower, at *** percent, in interim 2020 than in interim 2019, when it was *** percent. *Id.*

[220] *See* CR/PR at Tables IV-7, C-1.

E. Impact of the Subject Imports[221]

Section 771(7)(C)(iii) of the Tariff Act provides that examining the impact of subject imports, the Commission "shall evaluate all relevant economic factors which have a bearing on the state of the industry."[222] These factors include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, gross profits, net profits, operating profits, cash flow, return on investment, return on capital, ability to raise capital, ability to service debts, research and development, and factors affecting domestic prices. No single factor is dispositive and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[223]

U.S. forger/finishers' output-related indicators generally decreased each year from 2017 to 2019 and were lower in interim 2020 than in interim 2019. Production decreased by 65.2 percent from 2017 to 2019, and was *** percent lower in interim 2020 than in interim 2019.[224]

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[221] The statute instructs the Commission to consider the "magnitude of the dumping margin" in an antidumping proceeding as part of its consideration of the impact of imports. 19 U.S.C. § 1677(7)(C)(iii)(V). In its final antidumping duty determination with respect to subject imports from Germany, Commerce found a dumping margin of 3.82 percent for BGH and all others, and 70.84 percent for SWG and voestalpine Bohler Group. *Forged Steel Fluid End Blocks from the Federal Republic of Germany: Final Determination of Sales at Less Than Fair Value*, 85 Fed. Reg. 80018 (Dec. 11, 2020). In its final antidumping duty determination with respect to subject imports from Italy, Commerce found a dumping margin of 0.00 percent (zero) for Metalcam, 7.33 percent for Lucchini and all others, and 58.48 percent for IMER International S.p.A., Galperti Group, Mimest S.p.A., and P. Technologies S.r.l. *Forged Steel Fluid End Blocks from Italy: Final Determination of Sales at Less Than Fair Value*, 85 Fed. Reg. 79996 (Dec. 11, 2020). We take into account in our analysis the fact that Commerce has made final findings that all subject producers in Germany and all except Metalcam in Italy are selling subject imports in the United States at less than fair value. In addition to this consideration, our impact analysis has considered other factors affecting domestic prices. Our analysis of the significant underselling of subject imports, described in both the price effects discussion and below, is particularly probative to an assessment of the impact of the subject imports.

[222] 19 U.S.C. § 1677(7)(C)(iii); *see also* SAA at 851 and 885 ("In material injury determinations, the Commission considers, in addition to imports, other factors that may be contributing to overall injury. While these factors, in some cases, may account for the injury to the domestic industry, they also may demonstrate that an industry is facing difficulties from a variety of sources and is vulnerable to dumped or subsidized imports.").

[223] 19 U.S.C. § 1677(7)(C)(iii). This provision was amended by the Trade Preferences Extension Act of 2015, Pub. L. 114-27.

[224] *See* CR/PR at Table III-7, C-1. Production was 12,737 units in 2017, 9,942 units in 2018, 4,434 units in 2019, 2,502 units in interim 2019, and *** units in interim 2020. *Id.*

Capacity utilization decreased overall by 35.9 percentage points from 2017 to 2019, and was *** percentage points lower in interim 2020 than in interim 2019.[225] U.S. shipments decreased by *** percent from 2017 to 2019, and were *** percent lower in interim 2020 than in interim 2019.[226] U.S. shipments declined at a greater rate than apparent U.S. consumption.[227] U.S. forger/finishers' inventories decreased each year from 2017 to 2019, but were higher in interim 2020 than in interim 2019.[228]

U.S. toll finishers' output-related indicators generally fluctuated, but decreased overall from 2017 to 2019 and were lower in interim 2020 than in interim 2019. Production fluctuated, but decreased overall by 52.7 percent from 2017 to 2019, and was 77.1 percent lower in interim 2020 than in interim 2019.[229] Capacity utilization fluctuated, but decreased overall by 44.4 percentage points from 2017 to 2019, and was 36.5 percentage points lower in interim 2020 than in interim 2019.[230] U.S. toll finishers' U.S. shipments returned to all tollees fluctuated but decreased overall from 2017 to 2019; they were lower in interim 2020 than in interim 2019.[231]

The domestic industry's market share by quantity decreased throughout the POI. It fell by *** percentage points from 2017 to 2019 and was *** percentage points lower in interim 2020 than in interim 2019.[232]

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[225] *See* CR/PR at Table III-7, C-1. Capacity utilization was 54.7 percent in 2017, 43.4 percent in 2018, 19.7 percent in 2019, 21.9 percent in interim 2019, and *** percent in interim 2020. *Id.*

[226] *See* CR/PR at Table III-12, C-1. U.S. shipments were 12,383 units in 2017, 10,747 units in 2018, *** units in 2019, *** units in interim 2019, and *** units in interim 2020. *Id.*

[227] Apparent U.S. consumption declined overall by *** percent from 2017 to 2019; it was *** percent lower in interim 2020 than in interim 2019. CR/PR at Tables IV-7, C-1.

[228] *See* CR/PR at Table III-15, C-1. Inventories were *** units in 2017, *** units in 2018, *** units in 2019, *** units in interim 2019, and *** units in interim 2020. *Id.*

[229] *See* CR/PR at Table III-8, C-1. Production was 7,120 units in 2017, 7,707 units in 2018, 3,365 units in 2019, 2,188 units in interim 2019, and 502 units in interim 2020. *Id.*

[230] *See* CR/PR at Table III-8, C-1. Capacity utilization was 80.8 percent in 2017, 86.2 percent in 2018, 36.4 percent in 2019, 47.4 percent in interim 2019, and 10.9 percent in interim 2020. *Id.*

[231] *See* CR/PR at Table III-13. U.S. shipments returned to all tollees were 7,120 units in 2017, 7,707 units in 2018, 3,365 units in 2019, 2,180 units in interim 2019, and 509 units in interim 2020. *Id.*

[232] *See* CR/PR at Table IV-8, C-1. The domestic industry's market share by quantity was *** percent in 2017, *** percent in 2018, *** percent in 2019, *** percent in interim 2019, and *** percent in interim 2020. *Id.*

The domestic industry's employment indicators generally fluctuated but decreased overall from 2017 to 2019 and were lower in interim 2020 than in interim 2019. PRWs fluctuated on an annual basis but declined by 38.3 percent from 2017 to 2019, and were 68.4 percent lower in interim 2020 than in interim 2019.[233] Hours worked decreased each year from 2017 to 2019 and by 35.7 percent overall; they were 65.5 percent lower in interim 2020 than in interim 2019.[234] Hours worked per PRW fluctuated, but increased overall from 2017 to 2019; they were higher in interim 2020 than in interim 2019.[235] Wages paid fluctuated, but decreased overall from 2017 to 2019 by 32.2 percent; they were 61.9 percent lower in interim 2020 than in interim 2019.[236] Hourly wages increased each year from 2017 to 2019 and increased overall by 5.5 percent; they were 10.5 percent higher in interim 2020 than in interim 2019.[237] U.S. forger/finishers' productivity decreased each year from 2017 to 2019, falling by 44.4 percent; it was *** percent lower in interim 2020 than in interim 2019.[238] U.S. toll finishers' productivity decreased each year from 2017 to 2019, falling by 28.7 percent; it was *** percent higher in interim 2020 than in interim 2019.[239]

U.S. forger/finishers' sales revenues, gross profits, operating income, and net income all decreased each year from 2017 to 2019 and were lower in interim 2020 than in interim 2019. Sales revenues fell by *** percent from 2017 to 2019 and were *** percent lower in interim

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[233] *See* CR/PR at Tables III-18, C-1. The domestic industry's PRWs were 449 in 2017, 451 in 2018, 277 in 2019, 288 in interim 2019, and 91 in interim 2020. *Id.*

[234] *See* CR/PR at Tables III-18, C-1. Total hours worked were 951,000 hours in 2017, 950,000 hours in 2018, 612,000 hours in 2019, 339,000 hours in interim 2019, and 117,000 hours in interim 2020. *Id.*

[235] *See* CR/PR at Tables III-18, C-1. Hours worked per PRW were 2,119 hours in 2017, 2,106 hours in 2018, 2,209 hours in 2019, 1,176 hours in interim 2019, and 1,285 hours in interim 2020. *Id.*

[236] *See* CR/PR at Tables III-18, C-1. Wages paid were $24.8 million in 2017, $25.5 million in 2018, $16.8 million in 2019, $9.6 million in interim 2019, and $3.7 million in interim 2020. *Id.*

[237] *See* CR/PR at Tables III-18, C-1. Hourly wages were $26.04 per hour in 2017, $26.86 per hour in 2018, $27.46 per hour in 2019, $28.47 per hour in interim 2019, and $31.46 per hour in interim 2020. *Id.*

[238] *See* CR/PR at Tables III-16, C-1. Forger/finishers' productivity was 24.9 units per 1,000 hours in 2017, 24.1 units per 1,000 hours in 2018, 13.9 units per 1,000 hours in 2019, 13.9 units per 1,000 hours in interim 2019, and *** units per 1,000 hours in interim 2020. *Id.*

[239] *See* CR/PR at Tables III-17, C-1. Toll finishers' productivity was 16.2 units per 1,000 hours in 2017, 14.3 units per 1,000 hours in 2018, 11.5 units per 1,000 hours in 2019, 13.8 units per 1,000 hours in interim 2019, and *** units per 1,000 hours in interim 2020. *Id.*

2020 than interim 2019.[240] Gross profits decreased by *** percent from 2017 to 2019, and were *** in interim 2020.[241] Operating income and net income went from *** in 2017 and 2018 to *** in 2019 and interim 2020.[242]

U.S. toll finishers' sales revenues, gross profits, operating income, and net income all fluctuated, but decreased overall from 2017 to 2019 and were lower in interim 2020 than in interim 2019. Sales revenues declined by 35.5 percent from 2017 to 2019 and were 86.4 percent lower in interim 2020 than interim 2019.[243] Gross profits decreased overall from 2017 to 2019 by 64.0 percent, and were negative in interim 2020.[244] Operating income decreased overall from 2017 to 2019 by 77.5 percent, and was negative in interim 2020.[245] U.S. toll finishers' net income was *** in 2017 and 2018, but *** in 2019 and interim 2020.[246]

The domestic industry's capital expenditures decreased each year from 2017 to 2019, and were lower in interim 2020 than in interim 2019.[247] Its research and development expenses increased each year from 2017 to 2019, but were lower in interim 2020 than in

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[240] *See* CR/PR at Tables VI-1, C-1. Sales revenues were $*** in 2017, $*** in 2018, $*** in 2019, $*** in interim 2019, and $*** in interim 2020. *Id*.

[241] *See* CR/PR at Tables VI-1, C-1. Gross profits were $*** in 2017, $*** in 2018, $*** in 2019, $*** in interim 2019, and *** in interim 2020. *Id.*

[242] *See* CR/PR at Tables VI-1, C-1. Operating income was $*** in 2017, $*** in 2018, *** in 2019, $*** in interim 2019, and *** in interim 2020. *Id.* The ratio of operating income to net sales was *** percent in 2017, *** percent in 2018, *** percent in 2019, *** percent in interim 2019, and *** percent in interim 2020. *Id*. Net income was $*** in 2017, $*** in 2018, *** in 2019, $*** in interim 2019, and *** in interim 2020. *Id.*

[243] *See* CR/PR at Tables VI-5, C-1. Sales revenues were $57.9 million in 2017, $73.9 million in 2018, $37.4 million in 2019, $23.9 million in interim 2019, and $3.3 million in interim 2020. *Id.*

[244] *See* CR/PR at Tables VI-5, C-1. Gross profits were $17.5 million in 2017, $19.7 million in 2018, $6.3 million in 2019, $4.3 million in interim 2019, and negative $148,000 in interim 2020. *Id.*

[245] *See* CR/PR at Tables VI-5, C-1. Operating income was $11.1 million in 2017, $12.0 million in 2018, $2.5 million in 2019, $1.8 million in interim 2019, and negative $712,000 in interim 2020. *Id.* The ratio of operating income to net sales was 19.2 percent in 2017, 16.2 percent in 2018, 6.7 percent in 2019, 7.7 percent in interim 2019, and negative 21.9 percent in interim 2020. *Id*.

[246] *See* CR/PR at Tables VI-5, C-1. Net income was $*** in 2017, $*** in 2018, *** in 2019, $*** in interim 2019, and *** in interim 2020. *Id.*

[247] *See* CR/PR at Table C-1. Capital expenditures were $*** in 2017, $*** in 2018, $*** in 2019, $*** in interim 2019, and $*** in interim 2020. *Id.*

interim 2019.[248] The domestic industry's net assets decreased each year from 2017 to 2019.[249] Its return on assets decreased each year from 2017 to 2019 and went from a *** to *** return from 2018 to 2019.[250] All six U.S. forger/finishers reported actual negative effects on investment, growth, and development due to the subject imports.[251]

The significant volume of cumulated subject imports significantly undersold the domestic like product, taking sales and increasing market share by *** percentage points from 2017 to 2019 and at a level *** percentage points higher in interim 2020 than interim 2019.[252] As noted above, domestic producers' market share decreased by *** percentage points from 2017 to 2019, and was *** percentage points lower between the interim periods; nonsubject imports' share declined from *** percent in 2017 to *** percent in 2019 for a *** percentage point decline, and was *** percentage points higher in interim 2020, when it was *** percent, than in interim 2019, when it was *** percent.[253] Thus, the market share gains by subject imports were almost entirely at the expense of the domestic industry.[254] As a result, the domestic industry's output and financial indicators declined as the cumulated subject imports

[248] *See* CR/PR at Table C-1. Research and development expenses were $*** in 2017, $*** in 2018, $*** in 2019, $*** in interim 2019, and $*** in interim 2020. *Id.*

[249] *See* CR/PR at Table C-1. The domestic industry's net assets were $*** in 2017, $*** in 2018, and $*** in 2019. *Id.*

[250] *See* CR/PR at Table VI-8. The domestic industry's return on assets was *** percent in 2017, *** percent in 2018, and *** percent in 2019. *Id.*

[251] *See* CR/PR at Table VI-9.

[252] *See* CR/PR at Tables IV-8, C-1.

[253] *See* CR/PR at Tables IV-8, C-1. Even when apparent U.S. consumption declined by *** percent between 2018 and 2019, subject imports' market share still increased by *** percentage points as the domestic producers' market share decreased by *** percentage points. *See id.*

[254] BGH argues that cumulated subject import and domestic industry market share trends do not take into account the substantial difference in lead times for imported and domestic FEBs. *See* BGH's Posthearing Brief at 1-4. The pertinence of this argument is not clear, because the market share of the domestic industry declined, and that of cumulated subject imports increased, throughout the POI, not merely during the latter portion characterized by markedly decreased demand. *See* CR/PR at Table IV-8. Moreover, as demand and cumulated subject import quantities decreased, the ratio of importers' inventories to imports increased. *See* CR/PR at Table VII-15 (the ratio of importers' inventories to subject imports increased from 13.1 percent in 2017 to 24.9 percent in 2018 and 43.5 percent in 2019; it was higher in interim 2020, at 110.8 percent, than in interim 2019, when it was 36.6 percent). Thus, despite BGH's contention, any lead time advantage that domestic producers might have had over subject imports was lessened by importers' ability to draw on inventories.

caused the shipments and revenues for the domestic industry to be lower than they would have been otherwise. In light of these considerations, we find that cumulated subject imports had a significant impact on the domestic industry.

Respondents argue that any deterioration in the health of the domestic industry was due almost exclusively to overall declines in demand in the U.S. market.[255] However, we observe that the domestic industry's U.S. shipments decreased at a greater rate than demand: specifically, while apparent U.S. consumption declined by *** percent from 2017 to 2018, the domestic industry's U.S. shipments declined by *** percent, and while apparent U.S. consumption declined by *** percent from 2018 to 2019, the domestic industry's U.S. shipments declined by *** percent.[256] By the same token, while apparent U.S. consumption was *** percent lower in interim 2020 than in interim 2019, the domestic industry's U.S. shipments were *** percent lower.[257] Thus, the magnitude of declines in U.S. shipments cannot fully be explained by declining demand. Similarly, the domestic industry's market share losses, which are a consequence of its U.S. shipments decreasing at a greater rate than apparent U.S. consumption, are not the result of declining demand.

We have also examined nonsubject imports. As noted above, nonsubject imports were the smallest source of supply throughout the POI, never exceeding a *** percent share of apparent U.S. consumption.[258] Nonsubject imports' market share decreased overall from 2017 to 2019, by *** percentage points, and was higher by a modest *** percentage points between interim 2019 and interim 2020.[259] Furthermore, the declines in absolute volume of domestic producers' U.S. shipments were more than the total volume of nonsubject imports at any point

[255] *See* Lucchini's Final Comments at 3-4; Cogne, Metalcam, and Roselli's Posthearing Brief at 13-14; Joint Respondents' Prehearing Brief at 29-30. The EU and the Government of Italy make similar contentions. *See* EU Statement; Italy Statement.

[256] *See* CR/PR at Tables IV-7, C-1. The quantity of the domestic industry's U.S. shipments reflects the quantity of FEBs sold in the United States by U.S. forger/finishers, which includes the volume toll finished by U.S. toll finishers on behalf of the forger/finishers. CR/PR at Table IV-7, note.

[257] *See* CR/PR at Tables IV-7, C-1.

[258] CR/PR at Table IV-8.

[259] *See* CR/PR at Tables IV-8, C-1. Nonsubject imports' share of apparent U.S. consumption was *** percent in 2017, *** percent in 2018, and *** percent in 2019; it was *** percent in interim 2019 and *** percent in interim 2020. *Id.*

during the POI.[260] Thus, the presence of nonsubject imports does not explain the observed declines in the domestic industry's U.S. shipments and market share.

Respondents argue that U.S. producers were late to invest in SS FEB production and could not satisfy the demand for SS FEBs in the U.S. market.[261] Respondents' argument, however, appears to primarily pertain to one U.S. forger/finisher, ***.[262] The record indicates that the domestic industry was the largest source of supply of SS FEBs in the U.S. market throughout the POI.[263] It further indicates that domestic producers had available capacity to increase their production of SS FEBs, as capacity utilization for U.S. forger/finishers was below *** percent for most of the POI.[264] Finally, the record indicates that the domestic industry had the capability to produce both 15-5 and 17-4 grades of SS FEBs, as domestic producers reported shipments of pricing product 2, which is a 17-4 grade SS FEB, in 11 of 14 POI quarters, and shipments of pricing products 3 and 4, which are 15-5 grade SS FEBs, in a combined ten of 14 POI quarters.[265]

We are also not persuaded by arguments advanced by Cogne, Metalcam, and Roselli for the first time in their final comments. They argue that, while the domestic industry gained market share in the U.S. market for SS FEBs,[266] the domestic industry's market share losses in the NSS FEB U.S. market were almost entirely due to competition with imports from *** and *** for *** business. They point out that these two foreign producers had *** and were not

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[260] *See* CR/PR at Tables IV-8, C-1. Domestic producers' U.S. shipments declined by 1,636 units between 2017 and 2018, *** units between 2018 and 2019, and were *** units lower in interim 2020 than in interim 2019; in contrast, U.S. shipments of nonsubject imports never exceeded *** units. *Id.*

[261] *See* Lucchini's Final Comments at 5; Cogne, Metalcam, and Roselli's Posthearing Brief at 4-5; Joint Respondents Prehearing Brief at 6-7; SWG's Posthearing Brief at 1-2.

[262] Forger/finisher ***. CR/PR at II-8.

[263] *See* CR/PR at Table IV-9. The domestic industry's share of apparent U.S. consumption of SS FEBs by quantity was *** percent in 2017, *** percent in 2018, and *** percent in 2019; it was *** percent in interim 2019 and *** percent in interim 2020. *Id.*

[264] *See* CR/PR at Table III-7. Forger/finishers' capacity utilization was 54.7 percent in 2017, 43.4 percent in 2018, and 19.7 percent in 2019; it was lower in interim 2020, at *** percent, than in interim 2019, at 21.9 percent. *Id.* We observe that the *** produced both SS and non-SS FEBs during the POI, and that *** had ample excess capacity. *See* CR/PR at I-19 nn. 51 & 52, Table III-7

[265] *See* CR/PR at V-6, Tables V-4, V-5, V-6.

[266] We note that Cogne, Metalcam, and Roselli's acknowledgment that the domestic industry gained market share in the U.S. market for SS FEBs appears to directly contradict these parties' argument that U.S. producers could not supply SS FEBs. *See* Cogne, Metalcam, and Roselli's Posthearing Brief at 4-5; Joint Respondents Prehearing Brief at 6-7.

found to sell at less than fair value.[267] As previously discussed, however, the record indicates that price was a factor in *** purchasing decisions, notwithstanding the firm's contentions to the contrary. Moreover, both of these exporters were found to have benefitted from countervailable subsidies. The statute does not require that we take into account the magnitude of the subsidy rate in our analysis.[268]

We are also not persuaded by Cogne, Metalcam, and Roselli's argument that, because of certain changes to Ellwood's financial information as a result of verification, data submitted by other members of the domestic industry may be unreliable.[269] We first observe that Ellwood's data, which were verified, constituted *** percent of U.S. forger/finishers' net sales quantity in 2019.[270] We also observe that U.S. forger/finishers' U.S. shipment data and the overall decline in forger/finishers' financial performance during the POI were unaffected by the changes to Ellwood's data due to verification.[271] Thus, the changes to Ellwood's' financial information as a result of verification do not affect our finding that cumulated subject imports had a significant impact on the domestic industry.

VI. Conclusion

For the reasons stated above, we determine that an industry in the United States is materially injured by reason of subject imports of FEBs from China, Germany, India, and Italy that have been found by Commerce to be subsidized by the respective governments of those countries and imports of FEBs from Germany and Italy that have been found by Commerce to be sold in the United States at less than fair value.

[267] *See* Cogne, Metalcam, and Roselli's Final Comments at 1-3.

[268] *See* 19 U.S.C. § 1677(7)(C)(iii)(V).

[269] *See* Cogne, Metalcam, and Roselli's Final Comments at 10.

[270] CR/PR at Fig. VI-1.

[271] *Compare* CR/PR at Tables III-12, VI-1 *with* Confidential Report, Memorandum INV-SS-130 (Nov. 9, 2020), at Tables III-11, VI-1.

Part I: Introduction

Background

These investigations result from petitions filed with the U.S. Department of Commerce ("Commerce") and the U.S. International Trade Commission ("USITC" or "Commission") by Ellwood City Forge Company, Ellwood Quality Steels Company, and Ellwood National Steel Company (collectively the "Ellwood"), Ellwood City, Pennsylvania; A. Finkl & Sons ("Finkl Steel"), Chicago, Illinois; and FEB Fair Trade Coalition (an ad hoc coalition whose members include the Forging Industry Association, the Ellwood Group, and Finkl Steel), Cleveland, Ohio, on December 19, 2019, alleging that an industry in the United States is materially injured and threatened with material injury by reason of subsidized imports of fluid end blocks[1] from China, Germany, India, and Italy, and less-than-fair-value ("LTFV") imports of fluid end blocks from Germany, India, and Italy. The following tabulation provides information relating to the background of these investigations.[2] [3]

[1] See the section entitled "The subject merchandise" in Part I of this report for a complete description of the merchandise subject in this proceeding.

[2] Pertinent *Federal Register* notices are referenced in appendix A, and may be found at the Commission's website (www.usitc.gov).

[3] Appendix B presents the witnesses participating in the Commission's hearing.

Effective date	Action
December 19, 2019	Petitions filed with Commerce and the Commission; institution of Commission investigations (84 FR 71462, December 27, 2019)
January 8, 2020	Commerce's notice of initiation of countervailing duty investigations (85 FR 2385) and antidumping duty investigations (85 FR 2394), January 15, 2020
February 3, 2020	Commission's preliminary determinations (85 FR 7330, February 7, 2020)
May 26, 2020	Commerce's preliminary countervailing duty determinations for China (85 FR 31457), Germany (85 FR 31454), India (85 FR 31452), and Italy (85 FR 31452), May 26, 2020
July 23, 2020	Commerce's preliminary antidumping duty determinations for Germany (85 FR 44513), India (85 FR 44517), and Italy (85 FR 44500), July 23, 2020; scheduling of final phase of Commission investigations (85 FR 52151, August 24, 2020)
December 1, 2020	Commission's hearing
December 11, 2020	Commerce's final affirmative countervailing duty determinations for China (85 FR 80020), Germany (85 FR 80011), India (85 FR 79999), and Italy (85 FR 80022). Commerce's final affirmative antidumping duty determinations for Germany (85 FR 80018) and Italy (85 FR 79996). Commerce's final negative antidumping duty determination for India (85 FR 80003)
December 11, 2020	Termination of India antidumping duty investigation (85 FR 83104)
January 6, 2021	Commission's vote
January 25, 2021	Commission's views

Statutory criteria

Section 771(7)(B) of the Tariff Act of 1930 (the "Act") (19 U.S.C. § 1677(7)(B)) provides that in making its determinations of injury to an industry in the United States, the Commission--

> *shall consider (I) the volume of imports of the subject merchandise, (II) the effect of imports of that merchandise on prices in the United States for domestic like products, and (III) the impact of imports of such merchandise on domestic producers of domestic like products, but only in*

the context of production operations within the United States; and. . . may consider such other economic factors as are relevant to the determination regarding whether there is material injury by reason of imports.

Section 771(7)(C) of the Act (19 U.S.C. § 1677(7)(C)) further provides that--[4]

In evaluating the volume of imports of merchandise, the Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States is significant.. . .In evaluating the effect of imports of such merchandise on prices, the Commission shall consider whether. . .(I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.. . . In examining the impact required to be considered under subparagraph (B)(i)(III), the Commission shall evaluate (within the context of the business cycle and conditions of competition that are distinctive to the affected industry) all relevant economic factors which have a bearing on the state of the industry in the United States, including, but not limited to. . . (I) actual and potential decline in output, sales, market share, gross profits, operating profits, net profits, ability to service debt, productivity, return on investments, return on assets, and utilization of capacity, (II) factors affecting domestic prices, (III) actual and potential negative effects on cash flow, inventories, employment, wages, growth, ability to raise capital, and investment, (IV) actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and (V) in {an antidumping investigation}, the magnitude of the margin of dumping.

In addition, Section 771(7)(J) of the Act (19 U.S.C. § 1677(7)(J)) provides that—[5]

(J) EFFECT OF PROFITABILITY.—The Commission may not determine that there is no material injury or threat of material injury to an industry in the United States merely because that industry is profitable or because the performance of that industry has recently improved.

[4] Amended by PL 114-27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.
[5] Amended by PL 114-27 (as signed, June 29, 2015), Trade Preferences Extension Act of 2015.

Organization of report

Part I of this report presents information on the subject merchandise, subsidy/dumping margins, and domestic like product. Part II of this report presents information on conditions of competition and other relevant economic factors. Part III presents information on the condition of the U.S. industry, including data on capacity, production, shipments, inventories, and employment. Parts IV and V present the volume of subject imports and pricing of domestic and imported products, respectively. Part VI presents information on the financial experience of U.S. producers. Part VII presents the statutory requirements and information obtained for use in the Commission's consideration of the question of threat of material injury as well as information regarding nonsubject countries.

Market summary

Fluid end blocks generally are used in the manufacture or service of hydraulic pumps. The leading U.S. producers of fluid end blocks are the forgers/finishers Ellwood and Finkl Steel, while leading producers of fluid end blocks outside the United States include China Machinery Industrial Products Co., Ltd. ("CMIPC") and Shanghai Qinghe Machinery Co., Ltd. ("Qinghe") of China,[6] *** of Germany, Bharat Forge Limited ("Bharat")[7] of India, and *** of Italy. The leading U.S. importer of fluid end blocks from China is ***, the leading U.S. importers of fluid end blocks from Germany are ***, the leading U.S. importer of fluid end blocks from India is ***, and the leading U.S. importers of fluid end blocks from Italy are ***. Leading importers of fluid end blocks from nonsubject countries (primarily ***) include ***. U.S. purchasers of fluid end blocks are typically fluid pump manufacturers that either sell complete hydraulic pumps to oil and gas service companies or are vertically integrated oil and gas service companies

[6] Commerce selected China Machinery Industrial Products Co., Ltd. (CMIPC) and Shanghai Qinghe Machinery Co., Ltd. (Qinghe) as mandatory respondents for its countervailing duty investigation on fluid end blocks from China, as they were the largest producers/exporters of fluid end blocks, by quantity, according to Q&V questionnaire responses. 85 FR 31457, May 26, 2020. See Decision Memorandum for the Preliminary Determination of the Countervailing Duty Investigation of Forged Steel Fluid End Blocks from the People's Republic of China, p. 3.

[7] Conference transcript, p. 10 (Powell).

that manufacture their own pumps using forged fluid end blocks. Leading purchasers include ***.

Apparent U.S. consumption of fluid end blocks totaled approximately *** fluid end blocks ($***) in 2019. Currently, six U.S. producers are known to forge and finish fluid end blocks, and 12 firms are known to toll finish fluid end blocks in the United States. U.S. producers' U.S. shipments of fluid end blocks totaled *** fluid end blocks ($***) in 2019, and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. imports from subject sources totaled 6,685 fluid end blocks ($180.6 million) in 2019 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value. U.S. imports from nonsubject sources totaled *** fluid end blocks ($***) in 2019 and accounted for *** percent of apparent U.S. consumption by quantity and *** percent by value.

Summary data and data sources

A summary of data collected in these investigations is presented in appendix C, table C-1. U.S. industry data presented in Part III are based on questionnaire responses of six U.S. forgers/finishers and eight U.S. toll finishers. U.S. forgers/finishers produce the fluid end block forging and also perform some or all of the following six finishing steps: (1) milling of one or more flat surfaces; (2) contour machining to custom shapes or dimensions; (3) drilling or boring holes; (4) heat treating; (5) painting, varnishing, or coating; and (6) threading. U.S. toll finishers perform only finishing operations under a tolling agreement for U.S. forgers/finishers, U.S. importers, and/or U.S. purchasers of fluid end blocks. The six U.S. forgers/finishers' questionnaire responses account for all known 2019 U.S. production of fluid end blocks in forged form with varying degrees of finishing, and the eight U.S. toll finishers' questionnaire responses account for at least one-third of all U.S. toll finishing of fluid end blocks in 2019.

U.S. import data are based on questionnaire responses from 20 U.S. importers that accounted for more than 80 percent of fluid end blocks from both subject and nonsubject sources in 2019. Foreign producer and exporter data are based on questionnaire responses from 9 firms that accounted for a minority of production in China and the majority of production in Germany, India, and Italy.

Previous and related investigations

Fluid end blocks have not been the subject of prior countervailing and antidumping duty investigations in the United States.

Nature and extent of subsidies and sales at LTFV

Subsidies

Commerce published notices in the *Federal Register* of its preliminary determination on May 26, 2020, and its final determination on December 11, 2020, of countervailable subsidies for producers and exporters of fluid end blocks from China.[8] Table I-1 presents Commerce's findings of subsidization of fluid end blocks in China.

Table I-1
Fluid end blocks: Commerce's subsidy determination with respect to imports from China

Entity	Preliminary countervailable subsidy margin (percent)	Final countervailable subsidy margin (percent)
Nanjing Develop Advanced Manufacturing Co., Ltd.	16.18	16.18
Shanghai Qinghe Machinery Co., Ltd.	22.21	19.88
China Machinery Industrial Products Co., Ltd., Anhui Tianyu Petroleum Equipment Manufacturing Co., Ltd., CNCCC Sichuan Imp & Exp Co., Ltd., GE Petroleum Equipment (Beijing) Co., Ltd., Jiaxing Shenghe Petroleum Machinery Co., Ltd., Ningbo Minmetals & Machinery Imp & Exp Co., Ltd.,13 Qingdao RT G&M Co., Ltd., Shandong Fenghuang Foundry Co., Ltd., Shandongshengjin Ruite Energy Equipment Co., Ltd. (part of Shengli Oilfield R&T Group), Shanghai Baisheng Precision Machine, Shanghai Boss Petroleum Equipment, Shanghai CP Petrochemical and General Machinery Co., Ltd., Suzhou Douson Drilling & Production Equipment Co., Ltd., Zhangjiagang Haiguo New Energy Equipment Manufacturing Co., Ltd., Anhui Yingliu Electromechanical Co., Ltd., Daye Special Steel Co., Ltd., (Citic Specific Steel Group), Suzhou Fujie Machinery Co., Ltd., (Fujie Group)	138.53	337.07
All others	21.57	19.52

Note: Commerce determined the following programs to be countervailable with respect to China: Export Buyer's Credit Program, Policy Loans to the Fluid End Blocks Program, Export Seller's Credit Program, Income Tax Reduction for High and New Technology Enterprises, Income Tax Deduction for Research and Development (R&D) Expenses Under the Enterprise Income Tax Law, Import Tariff and Value Added Tax (VAT) Exemptions on Imported Equipment, Provision of Steel Ingots for LTAR, Other Subsidies, and Electricity for LTAR. See Issues and Decision Memorandum for the Final Determination of the Countervailing Duty Investigation of Fluid End Blocks from China, pp. 5-7.

Source: 85 FR 31457, May 26, 2020 and 85 FR 80020, December 11, 2020.

[8] 85 FR 31457, May 26, 2020, and 85 FR 80020, December 11, 2020.

Commerce published notices in the *Federal Register* of its preliminary determination on May 26, 2020, and its final determination on December 11, 2020, of countervailable subsidies for producers and exporters of fluid end blocks from Germany.[9] Table I-2 presents Commerce's findings of subsidization of fluid end blocks in Germany.

Table I-2
Fluid end blocks: Commerce's subsidy determination with respect to imports from Germany

Entity	Preliminary countervailable subsidy margin (percent)	Final countervailable subsidy margin (percent)
BGH Edelstahl Siegen GmbH	5.25	5.86
Schmiedewerke Groditz GmbH	6.06	6.71
voestalpine Bohler Group	10.04	14.81
All others	5.61	6.29

Note: Commerce determined the following programs to be countervailable with respect to Germany: RFCS, Section 9a of the StromStG, Section 9b of the StromStG, Section 10 of the StromStG, Section 51 of the EnergieStG, Section 55 of the EnergieStG, 2018 Special Equalization Scheme – Reduced EEG Surcharge, Special Equalization Scheme: Reduced Surcharge Under the KWKG, Concession Fee Ordinance (Konzessionsabgabenverordung or KAV) Relief, Free Allocation of EU ETS Allowances, European Emission Trading System – Compensation of Indirect CO2 Costs, See Issues and Decision Memorandum for the Final Determination of the Countervailing Duty Investigation of Fluid End Blocks from Germany, pp. 6-8.

Source: 85 FR 31454, May 26, 2020, and 85 FR 80018, December 11, 2020.

[9] 85 FR 31454, May 26, 2020, and 85 FR 80018, December 11, 2020.

Commerce published notices in the *Federal Register* of its preliminary determination on May 26, 2020, and its final determination on December 11, 2020, of countervailable subsidies for producers and exporters of fluid end blocks from India.[10] Table I-3 presents Commerce's findings of subsidization of fluid end blocks in India.

Table I-3
Fluid end blocks: Commerce's subsidy determination with respect to imports from India

Entity	Preliminary countervailable subsidy margin (percent)	Final countervailable subsidy margin (percent)
Bharat Forge Limited	4.69	5.20
All others	4.69	5.20

Note: Commerce determined the following programs to be countervailable with respect to India: Duty Drawback Scheme, Export Promotion of Capital Goods Scheme, Merchandise Exports from India Scheme, Interest Equalization Scheme, Status Holder Incentive Scheme, Income Tax Deduction for R&D Expenses, 1998 Power Generation and Promotion Policy, Renewable Energy Certificates, and State Government of Maharashtra PSI: Industrial Promotion Subsidy. See Issues and Decision Memorandum for the Final Determination of the Countervailing Duty Investigation of Fluid End Blocks from India, pp. 4-6.

Source: 85 FR 31452, May 26, 2020, and 85 FR 79999, December 11, 2020.

[10] 85 FR 31452, May 26, 2020, and 85 FR 79999, December 11, 2020.

Commerce published notices in the *Federal Register* of its preliminary determination on May 26, 2020, and its final determination on December 11, 2020, of countervailable subsidies for producers and exporters of fluid end blocks from Italy.[11] Table I-4 presents Commerce's findings of subsidization of fluid end blocks in Italy.

Table I-4
Fluid end blocks: Commerce's subsidy determination with respect to imports from Italy

Entity	Preliminary countervailable subsidy margin (percent)	Final countervailable subsidy margin (percent)
Lucchini Mamè Forge S.p.A.	3.39	4.76
Metalcam S.p.A.	3.05	3.12
All others	3.13	3.52
Companies Subject to AFA (non-respondent companies): Forge Monchieri S.p.A., Imer International S.p.A., Galperti Group, Mimest S.p.A., P. Technologies S.r.L	43.75	44.86

Note: Commerce determined the following programs to be countervailable with respect to Italy: Industrial Exemptions for General Electricity Network Costs, Energy Interruptibility Contracts, Electricity Purchases Through the Interconnector Program, Free Allocation of European Union Emissions Trading System Allowances, Grants for Continuous Training Under Article 118 of Law 388/2000, GSE Reimbursements for Contributions to Solar Energy, Reimbursement of Excise Duties, Article 1, paras 91 to 94 and para. 97, Law 28/12/2015, n. 208 – Super Ammortamento, Patent Box Deductions, Sgravi Benefits – Law 190/214, Sgravi Benefits – Law 208/2015, Sgravi Benefits – Directorial Decree No. 394 of 02/12/2016, Sgravi Benefits – Article 1, Paragraphs 100-108 and 113-114 of Law 205/201, Tax Credits under Law 388/2000 for Excise Duties, Tax Credits under Decree of the President of the Republic 917/1986—ART. 95, C. 4, and Reimbursements of Euro Motorway Tolls under Law Decree 451/1998. See Issues and Decision Memorandum for the Final Determination of the Countervailing Duty Investigation of Fluid End Blocks from Italy, pp. 5-8.

Source: 85 FR 31460, May 26, 2020, and 85 FR 80022, December 11, 2020.

[11] 85 FR 31460, May 26, 2020, and 85 FR 80022, December 11, 2020.

Sales at LTFV

Commerce published notices in the *Federal Register* of its preliminary determination on July 23, 2020, and its final determination on December 11, 2020, of sales at LTFV with respect to imports from Germany.[12] Tables I-5 presents Commerce's dumping margins with respect to imports of fluid end blocks from Germany.

Table I-5
Fluid end blocks: Commerce's weighted-average LTFV margins with respect to imports from Germany

Exporter/producer	Preliminary dumping margin (percent)	Final dumping margin (percent)
BGH Edelstahl Siegen GmbH	0.00	3.82
Schmiedewerke Groditz GmbH	15.47	70.84
voestalpine Bohler Group	15.47	70.84
All others	7.74	3.82

Source: 85 FR 44513, July 23, 2020, and 85 FR 80018, December 11, 2020.

Commerce published notices in the *Federal Register* of its preliminary determination on July 23, 2020, and its final negative determination on December 11, 2020, of sales at LTFV with respect to imports from India.[13] Tables I-6 presents Commerce's dumping margins with respect to imports of fluid end blocks from India.

Table I-6
Fluid end blocks: Commerce's weighted-average LTFV margins with respect to imports from India

Exporter/producer	Preliminary dumping margin (percent)	Final dumping margin (percent)
Bharat Forge Limited	0.00	0.00

Source: 85 FR 44517, July 23, 2020, and 85 FR 80003, December 11, 2020.

[12] 85 FR 44513, July 23, 2020, and 85 FR 80018, December 11, 2020.
[13] 85 FR 44517, July 23, 2020, and 85 FR 80003, December 11, 2020.

On July 23, 2020, Commerce published notices in the *Federal Register* of its preliminary determination on July 23, 2020, and its final determination on December 9, 2020, of sales at LTFV with respect to imports from Italy.[14] Tables I-5 presents Commerce's dumping margins with respect to imports of fluid end blocks from Italy.

Table I-5
Fluid end blocks: Commerce's weighted-average LTFV margins with respect to imports from Italy

Exporter/producer	Preliminary dumping margin (percent)	Final dumping margin (percent)
Metalcam S.p.A	0.00	0.00
Lucchini Mamè Forge S.p.A	4.84	7.33
IMER International S.p.A	50.93	58.48
Galperti Group	50.93	58.48
Mimest S.p.A	50.93	58.48
P. Technologies S.r.l	50.93	58.48
All others	4.84	7.33

Source: 85 FR 44500, July 23, 2020, and 85 FR 79996, December 11, 2020.

The subject merchandise

Commerce's scope

In the current proceeding, Commerce has defined the scope as follows:[15]

> *The products covered by this investigation are forged steel fluid end blocks (fluid end blocks), whether in finished or unfinished form, and which are typically used in the manufacture or service of hydraulic pumps.*
>
> *The term ''forged'' is an industry term used to describe the grain texture of steel resulting from the application of localized compressive force. Illustrative forging standards include, but are not limited to, American Society for Testing and Materials (ASTM) specifications A668 and A788.*
>
> *For purposes of this investigation, the term ''steel'' denotes metal containing the following chemical elements, by weight: (i) Iron greater than or equal to 60 percent; (ii) nickel less than or equal to 8.5 percent; (iii) copper less than or equal to 6 percent; (iv) chromium greater than or equal to 0.4 percent, but less than or equal to 20 percent; and (v)*

[14] 85 FR 44500, July 23, 2020, and 85 FR 79996, December 11, 2020.
[15] 85 FR 7999, December 11, 2020.

molybdenum greater than or equal to 0.15 percent, but less than or equal to 3 percent. Illustrative steel standards include, but are not limited to, American Iron and Steel Institute (AISI) or Society of Automotive Engineers (SAE) grades 4130, 4135, 4140, 4320, 4330, 4340, 8630, 15–5, 17–4, F6NM, F22, F60, and XM25, as well as modified varieties of these grades.

The products covered by this investigation are: (1) Cut-to-length fluid end blocks with an actual height (measured from its highest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), an actual width (measured from its widest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), and an actual length (measured from its longest point) of 11 inches (279.4 mm) to 75 inches (1,905.0 mm); and (2) strings of fluid end blocks with an actual height (measured from its highest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), an actual width (measured from its widest point) of 8 inches (203.2 mm) to 40 inches (1,016.0 mm), and an actual length (measured from its longest point) up to 360 inches (9,144.0 mm).

The products included in the scope of this investigation have a tensile strength of at least 70 KSI (measured in accordance with ASTM A370) and a hardness of at least 140 HBW (measured in accordance with ASTM E10).

A fluid end block may be imported in finished condition (i.e., ready for incorporation into a pump fluid end assembly without further finishing operations) or unfinished condition (i.e., forged but still requiring one or more finishing operations before it is ready for incorporation into a pump fluid end assembly). Such finishing operations may include: (1) Heat treating; (2) milling one or more flat surfaces; (3) contour machining to custom shapes or dimensions; (4) drilling or boring holes; (5) threading holes; and/or (6) painting, varnishing, or coating.

Excluded from the scope of this investigation are fluid end block assemblies which (1) include (a) plungers and related housings, adapters, gaskets, seals, and packing nuts, (b) valves and related seats, springs, seals, and cover nuts, and (c) a discharge flange and related seals, and (2) are otherwise ready to be mated with the ‘‘power end’’ of a hydraulic pump without the need for installation of any plunger, valve, or discharge flange components, or any other further manufacturing operations.

Tariff treatment

Based upon the scope set forth by Commerce, information available to the Commission indicates that the merchandise subject to these investigations is imported under Harmonized Tariff Schedule of the United States ("HTS") subheadings 7218.91.00, 7218.99.00, 7224.90.00, 7326.19.00, 7326.90.86, or 8413.91.90, and are imported under statistical reporting numbers 7218.91.0030, 7218.99.0030, 7224.90.0015, 7224.90.0045, 7326.19.0010, 7326.90.8688, or 8413.91.9055.[16] The general rate of duty for HTS subheadings 7218.91.00, 7218.99.00, 7224.90.00, and 8413.91.90 is free. The general duty rate for HTS subheadings 7326.19.00 and 7326.90.86 is 2.9 percent *ad valorem*. Decisions on the tariff classification and treatment of imported goods are within the authority of U.S. Customs and Border Protection.

Section 232 and 301 duties

Fluid end blocks are not subject to an ad valorem duty under Section 232 of the Trade Expansion Act of 1962, as amended. However, stainless or non-stainless alloy steels, primary raw materials used in the manufacturing of fluid end blocks, are subject to a 25 percent ad valorem duty under Section 232.[17] [18] [19]

Fluid end blocks imported from China imported under HTS subheadings 7326.19.00 and 7326.90.86 were included in USTR's third enumeration ("Tranche 3" or "List 3") of products imported from China that became subject to the additional 10 percent ad valorem duties (annexes A and C of 83 FR 47974, on or after September 24, 2018) under Section 301 of the Trade Act of 1974.[20] [21] Escalation of this duty to 25 percent ad valorem was rescheduled from

[16] Prior to 2019, subject goods were imported under statistical reporting numbers 7218.91.0030, 7218.99.0030, 7224.90.0015, 7224.90.0045, 7326.19.0010, 7326.90.8688. These statistical reporting numbers include products other than fluid end blocks. Effective as of January 1, 2019, fluid end blocks comprising parts of pumps are separately enumerated and are imported under statistical reporting number 8413.91.9055.

[17] *Adjusting Imports of Steel Into the United States,* Presidential Proclamation 9705, March 8, 2018, 83 FR 11625, March 15, 2018.

[18] See U.S. notes 16(a) and 16(b), subchapter III of chapter 99. *HTS (2019) Revision 9,* USITC publication No. 4937, July 2019, pp. 99-III-5 – 99-III-7, 99-III-72 – 99-III-78.

[19] *** identified Section 232 duties on steel products as a contributor to higher raw material costs. Petitioners' postconference brief, p. I-26.

[20] 83 FR 47974, September 21, 2018.

[21] HTS subheading 7326.19.00 provides for articles of iron or steel, articles forged or stamped but not further worked, nesoi. HTS subheading 7326.90.86 provides for articles of iron or steel, other, other.

January 1, 2019 (annex B of 83 FR 47974)[22] to March 2, 2019 (83 FR 65198),[23] but was subsequently postponed until further notice,[24] and then was implemented effective May 10, 2019 (84 FR 20459).[25]

On August 20, 2019, USTR published its determination to modify the action being taken under Section 301 by imposing additional duties of 10 percent ad valorem on products of China. Fluid end blocks imported from China imported under HTS subheadings 7218.91.00, 7218.99.00, 7224.90.00 were included in USTR's fourth enumeration ("Tranche 4") of products imported from China that became subject to the additional 10 percent ad valorem duties under Section 301.[26] [27] On August 30, 2019, USTR published its determination to modify this action by increasing the rate of additional duty from 10 to 15 percent for the products of China covered by the $300 billion tariff action (Tranche 4), effective September 1, 2019.[28]

The product

Description and applications

Fluid end blocks are steel forgings that are an essential part of a well service pump. Fluid end blocks are used in well stimulation processes and are responsible for pressurizing the pumped fluid into the well. A typical well service pump consists of a power end that connects to a fluid end with stay rods (figure I-1). The pump's fluid end produces the pumping process with valves, pistons, and liners, while the power end converts the rotation of the drive shaft to the reciprocating motion of the pistons.[29]

[22] Ibid.

[23] 83 FR 65918, December 19, 2018.

[24] 84 FR 7966, March 5, 2019.

[25] 84 FR 20459, May 9, 2019.

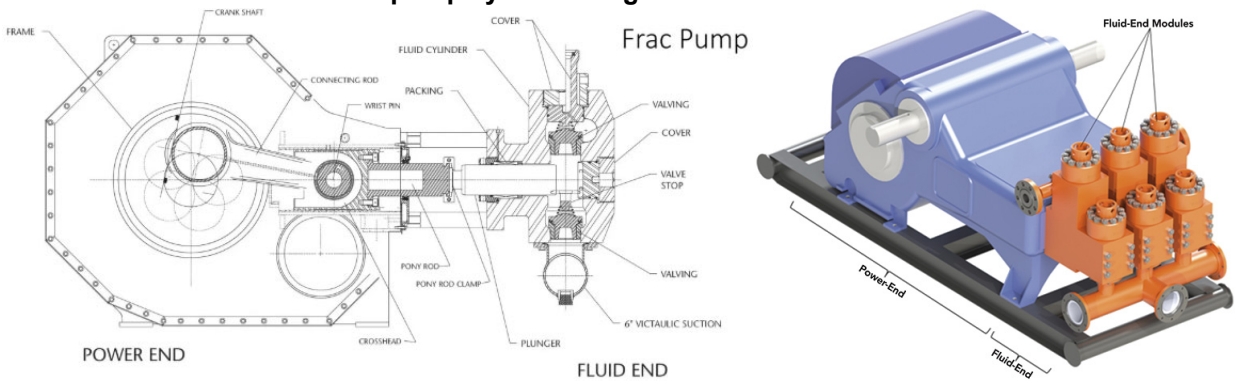
[26] 84 FR 43304, August 20, 2019.

[27] HTS subheading 7218.91.00 provides for articles of stainless steel, semifinished products of rectangular (other than square) cross-section. HTS subheading 7218.99.00 provides for articles of stainless steel, semifinished products, other than of rectangular (other than square) cross-section. HTS subheading 7224.90.00 provides for articles of alloy (other than stainless), semifinished products.

[28] 84 FR 45821, August 30, 2019.

[29] Petitions, p. 10.

Figure I-1
Fluid end blocks: Well service pump system design



Sources: Fluidendpumpparts; Upstream Pumping.

In the United States and subject countries, most fluid end blocks are made from stainless or non-stainless alloy steels. Historically, carbon steel has been used but is now less prevalent in the production of fluid end blocks due to its corrosive qualities. To reduce corrosion, stainless steel fluid end blocks were introduced around 2011 to 2012.[30] [31] Today, most fluid end blocks used in pumps are made from forgings of a variety of grades of stainless or non-stainless alloy steel, the most common of which are 15-5PH and 17-4PH.[32] [33] [34] Many fluid end block manufacturers experiment with different steel chemistries in an effort to improve the fluid end block's properties, including hardness, toughness, strength, and

[30] Pumps & Systems website, https://www.pumpsandsystems.com/fluid-end-material-geometry-updates, retrieved October 22, 2020.

[31] ***. Virtual fieldwork with Weir Oil & Gas – SPM Flow Control, November 4, 2020.

[32] Finkl stated that it is fully capable of producing all alloy and stainless steel grades that customers have requested through request for quotations. Hearing transcript, p. 46 (Shirley). Finkl began production of stainless steel FEBs in 2014; Initially, Finkl purchased stainless steel ingots from Electralloy (Pennsylvania), ASW (Canada), and Ellwood (Pennsylvania), and in 2018 Finkl invested in its own melt shop and began producing its own stainless steel ingots in 2020. Hearing transcript, p. 73 (Shirley); Ellwood produces its own alloy and stainless steel ingots and forgings, and began production of stainless steel blocks in the 2011-2012 timeframe. Hearing transcript, p. 47, 72 (Boyd); A third forger/finisher, Union Electric Steel, sourced stainless steel ingots from its sister company, ASW (Canada). Hearing transcript, p. 73 (Levy).

[33] Petitions, p. 10.

[34] The petitions list several steel grades used in the manufacturing of fluid end blocks. Steel standards include, but are not limited to, American Iron and Steel Institute ("AISI") or Society of Automotive Engineers ("SAE") grades 4130, 4135, 4140, 4320, 4330, 4340, 8630, 15-5, 17-4, F6NM, F22, F60, and XM25, as well as modified variety of these grades. Petitions Amendment Part 1, p. 57.

machinability.[35] The high pressures involved at the fluid end dictate the use of forging technology as well as particular steel specifications. Depending upon the application, pumps can generate pressures as high as 20,000 PSI with flow rates above 100 barrels per minute.[36]

Due to the many pump applications for fluid end blocks, manufacturers produce design variations that meet the specifications, applications, and designs required by the pump manufacturer. Pumps are commonly triplex or quintuplex in design, meaning that they have either three or five sets of piston-and-valve bores in each fluid end block, although fluid ends can have a different number of piston-and-valve bores depending upon the particular application or the proprietary design of the pump manufacturer (figure I-2).[37]

Figure I-2
Fluid end blocks: Examples of fluid end blocks, including triplex, multiplex and quintuplex fluid end blocks and modules.

Sources: Upstream Pumping; Hymac; Kerr Pumps.

[35] Pumps & Systems website, https://www.pumpsandsystems.com/fluid-end-material-geometry-updates, retrieved October 23, 2020.

[36] Petitions, p. 10.

[37] Petitions, p. 10.

Fluid end blocks produced in the United States and those imported from subject countries typically are sold to original equipment manufacturers ("OEMs") of hydraulic pumps or fluid end module manufacturers. These manufacturers may perform further machining and finishing processes and incorporate the fluid end block into a fluid end module or hydraulic pump, which is then sold to third parties involved in oil and gas exploration and production. Fluid end blocks are also sold directly to vertically integrated pump manufacturers that are engaged in drilling and recovery.[38] [39]

Most pumps produced by manufacturers are used for drilling or hydraulic fracturing in the oil and gas industry. Depending upon the application, pumps can generate pressures as high as 20,000 PSI, with flow rates above 100 barrels per minute.[40] Some fluid end blocks are used for mud pumps, which generate lower pressures while pumping water or a mud mix.[41]

The life cycle of the fluid end blocks also depends on several factors, including the application for which they are used.[42] The fluid end blocks used in hydraulic pumps, for example, have limited product lifecycles because of fatigue cracking and abrasions which may cause a pump to fail after only a few hundred hours of service.[43] [44] Once this occurs, pump producers and operators purchase replacement fluid end blocks to service a particular pump model.

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[38] Conference transcript, p. 19 (Saunders) and p. 137 (Poradek).

[39] Pump manufacturers in the United States include FTS International, Gardner Denver, Halliburton, and Schlumberger. Petitions, p. 10.

[40] Petitions, p. 10.

[41] Conference transcript, p. 101 (Gilbert).

[42] There are several variables that determine the performance and life of a fluid end block, including the pressure under which it is operated; the shale plate or geography of where it is operated; the makeup of the fluid that is being utilized; the quantity and makeup of the sand and chemicals used; and the work crew that operates and maintains the pump. Conference transcript, p. 57 (Saunders).

[43] Petitions, p. 10.

[44] Fluid end blocks manufactured using carbon steel typically have a life of 250 to 450 hours. In general, fluid end blocks used in the fracking industry can fail in as little as 100 to 500 pumping hours due to extreme environments such as frac sands, ever-increasing pressure, recycled water, and advanced chemicals and slick water. VP Sales & Manufacturing L.P. ("VP Sales"), a fluid end manufacturer, claims that its Hercules 2 fluid end block has demonstrated a service life of over 1,000 pumping hours and in some cases over 2,000 pumping hours. Caterpillar website, https://www.cat.com/en_US/articles/solutions/oil-gas/6reasonsfluidendsfail.html, retrieved October 23, 2020; Kerr Pumps website, http://kerrpumps.com/5failures, retrieved October 23, 2020; Pumps & Systems website, https://www.pumpsandsystems.com/fluid-end-material-geometry-updates, retrieved October 23, 2020; World Oil website, https://www.worldoil.com/techtalk/vp-sales-manufacturing/new-fluid-end-design-increases-packing-life-decreases-cost-per-pumping-hour, retrieved October 23, 2020.

Manufacturing processes

Fluid end blocks are produced to the specification of each individual OEM or pump manufacturer, and each OEM or pump manufacturer has multiple fluid end designs.[45] [46] The pump model and characteristics of the project site dictate which fluid end block design will be used in a particular pump.

Fluid end block forgings, or unfinished fluid end blocks, are hot forged using an open-die or closed-die forging method, and are then either machined by the forgers, toll finishers (on behalf of either the forger or the purchaser), or the OEMs that purchase the forging, who undertake several manufacturing operations, including machining and heat treating.[47] [48] [49] Once these essential operations are performed, the fluid end block is dedicated for eventual use in the fluid end module of a pump. The difference between a finished and unfinished fluid end block is determined by the extent to which the forger, OEM, or pump manufacturer elects to perform finishing functions.[50]

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[45] OEMs and pump manufacturers have their own custom fluid end block specifications for each corresponding fluid end module they produce. When an OEM or pump manufacturer needs fluid end blocks to manufacture a fluid end module, they will put out a request for quotation that includes their required specifications and drawings, including steel chemistry, forging process, heat treatment properties, dimensions, machining tolerances, et cetera. Hearing transcript, p. 27 (Saunders).

[46] According to respondents, OEM and pump manufacturer specifications contain allowable variations and ranges within certain components of the specification. The specification can contain ranges of allowable levels of cleanliness, inclusions, hardness, and other factors that affect the manufacturing process. A specification may also contain required documentation and certification that validate that the manufacturer can meet the specifications. Once the terms of the specification are met by the manufacturer and approved by the OEM, the manufacturing process plan is set, and the steelmaker and forger cannot deviate from meeting the criteria. Hearing transcript, pp. 190-191 (Bell).

[47] Conference transcript, pp. 138-139 (Gilbert, Lowrey, Poradek).

[48] "Finished" and "unfinished" are not established industry standards, but within the context of these investigations the following definitions are applied: A finished fluid end block is a fluid end block that is ready for incorporation into a pump fluid end module without further finishing operations. An unfinished fluid end block is a forged fluid end block that still requires at least one more finishing operation before it is ready for incorporation into a pump fluid end module. Finishing operations may include: (1) heat treating; (2) milling one or more flat surfaces; (3) contour machining to custom shapes or dimensions; (4) drilling or boring holes; (5) threading holes; and/or (6) painting, varnishing, or coating. "Semi-finished" fluid end blocks may be defined as fluid end blocks that have undergone some of these finishing operations but generally are not ready for incorporation into a fluid end module. Petitions amendment Part 1, p. 57

[49] U.S. toll finishers perform only finishing operations for U.S. forgers/finishers and/or U.S. purchasers of fluid end blocks.

[50] Petitions amendment part 1, p. 6.

Depending on a company's level of vertical integration, a fluid end block manufacturer's capabilities may include steel making, forging, secondary processing and finishing functions, and/or testing.[51] [52] Fluid end blocks are produced from stainless or non-stainless alloy steel, but the steel grade used is ultimately determined by the specifications and chemistries provided by the OEM and/or pump manufacturer.[53] The steel specification may reflect a standard grade, a modified standard grade in which the permissible range of one or more alloying elements (e.g. nickel) deviates from the standard, or a custom grade delineated in the customer's specification. The exact grade formulation may be proprietary to the producer or customer.[54] In some cases, fluid end block producers that are vertically integrated in steel making produce ingots that meet the specified grade and necessary dimensions. Producers who are not vertically integrated in steel making acquire the required grade and size ingot from a steel maker or supplier.

The next step in the production phase is the forging process. Fluid end blocks in the United States and in subject countries typically are hot forged using open-die forging presses.[55]

[51] Finkl is a vertically integrated fluid end block domestic producer. Finkl has its own melt shop for producing ingots, open-die forging presses, furnaces for heat treatment, and machining and finishing lines. It produces steel alloy and stainless steel ingots, as well as a proprietary stainless steel grade called "HVX." To meet customer requirements and specifications, Finkl has purchased different grades of stainless steel ingots that it does not produce itself. Conference transcript, p. 23 (Shirley).

[52] ***. Virtual meeting with Ellwood Group, October 13, 2020.

[53] FEB purchasers issue request for proposals to multiple qualified manufacturers – both domestic and foreign producers – for the supply of FEBs produced to their custom specifications. Petitioner prehearing brief, p. 20.

[54] Petitions, p. 11.

[55] Respondent Bharat Forge, the largest producer and exporter of fluid end blocks from India, uses both open-die and closed-die forging presses to produce fluid end blocks. Representatives for Bharat Forge stated that Bharat Forge filed a patent for its closed die manufacturing process in 2016, which is pending in the United States, Europe, and China. Representatives reported that Bharat Forge opened a closed-die production facility during the period of investigation. In its postconference brief, Bharat Forge stated that almost *** percent of its open-die forging assets and *** percent of its closed die assets were dedicated to the relationship with ***. Conference transcript, p. 52 (Levy); Conference transcript, pp. 79-81, 142 (Powell); Respondent Bharat Forge's postconference brief, p. 3.

After the ingot is heated, it is then forged. During open-die forging, the hot ingot is repeatedly pressed between two separate dies using a hydraulic press until it is manipulated into the appropriate shape. The hot steel is altered until its properties are improved, such that it has (1) improved microstructure, (2) greater strength and ductility, (3) finer grain size, (4) continuous grain flow, and (5) higher fatigue resistance.[56] At this point of the process, a forger that is vertically integrated in heat treating, machining, and other finishing capabilities may continue to develop the fluid end block. In other cases, the forger may elect to do some basic machining before selling it to an OEM or vertically integrated pump manufacturer, which then continues to apply finishing functions.[57] Due to specifications, such as certain chemistries and configurations, once a fluid end block is forged, it is fully dedicated to becoming a fluid end block.[58]

Following the forging process, the fluid end block usually requires heat treatment using heat treating furnaces. Heat treatment is applied to the fluid end block to austenitize, normalize, anneal, solution anneal, temper, age, or quench.[59] Prior to heat treatment, rough

[56] ***. Virtual meeting with Ellwood Group, October 13, 2020.

[57] According to respondents, most fluid end block forgings undergo some machining before being sold to OEMs or fluid end manufacturers. Conference transcript, p. 138 (Gilbert).

[58] Conference transcript, p. 53 (Shirley, Saunders).

[59] "Austenitized" – Steel that has been heated above the temperature at which it changes crystal structure from ferrite to austenite is called austenized steel.

"Normalized" – Steel that has been heated above its upper critical temperature and then cooled in standing air is called normalized steel. Normalizing is used to undo previous heat treating results so as to achieve a uniform grain structure.

"Annealed" – Steel that has been heated above its recrystallization temperature, maintained at a suitable temperature for a suitable amount of time, and then cooled in a controlled manner, has been annealed.

"Solution annealed" – Steel that has been heated to a temperature at which a particular constituent will enter into solid solution followed by cooling at a rate fast enough to prevent the dissolved constituent from precipitating is known as a solution annealed steel.

"Tempered" – Quenched steel that has been heated to a temperature below the critical point, and then allowed to cool, has been tempered. The martensite resulting from quenching makes the steel hard but brittle. Excessive hardness is reduced by the tempering process.

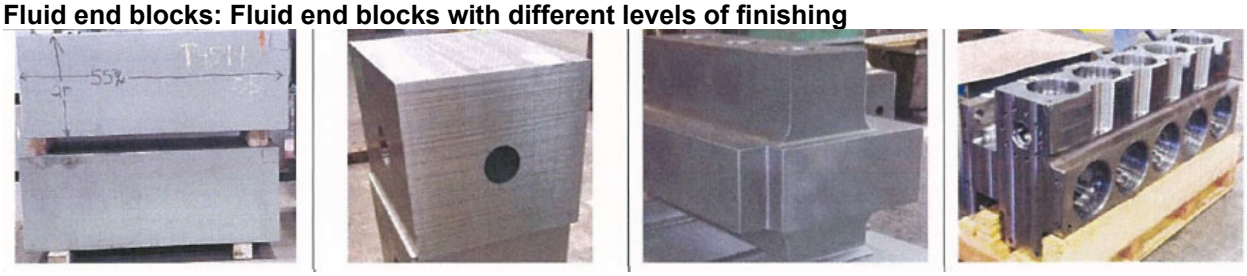
"Age hardened" – (also known as precipitation hardening and particle hardening) Steel that is subject to prolonged low temperature heat treatment allowing the controlled release of constituent to form precipitate clusters is called age hardened steel. The "PH" for 17-4PH or 15-5PH steel refers to "precipitation hardening" stainless steels.

"Quenched" – Steel that has been heated above the pearlite eutectoid transition temperature and then rapidly cooled such that some of the crystal structure is transformed into martensite has been quenched. Petitions, pp.12-13.

milling may be required, and following the heat treatment the fluid end block may be grit blasted to remove the heat treatment scale.[60]

Since open-die forging cannot shape the steel to precise dimensions, the fluid end block must undergo machining to achieve the dimensions required by the purchaser. The machining process can range from simple sawing and rough milling to complex milling, contour machining, and drilling/boring that require multiple steps and specialized machine tools.[61] [62] Nearly all fluid end blocks sold in the merchant market are at least heat treated and rough machined to a certain degree. Figure I-3 demonstrates different levels of finishing, from a basic fluid end block in which its surfaces are milled flat to a fluid end block that is fully finished and is ready for post-processing and transformation into a fluid end module.[63]

Figure I-3
Fluid end blocks: Fluid end blocks with different levels of finishing



Sources: Petitioners' postconference brief.

Testing is the final step before a fluid end block is delivered to a customer. Customer specifications usually require certain dimensions, as well as chemical and mechanical properties

[60] Petitions, p. 13.
[61] Petitions, p. 13.
[62] ***. Virtual meeting with Weir Oil & Gas – SPM Flow Control, November 4, 2020.
[63] Figure I-3 demonstrates fluid end blocks with different levels of machining and finishing. The first image is a fluid end block that has had at least one side milled flat and heat treated. The second image shows a fluid end block that has had one or more holes drilled/bored. The third image shows a fluid end block with a certain amount of contour machining in addition to milling of flat surfaces. The last image is of a "finished" fluid end block that is ready for post-processing and transformation into a fluid end module. Petitioners' postconference brief, pp. II-2-II-7.

of the forging.[64] Extensive quality control procedures using specialized laboratory inspection and testing equipment are undertaken to ensure that the fluid end block meets the customer's specifications and requirements.[65] [66] [67] Additional testing takes place in the event of performance failure.[68]

Domestic like product issues

The Commission's decision regarding the appropriate domestic product(s) that are "like" the subject imported product is based on a number of factors including: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) common manufacturing facilities, production processes, and production employees; (5) customer and producer perceptions; and (6) price. In a semi-finished product analysis, the Commission examines: (1) whether the upstream article is dedicated to the production of the downstream article or has independent uses; (2) whether there are perceived to be separate markets for the upstream and downstream articles; (3) differences in the physical characteristics and functions of the upstream and downstream articles; (4) differences in the costs or value of the vertically differentiated articles; and (5) significance and extent of the processes used to transform the upstream into the downstream articles.

Petitioners propose a domestic like product coextensive with the scope of these investigations, observing that fluid end blocks constitute a single family of products that use common manufacturing facilities, production processes, and employees to produce forged steel

[64] Mechanical properties include yield strength, elongation, and tensile strength, and are typically designated by testing standards and protocols established by the American Society for Testing and Materials.

[65] Petitions, p. 13.

[66] ***. Virtual meeting with Ellwood Group, October 13, 2020.

[67] According to respondents, fluid end block manufacturers have different inspection capabilities, and inspection requirements are often defined in an OEM's specifications. Inspection requirements set by OEMs can include an inspection of the different specification criteria, including hardness, imperfections, inclusion size, and inclusion frequency. Hearing transcript, pp. 189-190 (Podarek).

[68] Petitioners stated that Ellwood's quality control practices include conducting destructive and technical analyses of failed fluid end blocks. According to Ellwood, when a customer raises quality issues with a fluid end block, Ellwood dispatches inspectors to the field to conduct a failure analysis. The analysis can include ultrasonic testing and destructive analysis to determine the cause of the issue and detect any related defects. Hearing transcript, pp. 39-40 (Brada).

blocks used as a key component in fluid end modules for oil and gas applications.[69] Petitioners state that once a supplier is qualified, all sources of supply are interchangeable, and all fluid end blocks made for a given customer specification are suitable for the same applications.[70] Petitioners observe that fluid end blocks are sold through similar channels of distribution to manufacturers of fluid end modules.[71] Petitioners assert that, while purchasers may have different preferences in steel types, purchasers and producers perceive the full continuum of forged fluid end blocks to be uniquely suited for the production of fluid end modules used in hydraulic pumps for the oil and gas sector.[72]

Respondent Bharat Forge stated in the staff conference that, for the purposes of the preliminary investigations, there is one domestic like product coextensive with the scope of these investigations.[73] In Bharat's postconference brief, in the context of cumulation, it argued that finished fluid end blocks and unfinished or semifinished fluid end blocks are not interchangeable and are "distinct" fluid end blocks.[74] Respondent BGH proposed unfinished, semi-finished and finished fluid end blocks each represent separate like products, which are each further divided into stainless and non-stainless alloy steel separate like products, citing separate industries and different customers.[75] Respondent SWG proposed stainless alloy steel fluid end blocks be considered separate like products from non-stainless alloy steel fluid end blocks, stating that customers do not view the two products as interchangeable because stainless alloy steel fluid end blocks have different physical characteristics and mechanical properties, resulting in better performance and commanding a higher price than non-stainless alloy steel fluid end blocks. SWG observed that stainless alloy steel fluid end blocks have higher raw material costs and undergo different manufacturing processes, including longer forging and melting processes.[76] Respondent Lucchini proposed that fluid end blocks used for hydraulic fracturing applications should be considered a separate like product from fluid end blocks used for mud-pump applications, citing differences in size, raw materials, mechanical characteristics, heat treatment processes, skill level of labor required, and the level of machinery sophistication required.[77]

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[69] Petitioners' prehearing brief, pp. 9-15, and Petitioners' postconference brief, pp. I-8 and I-9.
[70] Ibid., p. I-9.
[71] Ibid., pp. I-9 and I-10.
[72] Ibid., p. I-10.
[73] Conference transcript, p. 94 (Powell).
[74] Respondent Bharat Forge's postconference brief, p. 8.
[75] Respondent BGH's postconference brief, p. 12.
[76] Respondent SWG's postconference brief, pp. 3-6.
[77] Respondent Lucchini Mamè's postconference brief, pp. 12-14.

The Commission analyzed whether unfinished fluid end blocks should be included in the same domestic like product as finished fluid end blocks and (2) whether, stainless and non-stainless fluid end blocks should be separate domestic like products, and in both cases, concluded that they were not separate like products.[78] As such, the Commission defined a single domestic like product coextensive with the scope.[79] No party requested data collection for a like product analysis in their comments on draft final phase questionnaires and no domestic like product issues were raised during the hearing or in party briefs.

[78] *Fluid End Blocks from China, Germany, India, and Italy, Investigation Nos. 701-TA-632-635 and 731-TA-1466-1468 (Preliminary),* USITC Publication 5017, February 2020, pp. 10-14.

[79] Ibid., p.14.

Part II: Conditions of competition in the U.S. market

U.S. market characteristics

Fluid end blocks are forged steel blocks that form part of fluid end modules. Fluid end blocks typically undergo multiple finishing operations such as milling and machining. Fluid end blocks can be made of stainless or non-stainless alloy steel with a large variety of chemical compositions. They are typically produced by open-die forging, but may also be produced through closed-die forging (which is considered by certain U.S. importers to provide superior compaction but by petitioners to add additional time, money, and inventory). Several parts of the production process may be patented, including steel chemistries and forging processes.

Fluid end modules are used in the oil and gas sector in hydraulic fracturing and drilling applications. Fluid end modules are subject to extreme pressures and surface corrosion and therefore require frequent replacement.[1]

Apparent U.S. consumption of fluid end blocks decreased substantially during the period for which data were collected. Overall, apparent U.S. consumption in 2019 was less than half the level in 2017. Similarly, apparent U.S. consumption in January-June 2020 was less than half the level in January-June 2019.

U.S. purchasers

The Commission received 15 usable questionnaire responses from firms that had purchased fluid end blocks since January 2017.[2] [3] Six responding firms each identified themselves as original equipment manufacturer ("OEM") fluid end module and pump

[1] Conference transcript, p. 52 and p. 57 (Boyd) and p. 80 (Powell). Petitioner's postconference brief, I-1.

[2] The following firms provided purchaser questionnaire responses: ***.

[3] Of the 15 responding purchasers, 9 purchased domestic fluid end blocks, 5 purchased imports of the subject merchandise from China, 4 purchased imports of the subject merchandise from Germany, 2 purchased imports of the subject merchandise from India, 11 purchased imports of the subject merchandise from Italy, and 5 purchased imports of fluid end blocks from other sources.

purchasers, while 4 identified as machine shop/FEB finishing operators, and 3 each identified as a distributor or "other OEM and/or other."

Responding U.S. purchasers were located primarily in the Central Southwest. The responding purchasers represented firms that primarily service the oil and gas industry, especially hydraulic fracturing. The three largest purchasers of fluid end blocks in 2019 were ***.

Impact of Section 301 tariffs on products from China[4]

As discussed in greater detail in Part I, fluid end blocks from China have been subject to Section 301 tariffs since September 2018.[5] Table II-1 presents the assessments of U.S. producers and importers of the impact of Section 301 tariffs that cover Chinese-origin fluid end blocks.

All responding U.S. producers reported no change in the supply of U.S.-produced fluid end blocks. The majority of U.S. producers (3 of 4) reported that the supply of fluid end blocks imported from China decreased as a result of Section 301 tariffs. The majority of U.S. producers (3 of 4) reported an increase in the supply of fluid end blocks imported from other countries as a result of Section 301 tariffs. The majority of U.S. importers reported that Section 301 tariffs increased the domestic supply in the market. Four U.S. importers reported that the supply of fluid end blocks imported from China decreased. Half of the responding importers reported that there was no change in the supply of fluid end blocks imported from other countries. Two purchasers reported that Section 301 tariffs increased the supply of fluid end blocks imported from other countries.

Three of four U.S. producers and two of five purchasers reported that prices of subject fluid end blocks had increased, while half of responding importers (2 of 4) and two purchasers reported that prices decreased.

Three of four U.S. producers reported no change in overall demand for fluid end blocks as a result of Section 301 tariffs.[6] Four U.S. importers reported that the overall demand in the market decreased as a result of Section 301 tariffs. Two of four purchasers each reported that overall demand in the market was unchanged as the result of Section 301 tariffs.

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[4] For additional information on Section 301 of the Trade Act of 1974, please refer to Part I.

[5] Petition, p. 6.

[6] The tabulations of U.S. producer responses consist primarily of responses from forgers/finishers, as these firms provided the most consistent reporting of their operations from production through sale.

Three of four U.S. producers and two of four purchases reported that raw material costs for fluid end blocks did not change as a result of Section 301 tariffs, while three of four U.S. importers reported an increase.

Table II-1
Fluid end blocks: Impact of imposition of section 301 tariffs under investigation

Item	U.S. producers				U.S. importers				U.S. purchasers			
	I	NC	D	F	I	NC	D	F	I	NC	D	F
Domestic supply in market	---	4	---	---	3	1	---	---	---	3	---	1
China supply in market	---	1	3	---	---	1	4	---	---	1	1	2
Other than China supply in market	3	1	---	---	1	2	1	---	2	1	---	---
Prices of scope merchandise	1	---	3	---	2	1	1	---	2	1	2	---
Overall demand in market	---	3	1	---	---	---	4	---	1	2	1	---
Raw material costs of scope merchandise	1	3	---	---	3	---	1	---	1	2	---	---

Note: I=Increase, NC=No change, D=Decrease, F=Fluctuate.

Source: Compiled from data submitted in response to Commission questionnaires.

Channels of distribution

U.S. producers and importers shipped the vast majority of their fluid end blocks to OEMs. Imports from Germany were shipped almost exclusively to OEMs during of the period of investigation, while imports from China, India, and nonsubject sources were shipped ***, as shown in table II-2. Among the subject sources, Italy had the largest share of shipments to non-OEM finishers.

Table II-2
Fluid end blocks: U.S. producers' and importers' U.S. shipments, by sources and channels of distribution, 2017-19, January to June 2019, and January to June 2020

Item	Period				
	Calendar year			January-June	
	2017	2018	2019	2019	2020
	Share of reported shipments (percent)				
U.S. producers: to Distributors	***	***	***	***	***
to OEMs	***	***	***	***	***
to non-OEM finishers	***	***	***	***	***
U.S. finishers: to Distributors	***	***	***	***	***
to OEMs	***	***	***	***	***
Importers' U.S. shipments from China: to Distributors	***	***	***	***	***
to OEMs	***	***	***	***	***
to non-OEM finishers	***	***	***	***	***
Importers' U.S. shipments from Germany: to Distributors	***	***	***	***	***
to OEMs	***	***	***	***	***
to non-OEM finishers	***	***	***	***	***
Importers' U.S. shipments from India: to Distributors	***	***	***	***	***
to OEMs	***	***	***	***	***
to non-OEM finishers	***	***	***	***	***
Importers' U.S. shipments from Italy: to Distributors	***	***	***	***	***
to OEMs	***	***	***	***	***
to non-OEM finishers	***	***	***	***	***
Importers' U.S. shipments from subject sources: to Distributors	***	***	***	***	***
to OEMs	***	***	***	***	***
to non-OEM finishers	***	***	***	***	***
Importers' U.S. shipments from nonsubject sources: to Distributors	***	***	***	***	***
to OEMs	***	***	***	***	***
to non-OEM finishers	***	***	***	***	***
Importers' U.S. shipments from all sources: to Distributors	***	***	***	***	***
to OEMs	***	***	***	***	***
to non-OEM finishers	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Geographic distribution

U.S. forgers/finishers reported selling fluid end blocks to all regions in the contiguous United States except for the Southeast, while importers reported selling fluid end blocks to all regions in the contiguous United States (table II-3). For both U.S. forgers/finishers and importers, sales were concentrated in the Central Southwest region. For U.S. forgers/finishers, *** percent of their sales were within 100 miles of their production facilities, *** percent were between 101 and 1,000 miles, and *** percent were over 1,000 miles. Importers sold *** percent within 100 miles of their U.S. points of shipment, *** percent between 101 and 1,000 miles, and *** percent over 1,000 miles.

Table II-3
Fluid end blocks: Geographic market areas in the United States served by U.S. forgers/finishers and importers

Region	U.S. forgers/finishers	Importers	China	Germany	India	Italy	Subject sources
Northeast	1	5	3	2	1	3	5
Midwest	2	5	2	---	---	3	5
Southeast	---	1	1	---	---	---	1
Central Southwest	6	18	8	5	5	8	18
Mountain	2	4	2	1	1	3	4
Pacific Coast	1	3	2	---	1	2	3
Other	1	1	1	---	---	---	1
All regions (except Other)	---	1	1	---	---	---	1
Reporting firms	6	18	8	5	5	8	18

Note: All other U.S. markets, including AK, HI, PR, and VI.

Source: Compiled from data submitted in response to Commission questionnaires.

Supply and demand considerations

U.S. supply

Table II-4 provides a summary of the supply factors regarding fluid end blocks from U.S. producers and from subject countries.

Table II-4
Fluid end blocks: Supply factors that affect the ability to increase shipments to the U.S. market

	Capacity (units)		Capacity utilization (percent)		Ratio of inventories to total shipments (percent)		Shipments by market, 2019 (percent)		Able to shift to alternate products
Country	2017	2019	2017	2019	2017	2019	Home market shipments	Exports to non-U.S. markets	No. of firms reporting "yes"
United States	23,301	22,537	54.7	19.7	***	***	***	***	6 of 6
China	***	***	***	***	***	***	***	***	1 of 1
Germany	***	***	***	***	***	***	***	***	2 of 2
India	***	***	***	***	***	***	***	***	1 of 1
Italy	***	***	***	***	***	***	***	***	5 of 5

Note: Responding U.S. forgers/finishers accounted for all known U.S. production of fluid end blocks in forged form, with varying degrees of finishing, in 2019. Responding foreign producer/exporter firms accounted for less than 25 percent of subject U.S. imports of fluid end blocks from China, and more than *** percent of subject U.S. imports of fluid end blocks from other countries during 2019. For additional data on the number of responding firms and their share of U.S. production and of U.S. imports from each subject country, please refer to Part I, "Summary Data and Data Sources."

Source: Compiled from data submitted in response to Commission questionnaires.

Domestic production

Based on available information, U.S. producers of fluid end blocks have the ability to respond to changes in demand with large changes in the quantity of shipments of U.S.-produced fluid end blocks to the U.S. market. The main contributing factor to this degree of responsiveness of supply is the availability of substantial unused capacity.

Although the Middle East, Latin America, and East Asia are developing hydraulic fracturing production, North America is the predominant location for such hydraulic fracturing activity.[7] U.S. producers' export shipments represented *** their total shipments. Other products that U.S. producers reportedly can produce on the same equipment as fluid end blocks are large oil/gas equipment forgings, petrochemical and industrial forgings, open-die forgings, and other/custom forgings (including die blocks, and landing gear preforms). Factors affecting U.S. producers' ability to shift production include existing capital investments into the production of fluid end blocks.

[7] Conference transcript, p. 95 (Lowrey).

Subject imports from China

Limited information was available on the ability of producers of fluid end blocks from China to respond to changes in demand with changes in the quantity of shipments of fluid end blocks to the U.S. market. Based on data made available in both the final and preliminary phase investigations, producers of fluid end blocks from China are believed to have the ability to respond to changes in demand with at least moderate to large changes in the quantities of shipments of fluid end blocks. The main factors for this degree of responsiveness of supply are publicly available information indicating that Chinese fluid end block producers have existing unused capacity and almost all shipments are home market shipments. Also, petitioners point to the government of China's announcement that it suffers from "severe excessive capacity in the industries of steel."[8]

Subject imports from Germany

Based on available information, producers of fluid end blocks from Germany have the ability to respond to changes in demand with large changes in the quantity of shipments of fluid end blocks to the U.S. market. Factors contributing to the responsiveness of supply include decreases in both German capacity and production during 2017-19, as capacity utilization decreased *** and the availability of inventories increased. *** of German producers' shipments in 2019 were to their home market, while *** were to non-U.S. export markets.

Subject imports from India

Based on available information, producers of fluid end blocks from India have the ability to respond to changes in demand with large changes in the quantity of shipments of fluid end blocks to the U.S. market. The main contributing factor to this degree of responsiveness of supply is the availability of unused capacity; capacity utilization declined by *** percentage points between 2017 and 2019. Factors mitigating responsiveness of supply include inventories and shipments to other markets. ***.

Subject imports from Italy

Based on available information, producers of fluid end blocks from Italy have the ability to respond to changes in demand with large changes in the quantity of shipments of fluid end

[8] Petitioners' postconference brief, p. I-45.

blocks to the U.S. market. The main contributing factors to this degree of responsiveness of supply is the availability of unused capacity ***.

Imports from nonsubject sources

Imports from nonsubject sources accounted for less than three percent of total U.S. imports throughout the period for which data were collected. Reported nonsubject sources of imports during this period were from Mexico, the United Kingdom, Canada, Austria, and Korea.

Supply constraints

No U.S. producers reported supply constraints, while 4 of 18 importers and 3 of 14 purchasers reported supply constraints. Forger/finisher ***. Importer *** reported declining orders that were not commercially viable. Importer/purchaser ***, while importer *** reported that it diversified its supply chain in order to protect against global capacity constraints during 2017-18.

New suppliers

Three of 14 responding purchasers indicated that new suppliers entered the U.S. market since January 1, 2017. Purchaser *** reported that ***. Purchaser *** indicated that domestic suppliers such as Ellwood City Forge and Finkl Steel had developed new competitive capabilities for steel fluid end blocks.

U.S. demand

Based on available information, the overall demand for fluid end blocks is likely to experience small changes in response to changes in price. The main contributing factors to this degree of responsiveness are the lack of substitute products, need for frequent replacement of fluid end blocks, and the large cost share of fluid end blocks in fluid end assemblies.

End uses and cost share

U.S. demand for fluid end blocks depends on the demand for U.S.-produced downstream products. Reported end uses are primarily in the oil and gas industry and include primarily hydraulic fracturing pumps, as well as mud pumps, cementing pumps, non-fracturing stimulation services, and saltwater disposal systems. Cost shares varied, but one estimate provided by importer *** reported that fluid end blocks represent *** percent of the cost share of fluid end assemblies while *** reported that fluid end blocks represent *** percent of the cost share of a hydraulic fracturing pump, and *** estimated that fluid end blocks consist of *** percent of the cost share of stimulation services.

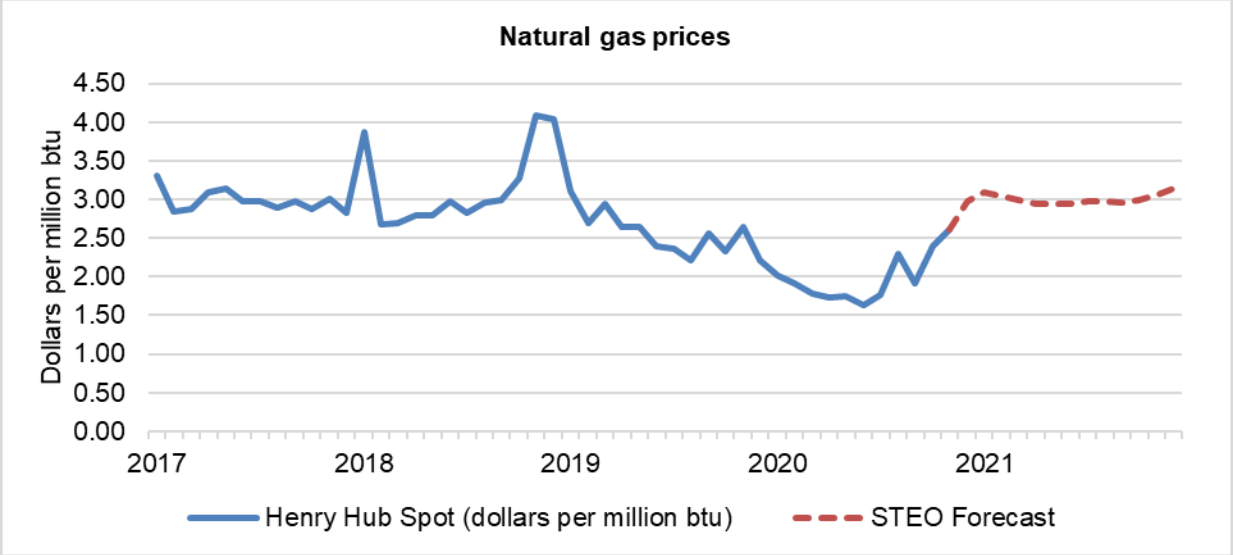
Business cycles

Five of six U.S. forgers/finishers, 12 of 20 importers, and 11 of 14 purchasers indicated that the market was subject to business cycles or conditions of competition. Many firms also identified changes to cycles or conditions since 2017. ***. Importer *** reported that competition has increased in the market due to new producers joining, while producer *** reported that the market has seen significant softening of demand since 2018. Producer *** reported that the COVID-19 pandemic has impacted demand, while importer/purchaser *** reported that the “price war between Saudi {Arabia} and Russia” resulted in a demand shock for fluid end blocks at the beginning of 2020.

Demand trends

U.S. demand for fluid end blocks depends on oil and gas market trends, which tend to operate cyclically.[9] According to industry information reported by petitioners, hydraulic fracturing horsepower appears to have declined by more than 50 percent between 2019 and 2020.[10] ***.[11] Natural gas prices declined from October 2019 to June 2020, but are forecasted to increase to their highest levels since 2018 starting in the first quarter of 2021 (figure II-1). Oil prices dropped steeply between February and March 2020, coinciding with the beginning of the COVID-19 pandemic, but increased beginning in May, and are forecasted to stabilize in the second half of 2021 (figure II-2). Rig counts, which closely follow oil and gas price changes, demonstrated a similar trend (figure II-3).

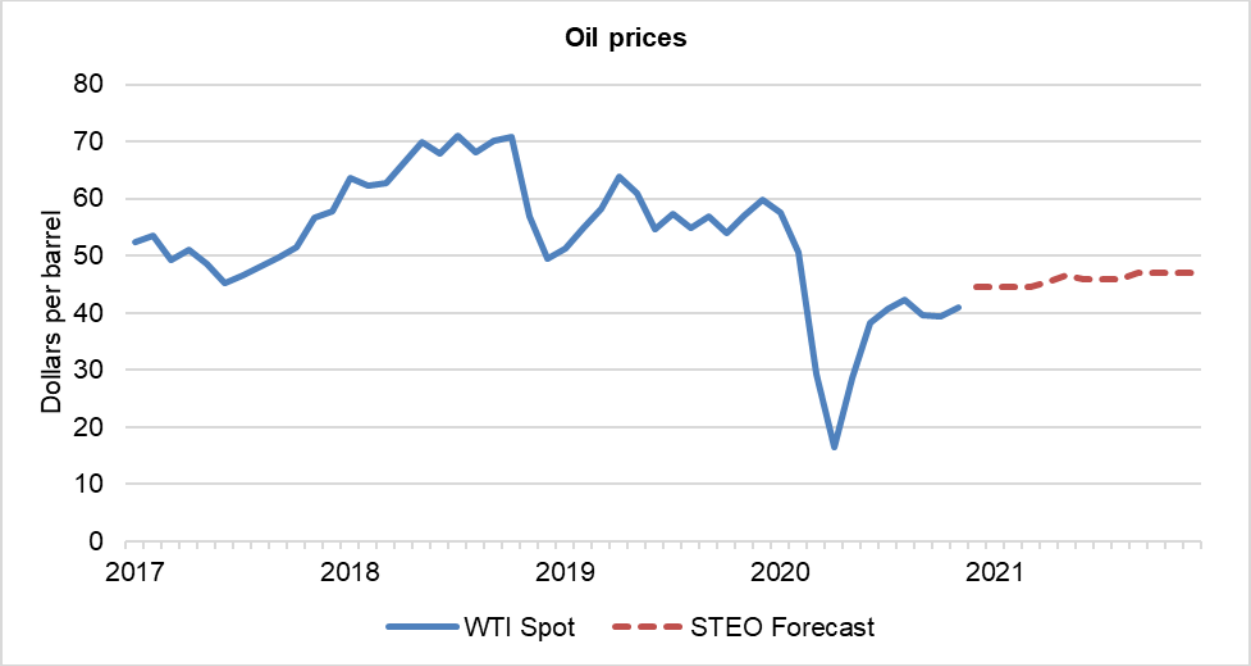
Figure II-1
Natural gas: Short term actual and predicted monthly Henry Hub spot prices of natural gas, monthly, January 2017-September 2020 and October 2020-December 2021



Source: U.S. EIA, https://www.eia.gov/outlooks/steo/data.php, retrieved December 16, 2020.

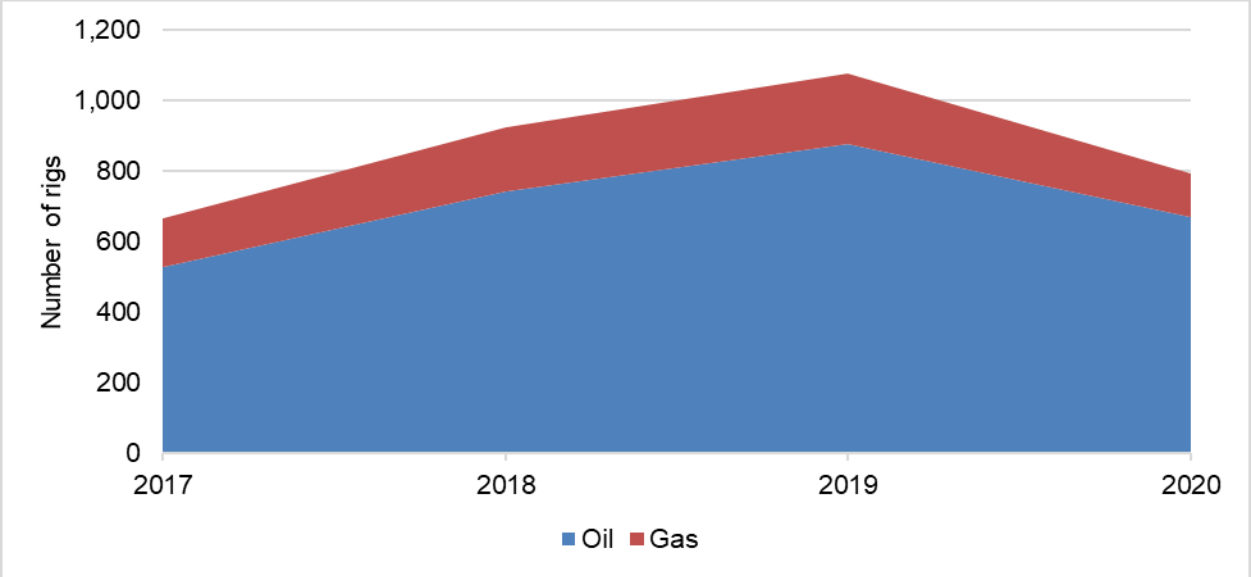
[9] Hearing transcript, p. 76 (Saunders).
[10] Petitioner's hearing presentation, Exhibit 8, p. 28.
[11] Petition, Exhibit GEN-3, "North America - Millions of Frac Horsepower: Total", p. 4.

Figure II-2
Oil: Short term actual and predicted monthly West Texas crude oil prices, monthly, January 2017-September 2020 and October 2020-December 2021



Source: U.S. EIA, https://www.eia.gov/outlooks/steo/data.php, retrieved December 16, 2020.

Figure II-3
Rotary rig count: Average monthly rig counts, quarterly, January 2017-September 2020



Source: Hughes Incorporated, https://rigcount.bakerhughes.com/static-files/c8d72798-ea4e-4603-b435-cfc6521f0dd5, retrieved October 15, 2020.

Most firms reported a decrease in U.S. demand for fluid end blocks since January 1, 2017 (table II-5).

Table II-5
Fluid end blocks: Firms' responses regarding U.S. demand and demand outside the United States

Item	Increase	No change	Decrease	Fluctuate
Demand in the United States				
U.S. forgers/finishers	---	---	6	1
Importers	1	---	14	3
Purchasers	---	---	11	3
Demand outside the United States				
U.S. forgers/finishers	---	---	1	---
Importers	1	2	7	---
Purchasers	---	1	4	2
Demand for end use product	1	---	7	4

Source: Compiled from data submitted in response to Commission questionnaires.

Substitute products

Because fluid end blocks are made to specification, substitutes do not exist. All U.S. producers, importers, and purchasers reported that there were no substitutes for fluid end blocks. Moreover, fluid end blocks need frequent replacement.[12]

Substitutability issues

The degree of substitution between domestic and imported fluid end blocks depends upon such factors as relative prices, quality (e.g., grade standards, defect rates, etc.), and conditions of sale (e.g., price discounts/rebates, lead times between order and delivery dates, reliability of supply, product services, etc.). Fluid end blocks are made to specification, ***.[13] Both domestic and imported fluid end blocks must be made to a particular specification, and customers often require a sample before placing an order.

Based on available data, staff believes that there is at least a moderate degree of substitutability between domestically produced fluid end blocks and fluid end blocks imported from subject sources.

Lead times

Fluid end blocks are almost exclusively produced-to-order. U.S. producers reported that *** of their commercial shipments were produced-to-order, with lead times averaging ***

[12] ***.

[13] ***.

days. Importers reported that *** percent of their commercial shipments were produced-to-order, with lead times averaging *** days. The remaining *** percent of their commercial shipments came from inventories, with lead times averaging *** days.

Knowledge of country sources

Eleven purchasers indicated they had marketing/pricing knowledge of domestic product, 5 of product from China, 4 of product from Germany, 4 of product from India, 12 of product from Italy, and 3 of product from nonsubject countries.

As table II-6 shows, the several responding purchasers or their customers "always" make purchasing decisions based on the producer, although a plurality of purchasers and most of their customers "never" make decisions based on the producer or country of origin. Of the purchasers that "always" make the decision based on the producer, *** and *** reported this is due to supplier certification requirements. Of the purchasers that reported that their customers "sometimes" make decisions based on the manufacturer, *** reported that its customer *** requires product produced in Italy, while *** reported that its customers prefer European product.

Table II-6
Fluid end blocks: Purchasing decisions based on producer and country of origin

Purchaser/customer decision	Always	Usually	Sometimes	Never
Purchaser makes decision based on producer	5	1	1	7
Purchaser's customers make decision based on producer	---	1	5	6
Purchaser makes decision based on country	2	2	---	9
Purchaser's customers make decision based on country	---	1	5	6

Source: Compiled from data submitted in response to Commission questionnaires.

Factors affecting purchasing decisions

The most often cited top three factors firms consider in their purchasing decisions for fluid end blocks are quality, price/cost, and lead time/delivery, as shown in table II-7. Quality was the most frequently cited first-most important factor (reported by four firms), followed by price/cost (three firms). Lead time/delivery was ranked as the second-most important factor (five firms). Other factors include payment terms (***), customer approval (***), and consignment/semifinishing (***).

Table II-7
Fluid end blocks: Ranking of factors used in purchasing decisions as reported by U.S. purchasers, by factor

Factor	First	Second	Third	Total
Quality	4	4	1	9
Price / Cost	3	2	4	9
Lead time / Delivery	1	5	2	9
Technical Capability / Compatibility / Ability to meet specifications	2	1	---	3
Availability / Supply / Capacity	1	1	2	3
All other factors	---	1	4	NA

Note: Other factors include payment terms (***), customer approval (***), and consignment/semifinishing (***).

Source: Compiled from data submitted in response to Commission questionnaires.

Five of 14 purchasers reported that they “usually” and five reported that they “never” purchase the lowest-priced product, while two each reported that they “always” and “sometimes” purchase the lowest-priced product.

Importance of specified purchase factors

Purchasers were asked to rate the importance of 17 factors in their purchasing decisions (table II-8). The factors rated as "very important" by most responding purchasers were availability, delivery time, price, product consistency, quality meets industry standards, quality exceeds industry standards, reliability of supply, and steel type. An equal number of purchasers reported technical support/service as a "very important" or "somewhat important purchasing factor" (six each).

Table II-8
Fluid end blocks: Importance of purchase factors, as reported by U.S. purchasers, by factor

Factor	Very important	Somewhat important	Not important
Availability	12	1	---
Delivery terms	5	7	1
Delivery time	12	---	1
Discounts offered	4	7	2
Finishing ability	2	4	7
Minimum quantity requirements	2	5	6
Packaging	2	5	6
Payment terms	4	8	1
Price	11	2	---
Product consistency	13	---	---
Product range	2	6	5
Quality meets industry standards	13	---	---
Quality exceeds industry standards	11	2	---
Reliability of supply	12	1	---
Steel type	12	1	---
Technical support/service	6	6	1
U.S. transportation costs	---	11	2

Source: Compiled from data submitted in response to Commission questionnaires.

Supplier certification

Twelve of 14 responding purchasers require their suppliers to become certified or qualified to sell fluid end blocks to their firm. Purchasers reported that the time to qualify a new supplier ranged from 30 days to 18 months. Several firms mentioned the importance of specifications as a characteristic it considers when determining the quality of fluid end blocks. According to a ***.[14] As shown in Table II-9, two purchasers (***) reported that domestic suppliers had lost their approved status, while eleven purchasers reported that they had no fialures, and two did not respond. ST9 reported that it began purchasing from Ellwood in April 2018, but that pinhole failures in approximately three percent of its purchases, caused by

[14] ***.

inclusions, and early cracks contributed to a lower average useful life of fluid end blocks purchased from Ellwood. ST9 estimated the useful life of Ellwood's fluid end blocks to be half of that from its Italian supplier.[15]

[15] Hearing transcript, pp. 119-120 (Poradek). Petitioners claim that, during the POI, neither Ellwood nor Finkl was decertified by any purchaser on the basis of quality concerns. Petitioners' posthearing brief, pp. II-34-II-35.

Table II-9
Fluid end blocks: Purchasers' responses to supplier certification, failure to certify, and quality characteristics

Purchaser	Supplier Certification	Failure to Certify	Quality Characteristics
***	Yes	No	Lifecycle
***	Yes	No	Must meet our specifications.
***	Yes	No	In this industry, FEB "quality" is an entirely a function of whether the FEB satisfies the specification provided to the FEB producer by the purchaser. These specs typically include: the steel chemistry; steel cleanliness; mechanical properties (e.g., hardness, tensile properties, impact properties, etc.); ultrasonic inspection to confirm internal integrity; and dimensions per technical drawings. Our company ***, so we have unique insight into the causes of such failures. In our experience, premature block failure is often attributable to defects in the OEM's FEM design or manufacturing, including finish machining of the internal surfaces of the block -- not the FEB itself. When FEMs fail prematurely, it is not uncommon for FEM producers to blame the FEB producer for the poor performance of their FEM model. Technical analysis of these failed blocks almost always reveals that the problem can be attributed to the FEM producer's failure to delineate the optimum specs to the FEB producer and/or their own downstream production/design flaws.
***	Yes	No	Product must meet customer specification and our specification. Material tests are required at various stages of production. Feedback from customers on the life of the product in the field is critical.
***	Yes	No	Material Properties
***	Yes	No	Must have the ability to withstand extreme temperatures as well as high pressure fluids must meet chemistry requirements, Charpy requirements, size and grain structure and flow as well as the overall shape of the {forging}.
***	Yes	No	Product life, product {dimensions}
***	No	---	---
***	Yes	No	Material hardness
***	Yes	No	That the product is produced to our c{us}tomer's specifications and free from defect.
***	Yes	Yes	Our specification dictates some technical requirements (grain structure, inclusions, etc.). We request data detailing historical production and the values measured per batch. This allows us to evaluate forge property variance. From there, field testing of product is critical, as this truly validates capability of the product.
***	---	---	---

Table continued on next page.

Table II-9--Continued
Fluid end blocks: Purchasers' responses to quality characteristics and supplier certification

Purchaser	Supplier Certification	Failure to Certify	Quality Characteristics
***	No	No	International quality standard certifications as well as market reputation
***	Yes	No	Supplier of FEB must be able to meet requirements of our FEB print and FEB specification, which defines mechanical properties, chemistry properties, dimensional tolerances, among other things.
***	Yes	Yes	Metallurgy, inclusions (or lack {thereof}), machining specifications

Note: ***.
Note: ***.

Source: Compiled from data submitted in response to Commission questionnaires.

Changes in purchasing patterns

Purchasers were asked about changes in their purchasing patterns from different sources since 2017 (table II-10); reasons reported for changes in sourcing included price, volume reduction, and potential quality risks. Three of 14 responding purchasers reported that they had changed suppliers since January 1, 2017. Specifically, *** and *** dropped an Italian supplier (***) because of price, while *** reported dropping *** due to volume reduction and potential quality risks.

Table II-10
Fluid end blocks: Changes in purchase patterns from U.S., subject, and nonsubject countries

Source of purchases	Did not purchase	Decreased	Increased	Constant	Fluctuated
United States	2	---	4	4	2
China	1	1	1	2	7
Germany	1	---	3	---	6
India	---	---	---	1	8
Italy	2	3	3	3	1
Other	2	1	---	2	6

Source: Compiled from data submitted in response to Commission questionnaires.

Importance of purchasing domestic product

Eleven of 15 purchasers reported that all of their purchases had no domestic requirement. One firm (***) reported other preferences for domestic product, namely ***.

Comparisons of U.S.-produced, imported, and nonsubject fluid end blocks

Purchasers were asked a number of questions comparing fluid end blocks produced in the United States, subject countries, and nonsubject countries. First, purchasers were asked for a country-by-country comparison on the same 17 factors (table II-11) for which they were asked to rate the importance of these factors in their purchasing decisions.

When comparing U.S.-produced product to fluid end blocks imported from China, most purchasers reported that they were comparable on every factor except for price.

In comparison with fluid end blocks imported from Germany, the majority of purchasers reported that U.S.-produced fluid end blocks were comparable on all factors except availability and delivery time (most purchasers reported that U.S.-produced product was superior), delivery terms (an equal number of purchasers reported that U.S.-produced product was superior or comparable), price (an equal number of purchasers reported that U.S.-produced product was superior, comparable, or inferior), and product consistency (an equal number of purchasers reported that U.S.-produced product was comparable or inferior).

The majority of purchasers reported fluid end blocks imported from India were comparable to U.S.-produced product on minimum quantity requirements, packaging, payment terms, quality exceeds industry standards, reliability of supply, technical support/service, and U.S. transportation costs.

The majority of purchasers reported that fluid end blocks imported from Italy were comparable to U.S.-produced product on every factor except delivery time (an equal number of purchasers reported that U.S.-produced product was superior or comparable).

Most purchasers reported that U.S. and nonsubject fluid end blocks were comparable among each other on all factors except for availability. A plurality of purchasers reported that U.S. and nonsubject fluid end blocks were comparable among each other on delivery terms, delivery time, price, product consistency, and reliability of supply. Most purchasers reported subject country products were comparable, except for fluid end blocks imported from China compared to those imported from India (comparable or inferior), and for fluid end blocks imported from India versus those imported from Italy (comparable or superior).

Table II-11
Fluid end blocks: Purchasers' comparisons between U.S.-produced and imported product

Factor	U.S. vs. China			U.S. vs. Germany			United States vs. India		
	S	C	I	S	C	I	S	C	I
Availability	1	4	1	2	1	1	1	1	1
Delivery terms	2	3	1	2	2	---	1	1	1
Delivery time	2	3	1	3	1	---	1	1	1
Discounts offered	---	4	2	---	3	1	---	1	2
Finishing ability	---	5	1	---	3	1	---	1	2
Minimum quantity requirements	1	5	---	---	4	---	---	3	---
Packaging	---	6	---	---	4	---	---	3	---
Payment terms	---	4	2	---	4	---	---	2	1
Price	1	1	4	1	1	1	---	1	2
Product consistency	1	4	1	---	2	2	---	1	2
Product range	1	5	---	---	3	1	---	1	2
Quality meets industry standards	---	4	1	---	3	1	---	1	2
Quality exceeds industry standards	---	4	1	---	3	1	---	2	1
Reliability of supply	---	6	---	1	3	---	---	3	---
Steel type	1	5	---	---	3	1	---	1	2
Technical support/service	1	4	1	---	3	1	---	2	1
U.S. transportation costs	2	3	1	1	3	---	---	2	1

Factor	U.S. vs. Italy			China vs. Germany			China vs. India		
	S	C	I	S	C	I	S	C	I
Availability	2	6	2	---	1	---	---	2	---
Delivery terms	4	5	1	---	2	---	---	2	---
Delivery time	4	4	2	---	2	---	---	1	1
Discounts offered	1	8	1	---	1	---	---	1	1
Finishing ability	---	6	4	1	1	---	---	1	1
Minimum quantity requirements	---	9	1	1	1	---	---	2	---
Packaging	---	10	---	---	2	---	---	2	---
Payment terms	---	8	2	1	1	---	---	1	1
Price	2	5	3	1	1	---	---	1	1
Product consistency	---	7	3	---	1	1	---	2	---
Product range	---	9	1	---	2	---	---	1	1
Quality meets industry standards	---	7	2	---	2	---	---	2	---
Quality exceeds industry standards	---	8	2	---	1	1	---	2	---
Reliability of supply	2	6	2	1	1	---	---	2	---
Steel type	---	10	---	---	2	---	---	1	1
Technical support/service	1	7	2	---	1	1	---	1	1
U.S. transportation costs	3	6	1	---	2	---	---	2	---

Table continued on next page.

Table II-11--Continued
Fluid end blocks: Purchasers' comparisons between U.S.-produced and imported product

Factor	China vs. Italy			Germany vs. India			Germany vs. Italy		
	S	C	I	S	C	I	S	C	I
Availability	---	2	---	---	1	---	---	4	---
Delivery terms	---	2	---	---	1	---	---	4	---
Delivery time	---	1	1	---	1	---	---	4	---
Discounts offered	---	1	1	---	1	---	---	4	---
Finishing ability	---	1	1	---	1	---	---	2	2
Minimum quantity requirements	---	2	---	---	1	---	---	4	---
Packaging	---	2	---	---	1	---	---	4	---
Payment terms	---	1	1	---	1	---	---	3	1
Price	---	1	1	---	1	---	---	3	1
Product consistency	---	2	---	---	1	---	---	4	---
Product range	---	1	1	---	1	---	1	3	---
Quality meets industry standards	---	2	---	---	1	---	---	4	---
Quality exceeds industry standards	---	2	---	---	1	---	---	4	---
Reliability of supply	---	2	---	---	1	---	---	4	---
Steel type	---	1	1	---	1	---	---	4	---
Technical support/service	---	1	1	---	1	---	1	3	---
U.S. transportation costs	---	2	---	---	1	---	---	4	---

Factor	India vs. Italy			U.S. vs. nonsubject			China vs. Nonsubject		
	S	C	I	S	C	I	S	C	I
Availability	---	2	---	1	---	1	---	1	---
Delivery terms	1	1	---	1	1	---	---	1	---
Delivery time	1	1	---	1	1	---	---	1	---
Discounts offered	1	1	---	---	2	---	---	1	---
Finishing ability	1	1	---	---	2	---	---	1	---
Minimum quantity requirements	---	2	---	---	2	---	---	1	---
Packaging	---	2	---	---	2	---	---	1	---
Payment terms	---	2	---	---	2	---	---	1	---
Price	1	1	---	---	1	1	---	1	---
Product consistency	---	2	---	---	1	1	---	1	---
Product range	1	1	---	---	2	---	---	1	---
Quality meets industry standards	1	1	---	---	2	---	---	1	---
Quality exceeds industry standards	1	1	---	---	2	---	---	1	---
Reliability of supply	---	2	---	---	1	1	---	1	---
Steel type	1	1	---	---	2	---	---	1	---
Technical support/service	1	1	---	---	2	---	---	1	---
U.S. transportation costs	---	2	---	---	2	---	---	1	---

Table continued on next page.

Table II-11--Continued
Fluid end blocks: Purchasers' comparisons between U.S.-produced and imported product

Factor	Germany vs. Nonsubject			India vs. Nonsubject			Italy vs. Nonsubject		
	S	C	I	S	C	I	S	C	I
Availability	---	1	---	---	1	---	---	2	---
Delivery terms	---	1	---	---	1	---	---	2	---
Delivery time	---	1	---	---	1	---	---	2	---
Discounts offered	---	1	---	---	1	---	---	2	---
Finishing ability	---	1	---	---	1	---	---	2	---
Minimum quantity requirements	---	1	---	---	1	---	---	2	---
Packaging	---	1	---	---	1	---	---	2	---
Payment terms	---	1	---	---	1	---	---	2	---
Price	---	1	---	---	1	---	---	2	---
Product consistency	---	1	---	---	1	---	---	2	---
Product range	---	1	---	---	1	---	---	2	---
Quality meets industry standards	---	1	---	---	1	---	---	2	---
Quality exceeds industry standards	---	1	---	---	1	---	---	2	---
Reliability of supply	---	1	---	---	1	---	---	2	---
Steel type	---	1	---	---	1	---	---	2	---
Technical support/service	---	1	---	---	1	---	---	2	---
U.S. transportation costs	---	1	---	---	1	---	---	2	---

Note: A rating of superior means that price/U.S. transportation cost is generally lower. For example, if a firm reported "U.S. superior," it meant that the U.S. product was generally priced lower than the imported product.
Note: S=first listed country's product is superior; C=both countries' products are comparable; I=first list country's product is inferior.

Source: Compiled from data submitted in response to Commission questionnaires.

Comparison of U.S.-produced and imported fluid end blocks

In order to determine whether U.S.-produced fluid end blocks can generally be used in the same applications as imports from China, Germany, India, and Italy, U.S. producers, importers, and purchasers were asked whether the products can always, frequently, sometimes, or never be used interchangeably. As shown in table II-12, all U.S. forger/finishers and most importers and purchasers reported that fluid end blocks were always interchangeable between all country pairs.

Table II-12
Fluid end blocks: Interchangeability between fluid end blocks produced in the United States and in other countries, by country pair

Country pair	Number of U.S. forgers/finishers reporting				Number of U.S. importers reporting				Number of purchasers reporting			
	A	F	S	N	A	F	S	N	A	F	S	N
U.S. vs. subject countries:												
U.S. vs. China	6	---	---	---	5	3	1	1	4	---	---	2
U.S. vs. Germany	6	---	---	---	6	1	2	1	5	---	---	---
U.S. vs. India	6	---	---	---	4	---	1	---	4	---	---	---
U.S. vs. Italy	6	---	---	---	6	3	3	---	9	1	---	---
Subject countries comparisons:												
China vs. Germany	6	---	---	---	3	1	---	1	2	---	1	---
China vs. India	6	---	---	---	3	---	1	---	4	---	---	---
China vs. Italy	6	---	---	---	4	1	2	---	3	---	1	---
Germany vs. India	6	---	---	---	3	---	1	1	4	---	---	---
Germany vs. Italy	6	---	---	---	7	3	---	---	5	1	---	---
India vs. Italy	6	---	---	---	4	1	1	---	4	---	---	---
Nonsubject countries comparisons:												
U.S. vs. Other	6	---	---	---	6	---	---	---	2	---	---	---
China vs. Other	6	---	---	---	4	---	---	---	1	---	---	---
Germany vs. Other	6	---	---	---	5	---	1	---	1	---	---	---
India vs. Other	6	---	---	---	4	---	---	---	1	---	---	---
Italy vs. Other	6	---	---	---	5	---	1	---	2	---	---	---

Note: A=Always, F=Frequently, S=Sometimes, N=Never.

Source: Compiled from data submitted in response to Commission questionnaires.

As can be seen from table II-13, seven responding purchasers reported that domestically produced product always met minimum quality specifications. Purchaser ***, which reported that U.S.-produced fluid end blocks "sometimes" met minimum quality specifications, reported that its specifications contain technical requirements such as ***. Purchaser ST9 reported issues with fluid end blocks purchased from Ellwood around 2019, including pinhole failures and low average useful life.[16] However, petitioners reported that ST9 continued to solicit quotes from Ellwood and negotiate prices after ST9 reported quality concerns.[17] Nine responding purchasers reported that Italian fluid end blocks always met minimum quality specifications, while four reported the same for Chinese and German fluid end blocks and three reported this for Indian fluid end blocks.

[16] Hearing transcript, pp. 115-119 (Poradek).
[17] Hearing transcript, p. 37 (Levy) and pp. 39-40 (Brada).

Table II-13
Fluid end blocks: Ability to meet minimum quality specifications, by source

Source	Always	Usually	Sometimes	Rarely or never
United States	7	1	2	---
China	4	2	---	---
Germany	4	---	---	---
India	3	---	---	---
Italy	9	1	---	---
Nonsubject	2	---	---	---

Note: Purchasers were asked how often domestically produced or imported fluid end blocks meet minimum quality specifications for their own or their customers' uses.

Source: Compiled from data submitted in response to Commission questionnaires.

In addition, U.S. producers, importers, and purchasers were asked to assess how often differences other than price were significant in sales of fluid end blocks from the United States, subject, or nonsubject countries. As seen in table II-14, almost all U.S. producers reported that differences other than price were "sometimes" or "never" significant between all country comparisons. Importers responses were mixed, but generally reported that U.S. produced fluid end blocks and fluid end blocks imported from subject countries are "frequently" interchangeable. The majority of purchasers reported there were "always" or "frequently" significant for all comparisons between the United States and subject countries, and an equal number reported "always" or "sometimes" for differences other than price between fluid end blocks produced in each of the subject countries. *** reported that steel chemistry and delivery time were the most important factors, while purchaser *** reported that prices inclusive of delivery was an important factor. Purchaser *** reported that availability and lead time were important factors, and *** reported that different manufacturers produce different designs.

Table II-14
Fluid end blocks: Significance of differences other than price between fluid end blocks produced in the United States and in other countries, by country pair

Country pair	Number of U.S. producers reporting				Number of U.S. importers reporting				Number of purchasers reporting			
	A	F	S	N	A	F	S	N	A	F	S	N
U.S. vs. subject countries:												
U.S. vs. China	---	2	4	2	3	3	2	1	2	1	1	1
U.S. vs. Germany	---	---	4	4	1	3	3	2	2	---	2	---
U.S. vs. India	---	1	4	2	1	2	---	1	1	1	1	---
U.S. vs. Italy	---	---	5	3	1	4	3	2	4	1	3	1
Subject countries comparisons:												
China vs. Germany	---	---	3	2	1	2	1	---	1	---	1	---
China vs. India	---	---	3	2	1	1	---	1	1	---	1	---
China vs. Italy	---	---	4	2	---	3	2	1	1	---	1	---
Germany vs. India	---	---	3	2	2	1	1	---	1	---	1	---
Germany vs. Italy	---	---	3	2	1	1	5	1	1	---	1	---
India vs. Italy	---	---	3	2	1	2	1	1	1	---	1	---
Nonsubject countries comparisons:												
U.S. vs. Other	---	---	2	2	---	1	1	1	---	1	---	---
China vs. Other	---	---	1	2	---	1	---	1	---	---	---	---
Germany vs. Other	---	---	1	2	---	2	2	---	---	---	---	---
India vs. Other	---	---	1	2	1	1	---	1	---	---	---	---
Italy vs. Other	---	---	1	2	---	2	1	1	---	1	---	---

Note: A = Always, F = Frequently, S = Sometimes, N = Never.

Source: Compiled from data submitted in response to Commission questionnaires.

Elasticity estimates

This section discusses elasticity estimates; parties were encouraged to comment on these estimates.

U.S. supply elasticity

The domestic supply elasticity for fluid end blocks measures the sensitivity of the quantity supplied by U.S. producers to changes in the U.S. market price of fluid end blocks. The elasticity of domestic supply depends on several factors including the level of excess capacity, the ease with which producers can alter capacity, producers' ability to shift to production of other products, the existence of inventories, and the availability of alternate markets for U.S.-produced fluid end blocks. Analysis of these factors above indicates that the U.S. industry has a high ability to increase shipments to the U.S. market; an estimate between 6 to 10 is suggested.

U.S. demand elasticity

The U.S. demand elasticity for fluid end blocks measures the sensitivity of the overall quantity demanded to a change in the U.S. market price of fluid end blocks. This estimate depends on factors discussed above such as the existence, availability, and commercial viability of substitute products, as well as the component share of the fluid end blocks in the production of any downstream products. Based on the available information, the aggregate demand for fluid end blocks is likely to be very inelastic; a range of -0.25 to -0.5 is suggested.

Substitution elasticity

The elasticity of substitution depends upon the extent of product differentiation between the domestic and imported products.[18] Product differentiation, in turn, depends upon such factors as quality (e.g., chemistry, appearance, etc.) and conditions of sale (e.g., availability, sales terms/discounts/promotions, etc.). *** [19] In its posthearing brief, petitioners commented that the elasticity of substitution in the range of 2.5 to 4 in the prehearing report is "seriously understated".[20] Based on review of additional available information, the elasticity of substitution between U.S.-produced fluid end blocks and imported fluid end blocks are likely to be in the range of 3 to 7.

[18] The substitution elasticity measures the responsiveness of the relative U.S. consumption levels of the subject imports and the domestic like products to changes in their relative prices. This reflects how easily purchasers switch from the U.S. product to the subject products (or vice versa) when prices change.

[19] ***.

[20] Petitioners' posthearing brief, p. I-4, fn. 11.

Part III: U.S. producers' production, shipments, and employment

The Commission analyzes a number of factors in making injury determinations (see 19 U.S.C. §§ 1677(7)(B) and 1677(7)(C)). Information on the subsidies and dumping margins was presented in *Part I* of this report and information on the volume and pricing of imports of the subject merchandise is presented in *Part IV* and *Part V*. Information on the other factors specified is presented in this section and/or *Part VI* and is based on the questionnaire responses of 14 firms that accounted for all known U.S. production of fluid end blocks in forged form with varying degrees of finishing, and more than one-third of all U.S. toll finishing of fluid end blocks in 2019.

U.S. producers

U.S. producers as presented in this chapter include U.S. forgers/finishers and U.S. toll finishers. U.S. forgers/finishers produce the fluid end block forging and also perform some or all of the following six finishing steps: milling of one or more flat surfaces; contour machining to custom shapes or dimensions; drilling or boring holes; heat treating; painting, varnishing, or coating; and threading. U.S. toll finishers perform only finishing operations under a tolling agreement for U.S. forgers/finishers, U.S. importers, and/or U.S. purchasers of fluid end blocks.[1]

The Commission issued a U.S. producer questionnaire to eight potential U.S. forgers/finishers and 35 potential U.S. toll finishers based on information contained in the petitions, petitioners' postconference briefs, responses from preliminary phase questionnaires, and publicly available sources.[2] Six U.S. forgers/finishers and eight U.S. toll finishers provided

[1] Of the eight U.S. toll finishers that provided usable data, four have tolling agreements with U.S. purchasers of domestic fluid end blocks, four have tolling agreements with U.S. importers, and two have tolling agreements with U.S. forgers/finishers.

[2] Some firms perform finishing operations on the fluid end blocks they purchase or import prior to internally consuming them to produce a downstream product, such as a fluid end module ("FEM") or pump. In an effort to capture the value added by such firms, staff also asked 18 U.S. purchasers and U.S. importers that were potentially performing in-house finishing operations to complete a U.S. producer questionnaire. Five of these "FEM producers/OEM finishers" completed a U.S. producer questionnaire: ***. The data reported by the five FEM producers/OEM finishers are not presented in this report, as they are inconsistent and incomplete as a result of the operations of these firms, which produce (and in many cases utilize) downstream products, and virtually never commercially sell fluid end blocks.

usable data on their operations.[3] Staff believes that these responses represent all known U.S. production of fluid end blocks in forged form with varying degrees of finishing, and at least one-third of all U.S. toll finishing of fluid end blocks in 2019.[4]

Table III-1 shows the finishing activities that forgers/finishers and toll finishers reported they perform on fluid end blocks. As shown in table III-1, in addition to forging, all six U.S. forgers/finishers reported they perform milling of one or more flat surfaces and heat treating. U.S. forgers/finishers *** perform the following four finishing operations on fluid end blocks: heat treating, milling of one or more flat surfaces, contour machining, and drilling or boring holes. *** reported it performs three finishing operations on fluid end blocks: heat treating, milling of one or more flat surfaces, and drilling or boring holes. *** reported they perform two finishing operations on fluid end blocks: heat treating and milling of one or more flat surfaces. As shown in table III-1, all eight toll finishers contour machine fluid end blocks. Six of the eight toll finishers reported that they perform all of the following four finishing services: milling of one or more flat surfaces, contour machining, drilling or boring holes, and threading fluid end blocks. One toll finisher, ***, reported it performs all of the following three finishing services: milling of one or more flat surfaces, contour machining, and drilling or boring holes. One toll finisher, ***, reported it performs one finishing service: contour machining.

[3] Of the eight potential U.S. forgers/finishers that were issued a U.S. producer questionnaire, six firms provided usable data; one firm, ***, certified it does not produce in-scope product; and one firm, *** was not responsive, but indicated during the preliminary phase that ***. Of the 35 potential U.S. toll finishers that were issued a U.S. producer questionnaire, eight firms provided usable data, four firms confirmed they are U.S. toll finishers of in-scope product but have yet to submit a questionnaire, four firms certified they do not toll finish in-scope product, and 19 firms were unresponsive.

[4] To calculate 2019 toll finishing coverage, staff assumed that all domestically produced fluid end blocks and all imported fluid end blocks that were unfinished at the time of importation were toll finished in the U.S. at some point. Staff divided the number of fluid end blocks that toll finishers reported in their questionnaire responses as being returned to tollees in 2019 (*** units), by apparent consumption in 2019 of all U.S. forgers/finishers' U.S. shipments and U.S. importers' U.S. shipments of unfinished fluid end blocks (*** units) to arrive at a coverage estimate of at least *** percent. This percentage may be understated, as some fluid end blocks may not have been toll finished if, for example, they were purchased or imported by FEM producers/OEM finishers that did not use toll finishers and instead performed all remaining finishing operations in-house in the process of internally consuming them to produce a downstream product.

Table III-1
Fluid end blocks: Finishing operations performed by U.S. forgers/finishers and toll finishers

Item	Forgers /finishers	Toll finishers
Milling of one or more flat surfaces	6	7
Contour machining to custom shapes or dimensions	3	8
Drilling or boring holes	4	7
Heat treating	6	---
Painting, varnishing, or coating	---	---
Threading	---	6
Other	2	---

Source: Compiled from data submitted in response to Commission questionnaires.

Table III-2 lists U.S. producers of fluid end blocks, their production locations, positions on the petition, and shares of total production.

Table III-2
Fluid end blocks: U.S. producers of fluid end blocks, their firm type, positions on the petitions, production locations, and shares of reported production, 2019

Firm	Firm type	Position on petitions	Production location(s)	Share of forging/ finishing production (percent)	Share of toll finishing (percent)
Eastham	Forger/ finishers	***	Beaumont, TX	***	***
Ellwood		Petitioner	Ellwood City, PA New Castle, PA Irvine, PA Navasota, TX	***	***
Finkl		Petitioner	Chicago, IL	***	***
Forged Products		***	Houston, TX	***	***
Scot Forge		***	Spring Grove IL Clinton WI	***	***
Union Electric		***	Burgettstown, PA Avonmore, PA	***	***
Acme	Toll finishers	***	Elk Grove Village, IL	***	***
Bargo		***	Fayetteville, AR	***	***
Delaware Dynamics		***	Muncie, IN	***	***
Medart		***	Ellwood City, PA	***	***
Numerical Precision		***	Crosby, TX	***	***
Strohwig		***	Richfield, WI	***	***
TNN		***	Houston, TX	***	***
Trace-A-Matic		***	Brookfield, WI Houston, TX	***	***
All firms				***	***

Note: Union Electric's Avonmore, PA, location ***.

Source: Compiled from data submitted in response to Commission questionnaires.

Table III-3 presents information on U.S. producers' ownership. No other related or affiliated firms were reported.

Table III-3
Fluid end blocks: U.S. producers' ownership

Item / Firm	Firm Name	Affiliated/Ownership
Ownership:		
***	***	***
***	***	***
***	***	***
***	***	***

Note: ***.

Source: Compiled from data submitted in response to Commission questionnaires.

Table III-4 presents U.S. producers' reported changes in operations since January 1, 2017. Four firms reported production curtailments due to decreased sales, two firms reported expansions in capacity,[5] [6] one firm reported a plant closing, one firm reported a reduction in employment, and one firm reported delayed or cancelled expansions. ***.[7]

[5] During the staff conference, Finkl Steel explained that it upgraded its melt shop "in 2017, carrying into 2018" to produce stainless alloy steel, including a newly patented stainless alloy steel grade called "HVX." Prior to this, it had to purchase stainless alloy steel ingots to produce stainless alloy steel fluid end blocks. Conference transcript, p. 67 (Shirley).

[6] One additional expansion was reported but not included in the table, as it happened prior to 2017: ***.

[7] Staff virtual plant tour, Ellwood, October 13, 2020.

Table III-4
Fluid end blocks: U.S. producers' reported changes in operations, since January 1, 2017

Item / Firm	Reported changed in operations
Plant closings:	
***	***
Expansions:	
***	***
***	***
Prolonged shutdowns or curtailments:	
***	***
***	***
***	***
***	***
Other:	
***	***
***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Production related activities

The Commission concluded that, for the purposes of the preliminary phase of these investigations, firms that conduct finishing operations engage in sufficient production related activities in the United States to qualify as domestic producers of fluid end blocks.[8] Finishing operations include: milling of one or more flat surfaces; contour machining to custom shapes or dimensions; drilling or boring holes; heat treating; painting, varnishing, or coating; and threading. In making such an assessment, the Commission generally considers six factors: (1) source and extent of the firm's capital investment; (2) technical expertise involved in U.S. production activities; (3) value added to the product in the United States; (4) employment levels; (5) quantity and type of parts sourced in the United States; and (6) any other costs and activities in the United States directly leading to production of the like product. Table III-5 presents U.S. toll finishers' responses regarding the complexity and importance of finishing operations and table III-6 presents U.S. toll finishers' responses regarding the nature and extent of finishing operations.

Table III-5
Fluid end blocks: U.S. toll finishers' responses to the complexity and importance of finishing operations

Item	Rating of complexity (1=least complex, 5=most complex)				
	1	2	3	4	5
	Count of firms				
Acme	***	***	***	***	***
Bargo	***	***	***	***	***
Delaware Dynamics	***	***	***	***	***
Medart	***	***	***	***	***
Numerical Precision	***	***	***	***	***
Strohwig	***	***	***	***	***
TNN	***	***	***	***	***
Trace-A-Matic	***	***	***	***	***
Total	1	0	0	2	5

Source: Compiled from data submitted in response to Commission questionnaires.

[8] *Fluid End Blocks from China, Germany, India, and Italy, Investigation Nos. 701-TA-632-635 and 731-TA-1466-1468 (Preliminary),* USITC Publication 5017, February 2020, p. 17.

Table III-6
Fluid end blocks: U.S. toll finishers' nature and extent of finishing operations

Item/Firm	Narrative
Capital investments	
***	***
***	***
***	***
***	***
***	***
***	***
***	***
***	***
Technical expertise	
***	***
***	***
***	***
***	***
***	***
***	***
***	***
***	***
Value added	
***	***
***	***
***	***
***	***
***	***

Table continued on next page.

Table III-6 – Continued
Fluid end blocks: U.S. toll finishers' nature and extent of finishing operations

Item/Firm	Narrative
Employment	
***	***
***	***
***	***
***	***
***	***
***	***
***	***
***	***
Quantity, type and source of parts	
***	***
***	***
***	***
***	***
***	***
***	***
***	***
Costs and activities	
***	***
***	***
***	***
***	***
***	***
***	***
***	***

Source: Compiled from data submitted in response to Commission questionnaires.

In addition to the responses above, U.S. toll finishers were asked to estimate the percentage of value added for each of the six finishing operations. *** U.S. toll finisher provided the following estimates: contour machining adds *** percent, drilling or boring holes adds *** percent, threading adds *** percent, and milling flat surfaces adds *** percent to the total value of a fluid end block. No U.S. toll finishers estimated the value added from heat treating or painting, varnishing, and coating. Staff estimate the value added by toll finishers ranged from *** percent in 2017 to *** percent in 2019.[9]

U.S. toll finishers were also asked to describe and quantify the amount of capital investments needed, from a greenfield investment standpoint, to finish fluid end blocks. Estimates ranged between $***. Capital investments required to perform finishing operations include ***.

[9] Conversion costs are divided by total reported and computed COGS to estimate value added. Conversions costs are calculated by adding total energy, direct labor, and other factory costs, as reported by toll finishers. Total COGS is calculated by adding the value of raw materials (the value of the unfinished FEBs used in toll finishing operations plus other raw materials) and conversion costs. Because toll finishers do not take title to the unfinished FEBs they toll finished, staff estimated this value by multiplying the U.S. forgers/finishers' U.S. shipment of unfinished FEBs AUVs (if the toll finisher tolled on behalf of U.S. producers), or the U.S. importers' U.S. shipments of unfinished FEBs AUVs (if the toll finisher tolled on behalf of U.S. importers), by the quantity toll produced.

U.S. production, capacity, and capacity utilization

Table III-7 and figure III-1 present U.S. forgers/finishers' production, capacity, and capacity utilization. Capacity decreased by 3.3 percent from 2017 to 2019 and was 6.3 percent lower in interim 2020 than in interim 2019. Production decreased by 21.9 percent from 2017 to 2018, and by 55.4 percent from 2018 to 2019, for an overall decrease of 65.2 percent from 2017 to 2019. Production was *** percent lower in interim 2020 than in interim 2019.[10] Given that capacity was relatively unchanged, changes in capacity utilization mirrored production changes. Capacity utilization decreased by 11.2 percentage points from 2017 to 2018, and by 23.7 percentage points from 2018 to 2019, for an overall decrease of 35.0 percentage points from 2017 to 2019. Capacity utilization was *** percentage points lower in interim 2020 than in interim 2019.

[10] COVID-19 has not impacted production at Ellwood or Finkl. Ellwood noted that it has operated every day throughout 2020 and Finkl noted that it is considered an essential business and has implemented very robust measures to keep its employees safe. However, both Ellwood and Finkl noticed a drop in demand as a result of COVID-19, but are both starting to see demand trend upward now. Hearing transcript, p. 78 (Boyd, Saunders, and Shirley).

Table III-7
Fluid end blocks: U.S. forgers/finishers' capacity, production, and capacity utilization, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Capacity (units)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forger/finisher producers	23,301	22,897	22,537	11,449	10,729
	Production (units)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forger/finisher producers	12,737	9,942	4,434	2,502	***
	Capacity utilization (percent)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forger/finisher producers	54.7	43.4	19.7	21.9	***
	Share of production (percent)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forger/finisher producers	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Figure III-1
Fluid end blocks: U.S. forgers/finishers' capacity, production, and capacity utilization, 2017-19, January to June 2019, and January to June 2020

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Table III-8 and figure III-2 present U.S. toll finishers' production, capacity, and capacity utilization. Capacity increased by 4.8 percent from 2017 to 2019 and was the same in interim 2019 and interim 2020. Production increased by 8.2 percent from 2017 to 2018, and then decreased by 56.3 percent from 2018 to 2019, for an overall decrease of 52.7 percent from 2017 to 2019. Production was 77.1 percent lower in interim 2020 than in interim 2019. Capacity utilization increased by 5.4 percentage points from 2017 to 2018, and then decreased by 49.8 percentage points from 2018 to 2019, for an overall decrease of 44.4 percentage points from 2017 to 2019. Capacity utilization was 36.5 percentage points lower in interim 2020 than in interim 2019.

Table III-8
Fluid end blocks: U.S. toll finishers' capacity, production, and capacity utilization, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Capacity (units)				
Acme	***	***	***	***	***
Bargo	***	***	***	***	***
Delaware Dynamics	***	***	***	***	***
Medart	***	***	***	***	***
Numerical Precision	***	***	***	***	***
Strohwig	***	***	***	***	***
TNN	***	***	***	***	***
Trace-A-Matic	***	***	***	***	***
All toll finishers	8,810	8,938	9,232	4,616	4,616
	Production (units)				
Acme	***	***	***	***	***
Bargo	***	***	***	***	***
Delaware Dynamics	***	***	***	***	***
Medart	***	***	***	***	***
Numerical Precision	***	***	***	***	***
Strohwig	***	***	***	***	***
TNN	***	***	***	***	***
Trace-A-Matic	***	***	***	***	***
All toll finishers	7,120	7,707	3,365	2,188	502

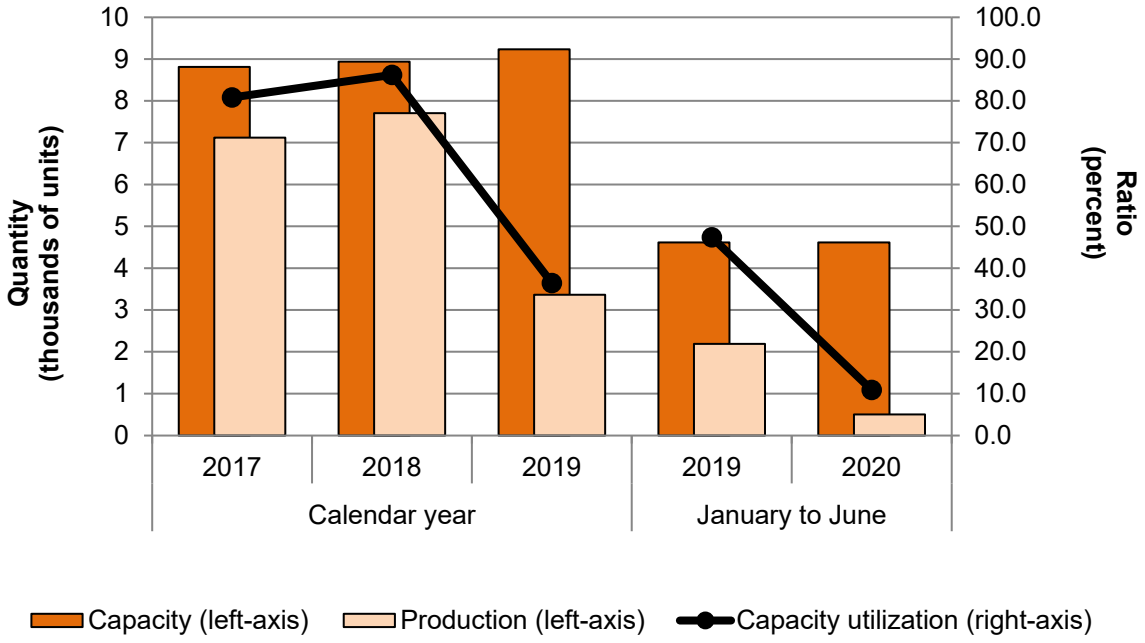
Table continued on next page.

Table III-8 – Continued
Fluid end blocks: U.S. toll finishers' capacity, production, and capacity utilization, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Capacity utilization (percent)				
Acme	***	***	***	***	***
Bargo	***	***	***	***	***
Delaware Dynamics	***	***	***	***	***
Medart	***	***	***	***	***
Numerical Precision	***	***	***	***	***
Strohwig	***	***	***	***	***
TNN	***	***	***	***	***
Trace-A-Matic	***	***	***	***	***
All toll finishers	80.8	86.2	36.4	47.4	10.9
	Share of production (percent)				
Acme	***	***	***	***	***
Bargo	***	***	***	***	***
Delaware Dynamics	***	***	***	***	***
Medart	***	***	***	***	***
Numerical Precision	***	***	***	***	***
Strohwig	***	***	***	***	***
TNN	***	***	***	***	***
Trace-A-Matic	***	***	***	***	***
All toll finishers	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Figure III-2
Fluid end blocks: U.S. toll finishers' capacity, production, and capacity utilization, 2017-19, January to June 2019, and January to June 2020



Source: Compiled from data submitted in response to Commission questionnaires.

Table III-9 presents U.S. toll finishers' U.S. shipments by type of tollee. U.S. shipments on behalf of U.S. forgers/finishers decreased by *** percent from 2017 to 2019 and was *** percent lower in interim 2020 than in interim 2019. U.S. shipments on behalf of U.S. importers decreased by *** percent from 2017 to 2019 and was *** percent lower in interim 2020 than in interim 2019. U.S. shipments on behalf of U.S. purchasers of domestically sourced fluid end blocks decreased by *** percent from 2017 to 2019 and was *** percent lower in interim 2020 than in interim 2019. As shown under share of U.S. shipments, until 2020, less than *** percent of toll finishing in all periods, occurred on behalf of U.S. forgers/finishers; conversely, more than *** percent of toll finishing occurred on behalf of U.S. importers and U.S. purchasers.[11]

Table III-9
Fluid end blocks: U.S. toll finishers' U.S. shipments by type of tollee, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	U.S. shipments (units)				
Toll production/finishing on behalf of.-- U.S. forgers/finishers	***	***	***	***	***
U.S. importers	***	***	***	***	***
U.S. purchasers of domestically sourced fluid end blocks	***	***	***	***	***
Firms other than forgers/finishers	***	***	***	***	***
All tollees	7,120	7,707	3,365	2,180	509
	Share of U.S. shipments (percent)				
Toll production/finishing on behalf of.-- U.S. forgers/finishers	***	***	***	***	***
U.S. importers	***	***	***	***	***
U.S. purchasers of domestically sourced fluid end blocks	***	***	***	***	***
Firms other than forgers/finishers	***	***	***	***	***
All tollees	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

[11] The majority of toll finishing on behalf of U.S. forgers/finishers occurred under a tolling agreement between ***. *** other toll finishers, *** other toll finishers, ***, reported minimal toll finishing on behalf of U.S. forgers/finishers.

Alternative products

Table III-10 presents data on U.S. forgers/finishers' capacity and production, in both pounds and units,[12] of alternative products using the same equipment as fluid end blocks. The majority of production on the machinery used to produce fluid end blocks is of alternative products. The percentage of fluid end block production to total production, in pounds, decreased from 20.5 percent in 2017 to *** percent in interim 2020.

All firms reported producing other forgings on the same machinery as fluid end blocks, including ***.

U.S. forgers/finishers cited market conditions and prices as factors affecting their ability to shift production. ***. *** all noted that other forgings can be produced on the same equipment used to produce fluid end blocks, but no alternative product would be able to replace the profit opportunity fluid end blocks presented prior to the surge of low-priced imports.

U.S. forgers/finishers were asked to describe the steps involved in shifting production between fluid end blocks and other products. Forger/finisher *** reported that switching production between products requires minimal change over time and steps, including furnace planning and setup and machining capacity allocation. *** and *** noted that each product requires that employees be trained to preheat, forge, and machine that particular product. ***.

[12] Overall capacity and total production collected in units are more variable, as forgers/finishers often produce forgings in a range of sizes and weights. Overall capacity and production in units will vary depending on the product mix in a given period.

Table III-10
Fluid end blocks: U.S. forgers/finishers' overall capacity and production on the same equipment as subject production, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds)				
Overall capacity.--					
To forge	876,202	896,842	878,842	447,701	431,421
To finish	640,247	644,087	626,087	321,755	304,755
Total overall capacity	876,202	896,842	878,842	447,701	431,421
Production:					
Fluid end blocks	94,321	70,768	30,087	17,747	***
Out-of-scope production	365,055	384,950	356,612	189,002	***
Total production on same machinery	459,376	455,717	386,699	206,749	172,348
	Quantity (units)				
Overall capacity.--					
To forge	203,738	205,029	204,629	102,515	101,715
To finish	83,738	85,029	84,629	42,515	42,515
Total overall capacity	203,738	205,029	204,629	102,515	102,515
Production:					
Fluid end blocks	12,737	9,942	4,434	2,502	***
Out-of-scope production	***	***	131,681	67,446	***
Total production on same machinery	***	***	136,115	69,948	***
	Ratios and shares: Based on pounds (percent)				
Capacity utilization	52.4	50.8	44.0	46.2	39.9
Share of production:					
Fluid end blocks	20.5	15.5	7.8	8.6	***
Out-of-scope production	79.5	84.5	92.2	91.4	***
Total production on same machinery	100.0	100.0	100.0	100.0	100.0
	Ratios and shares: Based on units (percent)				
Capacity utilization	***	***	66.5	68.2	***
Share of production:					
Fluid end blocks	***	***	3.3	3.6	***
Out-of-scope production	***	***	96.7	96.4	***
Total production on same machinery	100.0	100.0	100.0	100.0	100.0
	Average weight per unit (pounds per unit)				
Production:					
Fluid end blocks	***	***	6,786	7,093	***
Out-of-scope production	***	***	2,708	2,802	***
Total production on same machinery	***	***	2,841	2,956	***

Note: Total overall capacity is the greater of the total forging and total finishing capacities reported. Because forgers/finishers are principally forgers, with varying abilities to finish fluid end blocks, *** forgers/finishers reported equal or higher forging capacity than finishing capacity.

Source: Compiled from data submitted in response to Commission questionnaires.

Table III-11 presents data on U.S. toll finishers' capacity and production, in both pounds and units, of alternative products using the same equipment used to finish fluid end blocks.

*** U.S. toll finishers, ***, reported producing other products on the same machinery used to finish fluid end blocks. The majority of production, in pounds, on the machinery used to finish fluid end blocks is of fluid end blocks. The percentage of fluid end block production to total production, in pounds, ranged from *** percent in interim 2020 to *** percent in interim 2019.

U.S. toll finishers reported producing ***.

Table III-11
Fluid end blocks: U.S. toll finishers' overall capacity and production on the same equipment as subject production, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds)				
Overall capacity	62,647	65,131	67,507	35,153	35,153
Production:					
Fluid end blocks	52,389	55,459	22,816	15,451	3,263
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Quantity (units)				
Overall capacity	9,204	9,544	9,904	5,052	5,052
Production:					
Fluid end blocks	7,120	7,707	3,365	2,188	502
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Ratios and shares: Based on pounds (percent)				
Capacity utilization	***	***	***	***	***
Share of production:					
Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Ratios and shares: Based on units (percent)				
Capacity utilization	***	***	***	***	***
Share of production:					
Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Average weight per unit (pounds per unit)				
Production:					
Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. producers' U.S. shipments and exports

Table III-12 presents U.S. forgers/finishers' U.S. shipments, export shipments, and total shipments. *** U.S. forgers/finishers reported all U.S. shipments as commercial shipments. ***, reported all of its U.S. shipments as transfers to related firms.[13] *** U.S. forgers/finishers, ***, reported export shipments to ***.

*** U.S. forgers/finishers' U.S. shipments decreased from 2017 to 2019. U.S. shipments decreased from 2017 to 2018, by 13.2 percent in quantity and by 6.3 percent in value, and decreased from 2018 to 2019, by *** percent in quantity and by *** percent in value, for an overall decrease of *** percent in quantity and 58.4 percent in value from 2017 to 2019. U.S. forgers/finishers' U.S. shipment quantity was *** percent lower in interim 2020 than in interim 2019.

U.S. shipment unit values increased by *** percent from 2017 to 2019 and were *** percent higher in interim 2020 than in interim 2019. Higher average unit values occurred as the quantity and share of U.S. forgers/finishers' U.S. shipments of unfinished, stainless steel fluid end blocks increased in relation to unfinished, other alloy steel fluid end blocks, as shown in Appendix E.

[13] ***. Email from ***.

Table III-12
Fluid end blocks: U.S. forgers/finishers' U.S. shipments, export shipments, and total shipments, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. shipments	12,383	10,747	***	***	***
Export shipments	***	***	***	***	***
Total shipments	***	***	***	***	***
	Value (1,000 dollars)				
U.S. shipments	211,862	198,448	***	***	***
Export shipments	***	***	***	***	***
Total shipments	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. shipments	17,109	18,465	***	***	***
Export shipments	***	***	***	***	***
Total shipments	***	***	***	***	***
	Share of quantity (percent)				
U.S. shipments	***	***	***	***	***
Export shipments	***	***	***	***	***
Total shipments	100.0	100.0	100.0	100.0	100.0
	Share of value (percent)				
U.S. shipments	***	***	***	***	***
Export shipments	***	***	***	***	***
Total shipments	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Table III-13 presents the quantity of fluid end blocks for which U.S. finishers provided tolling services, as well as the value of the revenue generated by such services (generically described as U.S. shipments returned).[14] U.S. shipments returned to all tollee types decreased from 2017 to 2019 and were lower in interim 2020 than in interim 2019. U.S. shipments returned to forgers/finishers decreased from 2017 to 2019, by *** percent in quantity and by *** percent in value, and were *** percent lower in quantity and *** percent lower in value, in interim 2020 than in interim 2019. U.S. shipments returned to U.S. importers decreased from 2017 to 2019, by *** percent in quantity and by *** percent in value, and were *** percent lower in quantity and *** percent lower in value, in interim 2020 than in interim 2019. U.S. shipments returned to U.S. purchasers of domestically sourced fluid end blocks decreased from 2017 to 2019, by *** percent in quantity and by *** percent in value, and were *** percent lower in quantity and *** percent lower in value in interim 2020 than in interim 2020.

As shown under share by quantity and share by value, toll finishers performed the majority of their toll finishing on U.S. purchasers' fluid end blocks, followed by imported fluid end blocks. Less than *** percent of fluid end blocks, by quantity and value, were toll finished on behalf of forgers/finishers between 2017 and 2019.

The average unit tolling fees of U.S. shipments returned to U.S. forgers/finishers ranged from *** to *** per fluid end block, while average unit tolling fees of U.S. shipments returned to importers and U.S. purchasers of domestically sourced fluid end blocks ranged from *** to *** per fluid end block.[15] Average unit tolling fees of U.S. shipments returned to forgers/finishers decreased by *** percent from 2017 to 2019, while average unit tolling fees of U.S. shipments returned to U.S. importers and U.S. purchasers of domestically sourced fluid end blocks increased from 2017 to 2019, by *** percent and *** percent, respectively.

[14] A toll agreement is an agreement between two firms whereby the first firm ("tollee") furnishes the raw materials and the second firm ("toller") uses the raw materials to produce a product that it then returns to the first firm with a charge for processing costs, overhead, etc.

[15] The lower average unit fees for tolling on behalf of forgers/finishers is largely driven by the tolling fees reported by ***. *** reported in its questionnaire response that it performs the same finishing operations that the other U.S. toll finishers reported.

Table III-13
Fluid end blocks: U.S. toll finishers' U.S. shipments returned, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. shipments.-- Returned to U.S. forgers/finishers	***	***	***	***	***
Returned to U.S. importers	***	***	***	***	***
Returned to U.S. purchasers of domestically sourced fluid end blocks	***	***	***	***	***
Returned to all tollees	7,120	7,707	3,365	2,180	509
	Value (1,000 dollars)				
U.S. shipments.-- Returned to U.S. forgers/finishers	***	***	***	***	***
Returned to U.S. importers	***	***	***	***	***
Returned to U.S. purchasers of domestically sourced fluid end blocks	***	***	***	***	***
Returned to all tollees	57,992	73,985	37,387	23,955	3,262
	Unit value (dollars per unit)				
U.S. shipments.-- Returned to U.S. forgers/finishers	***	***	***	***	***
Returned to U.S. importers	***	***	***	***	***
Returned to U.S. purchasers of domestically sourced fluid end blocks	***	***	***	***	***
Returned to all tollees	8,145	9,600	11,111	10,989	6,409
	Share of quantity				
U.S. shipments.-- Returned to U.S. forgers/finishers	***	***	***	***	***
Returned to U.S. importers	***	***	***	***	***
Returned to U.S. purchasers of domestically sourced fluid end blocks	***	***	***	***	***
Returned to all tollees	100.0	100.0	100.0	100.0	100.0
	Share of value				
U.S. shipments.-- Returned to U.S. forgers/finishers	***	***	***	***	***
Returned to U.S. importers	***	***	***	***	***
Returned to U.S. purchasers of domestically sourced fluid end blocks	***	***	***	***	***
Returned to all tollees	100.0	100.0	100.0	100.0	100.0

Note: “Value” represents the total tolling fee charged by the toll finisher and the “unit value” represents the unit tolling fee charged by the toll finisher.

Source: Compiled from data submitted in response to Commission questionnaires.

Table III-14 presents the methodology staff used to determine the quantity and value of U.S. producers' U.S. shipments for use in apparent U.S. consumption.

Table III-14
Fluid end blocks: U.S. producers' U.S. shipments for use in apparent U.S. consumption, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (short tons)				
U.S. producers' U.S. shipments	12,383	10,747	***	***	***
	Value (1,000 dollars)				
U.S. producers' U.S. shipments.-- Fully domestic value	211,862	198,448	***	***	***
Additional value added by toll finishers	***	***	***	***	***
Total	***	***	***	***	***

Note.--The quantity for U.S. producers' U.S. shipments reflects the quantity of fluid end blocks sold in the United States by forgers/finishers, which includes the volume toll finished on behalf of the forgers/finishers. The fully domestic value for U.S. producers' U.S. shipments reflects the value of fluid end blocks sold in the United States by forgers/finishers, which includes the additional value added by toll finishers for merchandise toll finished on behalf of the forgers/finishers. Separately reported is the additional value added by toll finishers which represents the value added by toll finishers on behalf of U.S. importers and of other U.S. purchasers of fluid end blocks (e.g., OEM fluid end module and pump producers). In measuring U.S. apparent consumption and market share this methodology avoids reclassifying and/or double counting merchandise already reported once by U.S. forgers/finishers or by U.S. importers.

U.S. producers' inventories

Table III-15 presents U.S. forgers/finishers' end-of-period inventories and the ratio of these inventories to U.S. forgers/finishers' production, U.S. shipments, and total shipments.[16] *** of the six U.S. forgers/finishers, *** reported end-of-period inventories.[17] ***.

End-of-period inventories decreased by *** percent from 2017 to 2019, but were *** percent higher in interim 2020 than in interim 2019. The higher absolute level of inventory, combined with lower levels of production and shipments, resulted in sharply higher inventory ratios in January-June 2020.

Table III-15
Fluid end blocks: U.S. forgers/finishers' inventories, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. forgers/finishers' end-of-period inventories	***	***	***	***	***
	Ratio (percent)				
Ratio of inventories to.--					
U.S. production	***	***	***	***	***
U.S. shipments	***	***	***	***	***
Total shipments	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

[16] Toll finishers do not take title to the fluid end blocks for which they provide finishing services, and thus, do not maintain inventory.

[17] Fluid end blocks are produced to each purchaser's custom specifications, so fluid end blocks are typically produced to order and not produced to inventory. Conference transcript, pp. 40-41 (Shirley, Boyd).

U.S. producers' imports and purchases

U.S. forgers/finishers reported no imports or purchases of fluid end blocks, nor did any of the responding U.S. toll finishers. As discussed above, U.S. toll finishers do not take title to the fluid end blocks when they perform toll services for U.S. forgers/finishers, U.S. importers, or U.S. purchasers.[18]

[18] ***.

U.S. employment, wages, and productivity

Table III-16 presents U.S. forgers/finishers' employment-related data. The number of production and related workers decreased by 41.9 percent from 2017 to 2019, and was *** percent lower in interim 2020 than in interim 2019. Hours worked decreased by 37.4 percent from 2017 to 2019, and were *** percent lower in interim 2020 than in interim 2019. U.S. forgers/finishers cited reduced production and sales due to reduced demand as reasons for why employment indicators declined during the period for which data were collected.[19] Given that, from 2017 to 2019, production decreased more than hours worked (65.2 percent versus 37.4 percent), productivity decreased during this period by 44.4 percent.

Hourly wages increased by 3.4 percent between 2017 to 2019 and were *** percent higher in interim 2020 than in interim 2019. Unit labor costs increased by 86.0 percent from 2017 to 2019 and were *** percent higher in interim 2020 than in interim 2019.

Table III-16
Fluid end blocks: U.S. forgers/finishers' employment related data, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
Production and related workers (PRWs) (number)	258	218	150	170	***
Total hours worked (1,000 hours)	511	412	320	180	***
Hours worked per PRW (hours)	1,981	1,890	2,133	1,059	***
Wages paid ($1,000)	14,511	12,743	9,398	5,128	***
Hourly wages (dollars per hour)	$28.40	$30.93	$29.37	$28.49	***
Productivity (units per 1,000 hours)	24.9	24.1	13.9	13.9	***
Unit labor costs (dollars per unit)	$1,139	$1,282	$2,120	$2,050	***

Source: Compiled from data submitted in response to Commission questionnaires.

[19] The *** U.S. forger/finisher, *** reported no changes in its number of workers from 2017 to 2019, despite a decrease in production of *** percent from 2017 to 2019. ***.

Table III-17 presents U.S. toll finishers' employment-related data. The number of production and related workers increased by 22.0 percent from 2017 to 2018, then decreased by 45.5 percent from 2018 to 2019, for an overall decrease of 33.5 percent from 2017 to 2019. The number of workers was *** percent lower in interim 2020 than in interim 2019. Hours worked increased by 22.2 percent from 2017 to 2018, then decreased by 45.8 percent from 2018 to 2019, for an overall decrease of 33.7 percent from 2017 to 2019. Hours worked were *** percent lower in interim 2020 than in interim 2019. Given that, from 2017 to 2019, production decreased more than hours worked decreased, productivity decreased during this period by 28.7 percent.

Hourly wages increased by 8.9 percent between 2017 to 2019 and were *** percent higher in interim 2020 than in interim 2019. Unit labor costs increased by 52.7 percent from 2017 to 2019, but were *** percent lower in interim 2020 than in interim 2019.

Table III-17
Fluid end blocks: U.S. toll finishers' employment related data, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
Production and related workers (PRWs) (number)	191	233	127	118	***
Total hours worked (1,000 hours)	440	538	292	159	***
Hours worked per PRW (hours)	2,306	2,309	2,298	1,345	***
Wages paid ($1,000)	10,261	12,777	7,403	4,516	***
Hourly wages (dollars per hour)	$23.30	$23.75	$25.37	$28.45	***
Productivity (units per 1,000 hours)	16.2	14.3	11.5	13.8	***
Unit labor costs (dollars per unit)	$1,441	$1,658	$2,200	$2,064	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table III-18 presents U.S. forgers/finishers and U.S. toll finishers' combined employment-related data.

Table III-18
Fluid end blocks: Combined U.S. forgers/finishers' and U.S. toll finishers' employment related data, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
Production and related workers (PRWs) (number)	449	451	277	288	91
Total hours worked (1,000 hours)	951	950	612	339	117
Hours worked per PRW (hours)	2,119	2,106	2,209	1,176	1,285
Wages paid ($1,000)	24,772	25,520	16,801	9,644	3,677
Hourly wages (dollars per hour)	$26.04	$26.86	$27.46	$28.47	$31.46

Source: Compiled from data submitted in response to Commission questionnaires.

Part IV: U.S. imports, apparent U.S. consumption, and market shares

U.S. importers

The Commission issued importer questionnaires to 80 potential importers of fluid end blocks from subject and nonsubject sources, as well as to all U.S. producers of fluid end blocks.[1] Twenty firms provided usable questionnaire responses. These responses represent more than eighty percent of imports from subject sources, including *** percent of U.S. imports from China,[2] *** percent of U.S. imports from Germany, *** U.S. imports from India,[3] and *** percent of U.S. imports from Italy in 2019.[4] Imports from nonsubject sources comprised less than three percent of the total quantity of imports reported in U.S. importer questionnaires during the period for which data were collected and are generally consistent with the limited volumes and sources identified by the Petitioners.[5] Imports from nonsubject sources were sourced from Austria, Canada, Korea, Mexico, and the United Kingdom.

[1] The Commission issued questionnaires to those firms identified in the petitions, along with firms that, based on a review of data provided by U.S. Customs and Border Protection ("Customs"), accounted for more than one percent of total imports under HTS statistical reporting numbers 7218.91.0030, 7218.99.0030, 7224.90.0015, 7224.90.0045, 7326.19.0010, 7326.90.8688, or 8413.91.9055 from January to November 2019.

[2] Petitioners estimate *** fluid end blocks were imported from China in 2018. Petitions, Exh. GEN-2. U.S. importer questionnaire responses reported *** imports from China in 2018, which would make U.S. importer questionnaire responses account for *** percent of 2018 U.S. imports from China. To calculate subject import coverage, staff assumed import coverage from China was equal in 2018 and 2019.

[3] ***.

[4] Because the HTS statistical reporting numbers under which fluid end blocks are imported contain substantial amounts of out-of-scope product, and greater quantities of U.S. exports were reported in foreign producer questionnaires than U.S. imports in U.S. importer questionnaires from Germany and Italy, coverage calculations for imports from Germany and Italy were based on the quantities and coverage estimates of U.S. exports reported in foreign producer questionnaires.

[5] Petitioners believe that nonsubject imports comprised significantly less than 4 percent of apparent U.S. consumption from 2016 to 2018. Petitioners reported Austria, Korea, and Romania as the leading sources of nonsubject imports from 2016 to 2018. They also believe there may be some imported volumes from France and Mexico. Petitioners' postconference brief, page II-11. Petitions, Vol. I, p. 37 and Vol. II, Exh. GEN-2.

Table IV-1 lists all responding U.S. importers of fluid end blocks from China, Germany, India, Italy, and other sources, their locations, and their shares of U.S. imports, in 2019. As shown in Table IV-1, *** of the 20 firms are foreign-domiciled importers.

Table IV-1
Fluid end blocks: U.S. importers, their headquarters, and share of total imports by source, 2019

Firm	Headquarters	Share of imports by source (percent)						
		China	Germany	India	Italy	Subject sources	Non-subject sources	All import sources
BGH	Siegen, Germany	***	***	***	***	***	***	***
Bharat Forge	Pune, MH, India	***	***	***	***	***	***	***
Boss Oilwell	Houston, TX	***	***	***	***	***	***	***
Cogne USA	Fairfield, NJ	***	***	***	***	***	***	***
Firstex	Grand Prairie, TX	***	***	***	***	***	***	***
FMC	Stephenville, TX	***	***	***	***	***	***	***
Forum US	Houston, TX	***	***	***	***	***	***	***
Frisa Forjados	Santa Catarina, NL, Mexico	***	***	***	***	***	***	***
FTS	Fort Worth, TX	***	***	***	***	***	***	***
Gardner Denver	Quincy, IL	***	***	***	***	***	***	***
Halliburton	Houston, TX	***	***	***	***	***	***	***
Jason O&G	Houston, TX	***	***	***	***	***	***	***
Lucchini	Cividate Camuno, BS, Italy	***	***	***	***	***	***	***
Metalcam	Breno, BS, Italy	***	***	***	***	***	***	***
NOV	Houston, TX	***	***	***	***	***	***	***
Schlumberger	Sugar Land, TX	***	***	***	***	***	***	***
Serva	Catoosa, OK	***	***	***	***	***	***	***
SWG	Gröditz, Germany	***	***	***	***	***	***	***
Valtek	Odessa, TX	***	***	***	***	***	***	***
Weir	Fort Worth, TX	***	***	***	***	***	***	***
Total		***	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. imports

Table IV-2 presents data for U.S. imports of fluid end blocks from China, Germany, India, Italy, and all other sources. U.S. imports from the subject countries accounted for the vast majority of fluid end block imports throughout the period for which data were collected (more than 97.0 percent in quantity and value for all periods). With respect to the limited imports of fluid end blocks from other countries, *** was the primary nonsubject source.

India was the largest source of imports by quantity and value in all periods, with the exception of 2018, for which Italy was the largest.[6] China was the smallest source of imports by quantity and value in all periods.

U.S. imports from each subject source decreased between 2017 and 2019 and were lower in interim 2020 than in interim 2019. U.S. imports from subject sources decreased by 49.2 percent in quantity and 39.2 percent in value from 2017 to 2019, and were 72.1 percent lower in quantity and 77.8 percent lower in value in interim 2020 than in interim 2019. U.S. imports by value exhibited similar reductions.

Unit values of imports from subject sources increased by 19.7 percent from 2017 to 2019. Imports from India had the highest unit values for all periods for which data were collected, followed by imports from Italy.[7]

The ratio of subject imports to U.S. production increased by 48.2 percentage points from 105.2 percent in 2017 to 153.4 percent in 2019, but was *** percentage points lower in interim 2020 than in interim 2019. U.S. imports exceeded production by U.S. forgers/finishers In all three calendar years and in both interim periods.

[6] The increase in imports from Italy in 2018 was driven by an increase in imports by U.S. importer *** from ***.

[7] Unlike fluid end blocks produced by U.S. forgers/finishers and fluid end blocks imported from other subject sources, fluid end blocks from India are predominantly imported finished. Conference transcript, p. 12 (Powell), and table IV-4.

Table IV-2
Fluid end blocks: U.S. imports, by source, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. imports from.--					
China	1,383	1,237	274	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	4,664	5,119	2,808	***	***
Subject sources	13,403	11,714	6,803	4,597	1,281
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
	Value (1,000 dollars)				
U.S. imports from.--					
China	28,687	22,277	3,870	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	98,183	137,462	71,103	***	***
Subject sources	311,051	299,449	188,998	130,741	29,058
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. imports from.--					
China	20,743	18,009	14,124	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	21,051	26,853	25,322	***	***
Subject sources	23,208	25,563	27,782	28,441	22,684
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***

Table continued on next page.

Table IV-2 – Continued
Fluid end blocks: U.S. imports, by source, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Share of quantity (percent)				
U.S. imports from.--					
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
	Share of value (percent)				
U.S. imports from.--					
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
	Ratio to U.S. production				
U.S. imports from.--					
China	10.9	12.4	6.2	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	36.6	51.5	63.3	***	***
Subject sources	105.2	117.8	153.4	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Figure IV-1
Fluid end blocks: U.S. import quantities and average unit values, 2017-19, January to June 2019, and January to June 2020

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Negligibility

The statute requires that an investigation be terminated without an injury determination if imports of the subject merchandise are found to be negligible.[8] Negligible imports are generally defined in the Act, as amended, as imports from a country of merchandise corresponding to a domestic like product where such imports account for less than 3 percent of the volume of all such merchandise imported into the United States in the most recent 12-month period for which data are available that precedes the filing of the petition or the initiation of the investigation. However, if there are imports of such merchandise from a number of countries subject to investigations initiated on the same day that individually account for less than 3 percent of the total volume of the subject merchandise, and if the imports from those countries collectively account for more than 7 percent of the volume of all such merchandise imported into the United States during the applicable 12-month period, then imports from such countries are deemed not to be negligible.[9] Imports from China accounted for *** percent of total imports, Germany accounted for *** percent of total imports, India accounted for *** percent of total imports, and Italy accounted for *** percent of total imports of fluid end blocks by quantity during December 2018 through November 2019. Table IV-3 also presents the share of total imports from Italy minus imports from Metalcam (*** percent) under the line "Italy AD," as Commerce assigned a zero LTFV margin to Metalcam.

[8] Sections 703(a)(1), 705(b)(1), 733(a)(1), and 735(b)(1) of the Act (19 U.S.C. §§ 1671b(a)(1), 1671d(b)(1), 1673b(a)(1), and 1673d(b)(1)).

[9] Section 771 (24) of the Act (19 U.S.C § 1677(24)).

Table IV-3
Fluid end blocks: U.S. imports in the twelve month period preceding the filing of the petition, December 2018 through November 2019

Item	December 2018 through November 2019	
	Quantity (units)	Share quantity (percent)
U.S. imports from.--		
China	***	***
Germany	***	***
India CVD	***	***
Italy AD	***	***
Italy CVD	***	***
All other sources	***	***
All import sources	***	***

Note: All items in table are not additive. The CVD lines represent the imports from a given source subject to Commerce's nonzero and non de minimis countervailing duty margins, while AD lines represent the imports subject to Commerce's nonzero and non de minimis LTFV margins from that source. The fact set is such that the CVD lines represent total imports from a given source, as there were no zero rate or de minimis countervailing duty margin sources (unlike with the AD duty margin findings, which had some zero rate or de minimis dumping margins).

Source: Compiled from data submitted in response to Commission questionnaires.

Cumulation considerations

In assessing whether imports should be cumulated, the Commission determines whether U.S. imports from the subject countries compete with each other and with the domestic like product and has generally considered four factors: (1) fungibility, (2) presence of sales or offers to sell in the same geographical markets, (3) common or similar channels of distribution, and (4) simultaneous presence in the market. Information regarding channels of distribution, market areas, and interchangeability appear in Part II. Additional information concerning fungibility and simultaneous presence in the market is presented below.

Fungibility

Table IV-4 and figure IV-2 present U.S. forgers/finishers' U.S. shipments and U.S. importers' imports by level of finishing and steel type,[10] in 2019.[11] U.S. forgers/finishers reported U.S. shipments and U.S. importers from all subject import sources reported imports of unfinished fluid end blocks, while only U.S. importers of fluid end blocks from China, India, and Italy reported imports of finished fluid end blocks. India was the only source for which the majority of imports consisted of finished fluid end blocks.[12] The majority of U.S. shipments reported by U.S. forgers/finishers and imports reported by U.S. importers of fluid end blocks from China, Germany, and Italy were stainless fluid end blocks, while the majority of imports reported by U.S. importers of fluid end blocks from India were non-stainless alloy steel fluid end blocks. U.S. importers of fluid end blocks from Germany only reported imports of unfinished, stainless steel fluid end blocks.[13] *** forgers/finishers' U.S. shipments were classified as unfinished fluid end blocks, approximately two-thirds of which were classified as stainless steel.

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[10] Questionnaires defined "unfinished" as a fluid end block that requires further manufacturing operations prior to incorporation into a pump fluid end assembly and "finished" as a fluid end block that is ready for incorporation into a pump fluid end assembly without further manufacturing operations. Questionnaires defined "stainless steel" as alloy steel containing, by weight, 1.2 percent or less of carbon and 10.5 percent or more of chromium, with or without other elements.

[11] Time series data by level of finishing and steel type are presented in Appendix E.

[12] Bharat Forge, the largest Indian producer and exporter of fluid end blocks, reported that it has steadily shifted from producing unfinished fluid end blocks to finished fluid end blocks that its U.S. customer requires. Conference transcript, p. 10 and p. 81 (Powell).

[13] In the past few years, German producer SWG supplied only unfinished stainless alloy steel fluid end blocks to the U.S. market. SWG's customers further process the fluid end blocks to make finished fluid ends for the aftermarket or to manufacturer hydraulic power pumps. Conference transcript, p. 72 (Yang).

Table IV-4
Fluid end blocks: U.S. forgers/finishers' U.S. shipments and U.S. importers' imports by product type, 2019

Item	Product type				
	Finished stainless	Finished other alloy	Unfinished stainless	Unfinished other alloy	All product types
	Quantity (units)				
U.S. forgers/finishers' U.S. shipments	***	***	***	***	***
U.S. imports from:--					
China	***	***	***	***	274
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	2,808
Subject sources	***	***	***	***	6,803
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
U.S. forgers/finishers and U.S. importers	***	***	***	***	***
	Share across (percent)				
U.S. forgers/finishers' U.S. shipments	***	***	***	***	***
U.S. imports from:--					
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
U.S. forgers/finishers and U.S. importers	***	***	***	***	***
	Share down (percent)				
U.S. forgers/finishers' U.S. shipments	***	***	***	***	***
U.S. imports from:--					
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
U.S. forgers/finishers and U.S. importers	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Figure IV-2
Fluid end blocks: U.S. forgers/finishers' and U.S. importers' imports by product type, 2019

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Table IV-5 and figure IV-3 present U.S. forgers/finishers' U.S. shipments and U.S. importers' imports by application in 2019. The majority of U.S. forgers/finishers' U.S. shipments and U.S. importers' imports from all sources were fluid end blocks for hydraulic fracturing pump applications, with the exception of U.S. imports from China, for which the majority were fluid end blocks for mud pump applications.

Only U.S. forgers/finishers reported U.S. shipments and U.S. importers of fluid end blocks from China reported imports of fluid end blocks for mud pump applications. U.S. forgers/finishers reported U.S. shipments and U.S. importers of fluid end blocks from China and nonsubject sources reported imports of fluid end blocks with other applications, including ***.

Table IV-5
Fluid end blocks: U.S. forgers/finishers' and U.S. importers' imports by application, 2019

Item	Application			
	Mud pump	Hydraulic fracturing pump	Other	All applications
	Quantity (units)			
U.S. forgers/finishers' U.S. shipments	***	***	***	***
U.S. imports from:--				
China	***	***	***	274
Germany	***	***	***	***
India	***	***	***	***
Italy	***	***	***	2,808
Subject sources	***	***	***	6,803
Nonsubject sources	***	***	***	***
All import sources	***	***	***	***
U.S. forgers/finishers and U.S. importers	***	***	***	***
	Share across (percent)			
U.S. forgers/finishers' U.S. shipments	***	***	***	***
U.S. imports from:--				
China	***	***	***	***
Germany	***	***	***	***
India	***	***	***	***
Italy	***	***	***	***
Subject sources	***	***	***	***
Nonsubject sources	***	***	***	***
All import sources	***	***	***	***
U.S. forgers/finishers and U.S. importers	***	***	***	***
	Share down (percent)			
U.S. forgers/finishers' U.S. shipments	***	***	***	***
U.S. imports from:--				
China	***	***	***	***
Germany	***	***	***	***
India	***	***	***	***
Italy	***	***	***	***
Subject sources	***	***	***	***
Nonsubject sources	***	***	***	***
All import sources	***	***	***	***
U.S. forgers/finishers and U.S. importers	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Figure IV-3
Fluid end blocks: U.S. forgers/finishers' and U.S. importers' imports by application, 2019

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Presence in the market

Table IV-6, figure IV-4, and figure IV-5 present U.S. imports by month for a two-year (24 month) period. As shown in table IV-6, U.S. imports from each subject country were present from July 2018 through November 2019. There were ***.

Table IV-6
Fluid end blocks: U.S. imports by month, July 2018 through June 2020

U.S. imports	China	Germany	India	Italy	Subject sources	Non-subject sources	All import sources
	Quantity (units)						
2018.-- July	***	***	***	***	871	***	***
August	***	***	***	***	892	***	***
September	***	***	***	***	817	***	***
October	***	***	***	***	1,065	***	***
November	***	***	***	***	1,002	***	***
December	***	***	***	***	1,058	***	***
2019.-- January	***	***	***	***	1,044	***	***
February	***	***	***	***	808	***	***
March	***	***	***	***	916	***	***
April	***	***	***	***	699	***	***
May	***	***	***	***	784	***	***
June	***	***	***	***	346	***	***
July	***	***	***	***	447	***	***
August	***	***	***	***	324	***	***
September	***	***	***	***	408	***	***
October	***	***	***	***	462	***	***
November	***	***	***	***	393	***	***
December	***	***	***	***	172	***	***
2020.-- January	***	***	***	***	222	***	***
February	***	***	***	***	457	***	***
March	***	***	***	***	182	***	***
April	***	***	***	***	302	***	***
May	***	***	***	***	***	***	***
June	***	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Figure IV-4
Fluid end blocks: U.S. imports from individual subject sources, by month, July 2018 through June 2020

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Figure IV-5
Fluid end blocks: U.S. imports from aggregated subject and nonsubject sources, by month, July 2018 through June 2020

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Apparent U.S. consumption

Table IV-7 and figure IV-6 present data on apparent U.S. consumption for fluid end blocks. Apparent U.S. consumption decreased by *** percent in quantity and by *** percent in value from 2017 to 2019, and was *** percent lower in quantity and *** percent lower in value in interim 2020 than in interim 2019.

Both U.S. producers' U.S. shipments and U.S. importers' U.S. shipments from subject sources decreased from 2017 to 2019, by *** percent and 42.9 percent in quantity, respectively. U.S. shipments of imports from China fell the most in quantity (72.4 percent), followed by U.S. shipments of imports from Germany (*** percent), India (*** percent), and Italy (21.6 percent). U.S. producers' U.S. shipments and U.S. importers' U.S. shipments from each subject source were lower in interim 2020 than in interim 2019, by both quantity and value. U.S. producers' U.S. shipments were *** percent lower in interim 2020 than in interim 2019, compared to 61.2 percent lower for U.S. shipments of imports from subject sources.

Table IV-7
Fluid end blocks: Apparent U.S. consumption, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. producers' U.S. shipments	12,383	10,747	***	***	***
U.S. importers' U.S. shipments from.--					
China	1,158	1,064	320	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	3,807	4,085	2,985	***	***
Subject	11,709	10,335	6,685	4,065	1,579
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Apparent U.S. consumption	***	***	***	***	***
	Value (1,000 dollars)				
U.S. producers' U.S. shipments.--					
Fully domestic value	211,862	198,448	***	***	***
Additional value added by toll finishers	***	***	***	***	***
Total	***	***	***	***	***
U.S. importers' U.S. shipments from.--					
China	26,007	22,026	5,309	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	79,202	108,313	72,920	***	***
Subject	272,357	264,412	180,581	111,405	42,687
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Apparent U.S. consumption	***	***	***	***	***

Note.--The quantity for U.S. producers' U.S. shipments reflects the quantity of fluid end blocks sold in the United States by forgers/finishers, which includes the volume toll finished on behalf of the forgers/ finishers. The fully domestic value for U.S. producers' U.S. shipments reflects the value of fluid end blocks sold in the United States by forgers/finishers, which includes the additional value added by toll finishers for merchandise produced on behalf of the forgers/finishers. Separately reported is the additional value added by toll finishers which represents the value added by toll finishers on behalf of U.S. importers and of other U.S. purchasers of fluid end blocks (e.g., OEM fluid end module and pump producers). In measuring U.S. apparent consumption and market share this methodology avoids reclassifying and/or double counting merchandise already reported once by U.S. forgers/finishers or by U.S. importers.

Source: Compiled from data submitted in response to Commission questionnaires.

Figure IV-6
Fluid end blocks: Apparent U.S. consumption, 2017-19, January to June 2019, and January to June 2020

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. market shares

U.S. market share data are presented in table IV-8. From 2017 to 2019, the share in quantity of U.S. producers' U.S. shipments decreased by *** percentage points, while the share in quantity of subject U.S. imports increased by *** percentage points. U.S. producers' U.S. shipments represented a slightly greater share of the market than total and subject imports in 2017 and 2018. By 2019 and continuing into 2020, subject and total imports represented a greater share than U.S. producers' U.S. shipments. U.S. shipments of imports from Italy accounted for the largest increase in market share from 2017 to 2019, increasing by *** percentage points, followed by U.S. shipments of imports from India at *** percentage points. The share of apparent consumption accounted for by U.S. shipments of imports from China and Germany decreased by *** and *** percentage points, respectively, between 2017 and 2019.

Table IV-8
Fluid end blocks: Market shares, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
Apparent U.S. consumption	***	***	***	***	***
	Share of quantity (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. importers' U.S. shipments from.--China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
	Value (1,000 dollars)				
Apparent U.S. consumption	***	***	***	***	***
	Share of value (percent)				
U.S. producers' U.S. shipments.--Fully domestic value	***	***	***	***	***
Value added to imports	***	***	***	***	***
Total	***	***	***	***	***
U.S. importers' U.S. shipments from.--China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table IV-9 presents U.S. forgers/finishers' U.S. shipments and U.S. importers' imports of stainless steel fluid end blocks and table IV-10 presents U.S. forgers/finishers' U.S. shipments and U.S. importers' imports of non-stainless alloy steel fluid end blocks. As shown in table IV-9, the quantity of U.S. producers' U.S. shipments of stainless steel fluid end blocks was higher than the quantity of U.S. importers' imports in all time periods for which data were collected. Conversely, as shown in table IV-10, the quantity of U.S. importers' imports of non-stainless alloy steel fluid end blocks was higher than the quantity of U.S. producers' U.S. shipments of non-stainless alloy steel fluid end blocks in all time periods for which data were collected.[14] U.S. producers have accounted for an increasing share of U.S. shipments of stainless steel fluid end blocks since 2017. In contrast, U.S. importers have accounted for an increasing share of imports of Other, non-stainless alloy steel fluid end blocks since 2017.

[14] According to Mr. Nicholas Poradek, Vice-President of Finance at purchaser ST9 Gas + Oil, LLC, other than Halliburton, no other purchaser demands non-stainless alloy steel fluid end blocks. Hearing transcript, p. 164 (Poradek). Of the *** non-stainless alloy steel fluid end block imports reported during the period for which data were collected, ***, or *** percent, were reported by either ***. U.S. Importers' Questionnaire, responses to questions II-5c, II-6c, II-7c, II-8c, II-9c, and III-26. See also Written Statement of Information by Halliburton Energy Services, Inc., January 14, 2020.

Table IV-9
Stainless steel fluid end blocks: U.S. producers' U.S. shipments and U.S. importers' imports, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. importers' imports from.--					
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Combined producers and importers	***	***	***	***	***
	Share of quantity (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. importers' imports from.--					
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Combined producers and importers	***	***	***	***	***
	Ratio to total U.S. shipments (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. importers' imports from.--					
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Combined producers and importers	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table IV-10
Other, non-stainless alloy steel fluid end blocks: U.S. producers' U.S. shipments and U.S. importers' imports, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. importers' imports from.--					
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Combined producers and importers	***	***	***	***	***
	Share of quantity (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. importers' imports from.--					
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Combined producers and importers	***	***	***	***	***
	Ratio to total U.S. shipments (percent)				
U.S. producers' U.S. shipments	***	***	***	***	***
U.S. importers' imports from.--					
China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***
Combined producers and importers	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Part V: Pricing data

Factors affecting prices

Raw material costs

Fluid end blocks are produced in a variety of steel chemistries, combining such inputs as iron, nickel, copper, chromium, and molybdenum, and can be made from stainless steel or non-stainless alloy steel. The material type, quality of a forged block, and the finishing operations performed on it can affect the life of the product.[1] ***.[2] It is estimated that the majority of the conversion to stainless steel fluid end blocks occurred before or during 2016.[3] Stainless steel fluid end blocks can have a longer product lifecycle (potentially over 1,200 hours) while non-stainless alloy steel fluid end blocks are less costly to produce and have a shorter lifecycle (approximately 300-500 hours). Specifications can be proprietary or made to purchaser requirements.

Both U.S. producers and importers reported that raw material prices have increased since 2017. As demonstrated in figure V-1, prices for stainless steel bar and alloy steel bar increased overall between January 2017 and September 2020, with net increases of *** percent and *** percent, respectively. Prices for both stainless steel bar and non-stainless alloy steel bar peaked in early 2019 and late 2018, respectively, and declined through September 2020.

[1] Purchaser *** questionnaire response at III-29.
[2] ***.
[3] Hearing transcript, p. 164 (Poradek) and p. 165 (Betemps).

Figure V-1
Stainless steel and alloy steel cold-finished bar: Indexed average prices, by month, January 2017-September 2020

* * * * * * *

Source: ***.

Transportation costs to the U.S. market

Transportation costs for fluid end blocks shipped from subject countries to the United States averaged 7.6 percent for China, 4.7 percent for Germany, 5.7 percent for India, and 4.9 percent for Italy during 2019. These estimates were derived from official import data and represent the transportation and other charges on imports.[4]

U.S. inland transportation costs

Four of 6 responding U.S. forger/finishers and 12 of 15 responding importers reported that they typically arrange transportation to their customers. Four U.S. forger/finishers estimated U.S. inland transportation costs, ranging from 0.7 to 1.2 percent: ***.

[4] The estimated transportation costs were obtained by subtracting the customs value from the c.i.f. value of the imports for 2019 and then dividing by the customs value based on the HTS subheading s 7218.91.0030, 7218.99.0030, 7224.90.0015, 7224.90.0045, 7326.19.0010, 7326.90.8688, or 8413.91.9055.

Importers' responses ranged between 0.7 to 11.0 percent, with most importers reporting costs of 1 to 3 percent.

Pricing practices

Pricing methods

U.S. forgers/finishers and importers reported setting prices using mostly transaction-by-transaction negotiations, although importers also used contract sales (table V-1).

Table V-1
Fluid end blocks: U.S. producers' and importers' reported price setting methods, by number of responding firms

Method	U.S. forgers/finishers	Importers
Transaction-by-transaction	6	12
Contract	1	6
Set price list	1	1
Other	---	1
Responding firms	6	16

Note: The sum of responses down may not add up to the total number of responding firms as each firm was instructed to check all applicable price setting methods employed.

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. forgers/finishers reported selling the majority of their fluid end blocks under short-term contracts, with the remainder sold in the spot market. U.S. importers reported selling the vast majority of their fluid end blocks under short-term contracts, with a small share sold in the spot market (table V-2). U.S. forgers/finishers reported an average short-term contract provision of 90 days, while importers reported short-term contract provisions between 60 and 180 days. Most U.S. forgers/finishers and importers reported that short-term contracts fix to quantity and price and do not allow for price renegotiations.

Table V-2
Fluid end blocks: U.S. producers' and importers' shares of U.S. commercial shipments by type of sale, 2019

Type of sale	U.S. producers	Importers
Long-term contracts	---	---
Annual contracts	---	---
Short-term contracts	58.2	91.8
Spot sales	41.8	8.2
Total	---	---

Note: Because of rounding, figures may not add to the totals shown.

Source: Compiled from data submitted in response to Commission questionnaires.

Half of responding purchasers (7 of 14) reported that they purchase on demand. Of these, two purchasers (***) reported that they review their purchase orders

monthly or semi-monthly. One purchaser, ***, reported that it has not purchased additional product since December 2018. Three purchasers reported that they purchase product quarterly, while two purchase monthly, and one purchases weekly. Eight of 15 responding purchasers reported that their purchasing frequency had changed since 2017, with most of them reporting either a cessation or slowing of purchases due to the COVID-19 pandemic. Four purchasers reported contacting up to four suppliers before making a purchase, while three firms reported contacting only one supplier, two reported contacting up to two suppliers, and three reported contacting up to three suppliers. One purchaser reported contacting up to five suppliers, and one purchaser reported contacting up to ten.

Sales terms and discounts

The majority of U.S. forgers/finishers and importers typically quote prices on an f.o.b. basis. Most U.S. forgers/finishers and importers do not offer discounts. Two forgers/finishers *** reported that they consider discounts on a case-by-case basis.

Price leadership

Few purchasers identified price leaders. Purchasers *** identified Ellwood as a price leader. Ellwood maintains that it is a high price leader and that its prices are consistent with rising costs.[5] Purchaser/importer *** did not identify a price leader but reported that market conditions and customer feedback are more important determinants as there is no published price list for fluid end blocks.

[5] Hearing transcript, pp. 99-100 (Levy).

Price and purchase cost data

The Commission requested U.S. producers and importers to provide quarterly data for the total quantity and f.o.b. value of the following fluid end block products shipped to unrelated U.S. customers during January 2017-June 2020.[6] Firms that imported these products from China, Germany, India, and/or Italy for their own use were requested to provide import purchase cost data.

[6] Staff incorporated changes to the pricing product definitions made between the preliminary and final investigations, such as new definitions, specific weight and machining descriptions, and an emphasis on reporting only described pricing product definitions. In the final phase of these investigations, the Commission requested price data for six products and purchase cost data for six products, compared to four products and one product, respectively, in the preliminary phase.

Product 1.-- 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 7,300 and 7,550 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Product 2.-- 17-4 Solid Quint. Quintuplex fluid end block that has been rough machined but not drilled, made of forged stainless steel, with a chromium content between 14.50% and 18.00%, a nickel content between 2.90% and 5.10%, and a net weight between 7,500 and 9,300 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Product 3.-- 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 6,950 and 7,250 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Product 4.-- 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, undergone additional machining and finishing but not in a fully finished condition, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 4,000 and 4,700 lbs.

Product 5.-- 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and finished machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 4,500 and 5,000 lbs.

Product 6.-- 4330mod Drilled Mud Pump Block. Fluid end block that has been drilled with no more than one hole per face, rough machined, made of forged alloy steel, with a chromium content between 0.65% and 1.00%, a nickel content between 1.60% and 2.05%, and a net weight between 3,100 and 3,300 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Price data

Three U.S. producers and 7 importers provided usable pricing data for sales of fluid end blocks, although not all firms reported pricing for all products for all quarters.[7] Pricing data reported by these firms accounted for approximately *** percent of U.S. producers' shipments of fluid end blocks in 2019, and *** percent, *** percent, and *** percent of subject imports from Germany, India, and Italy, respectively, in 2019.[8] No pricing data were reported for subject imports of fluid end blocks from China.

Price data for products 1-6 are presented in tables V-3 to V-8 and figures V-2 to V-7.

[7] Per-unit pricing data are calculated from total quantity and total value data provided by U.S. producers and importers. The precision and variation of these figures may be affected by rounding, limited quantities, and producer or importer estimates.

[8] China was the smallest source of subject imports in each full or partial year, and these imports were primarily for internal consumption. Commercial shipments accounted for less than *** percent of U.S. shipments of fluid end blocks from China.

Table V-3
Fluid end blocks: Weighted-average f.o.b. prices and quantities of domestic and imported product 1 and margins of underselling/(overselling), by quarter, January 2017-June 2020

Period	United States		China			Germany		
	Price (per unit)	Quantity (units)	Price (per unit)	Quantity (units)	Margin (percent)	Price (per unit)	Quantity (units)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***

Period	India			Italy		
	Price (per unit)	Quantity (units)	Margin (percent)	Price (per unit)	Quantity (units)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***

Note: Product 1: 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 7,300 and 7,550 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-4
Fluid end blocks: Weighted-average f.o.b. prices and quantities of domestic and imported product 2 and margins of underselling/(overselling), by quarter, January 2017-June 2020

Period	United States		China			Germany		
	Price (per unit)	Quantity (units)	Price (per unit)	Quantity (units)	Margin (percent)	Price (per unit)	Quantity (units)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***

Period	India			Italy		
	Price (per unit)	Quantity (units)	Margin (percent)	Price (per unit)	Quantity (units)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***

Note: Product 2: 17-4 Solid Quint. Quintuplex fluid end block that has been rough machined but not drilled, made of forged stainless steel, with a chromium content between 14.50% and 18.00%, a nickel content between 2.90% and 5.10%, and a net weight between 7,500 and 9,300 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-5
Fluid end blocks: Weighted-average f.o.b. prices and quantities of domestic and imported product 3 and margins of underselling/(overselling), by quarter, January 2017-June 2020

Period	United States		China			Germany		
	Price (per unit)	Quantity (units)	Price (per unit)	Quantity (units)	Margin (percent)	Price (per unit)	Quantity (units)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***

Period	India			Italy		
	Price (per unit)	Quantity (units)	Margin (percent)	Price (per unit)	Quantity (units)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***

Note: Product 3: 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 6,950 and 7,250 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-6
Fluid end blocks: Weighted-average f.o.b. prices and quantities of domestic and imported product 4 and margins of underselling/(overselling), by quarter, January 2017-June 2020

Period	United States		China			Germany		
	Price (per unit)	Quantity (units)	Price (per unit)	Quantity (units)	Margin (percent)	Price (per unit)	Quantity (units)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***

Period	India			Italy		
	Price (per unit)	Quantity (units)	Margin (percent)	Price (per unit)	Quantity (units)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***

Note: Product 4: 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, undergone additional machining and finishing but not in a fully finished condition, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 4,000 and 4,700 lbs.

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-7
Fluid end blocks: Weighted-average f.o.b. prices and quantities of domestic and imported product 5 and margins of underselling/(overselling), by quarter, January 2017-June 2020

Period	United States		China			Germany		
	Price (per unit)	Quantity (units)	Price (per unit)	Quantity (units)	Margin (percent)	Price (per unit)	Quantity (units)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***

Period	India			Italy		
	Price (per unit)	Quantity (units)	Margin (percent)	Price (per unit)	Quantity (units)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***

Note: Product 5: 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and finished machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 4,500 and 5,000 lbs.

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-8
Fluid end blocks: Weighted-average f.o.b. prices and quantities of domestic and imported product 6 and margins of underselling/(overselling), by quarter, January 2017-June 2020

Period	United States		China			Germany		
	Price (per unit)	Quantity (units)	Price (per unit)	Quantity (units)	Margin (percent)	Price (per unit)	Quantity (units)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***

Period	India			Italy		
	Price (per unit)	Quantity (units)	Margin (percent)	Price (per unit)	Quantity (units)	Margin (percent)
2017: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***

Note: Product 6: 4330mod Drilled Mud Pump Block. Fluid end block that has been drilled with no more than one hole per face, rough machined, made of forged alloy steel, with a chromium content between 0.65% and 1.00%, a nickel content between 1.60% and 2.05%, and a net weight between 3,100 and 3,300 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-2
Fluid end blocks: Weighted-average prices and quantities of domestic and imported product 1, by quarter, January 2017-June 2020

* * * * * * *

Product 1: 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 7,300 and 7,550 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-3
Fluid end blocks: Weighted-average prices and quantities of domestic and imported product 2, by quarter, January 2017-June 2020

* * * * * * *

Product 2: 17-4 Solid Quint. Quintuplex fluid end block that has been rough machined but not drilled, made of forged stainless steel, with a chromium content between 14.50% and 18.00%, a nickel content between 2.90% and 5.10%, and a net weight between 7,500 and 9,300 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-4
Fluid end blocks: Weighted-average prices and quantities of domestic and imported product 3, by quarter, January 2017-June 2020

* * * * * * *

Product 3: 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 6,950 and 7,250 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-5
Fluid end blocks: Weighted-average prices and quantities of domestic and imported product 4, by quarter, January 2017-June 2020

* * * * * * *

Product 4: 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, undergone additional machining and finishing but not in a fully finished condition, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 4,000 and 4,700 lbs.

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-6
Fluid end blocks: Weighted-average prices and quantities of domestic and imported product 5, by quarter, January 2017-June 2020

* * * * * * *

Product 5: 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and finished machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 4,500 and 5,000 lbs.

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-7
Fluid end blocks: Weighted-average prices and quantities of domestic and imported product 6, by quarter, January 2017-June 2020

* * * * * * *

Product 6: 4330mod Drilled Mud Pump Block. Fluid end block that has been drilled with no more than one hole per face, rough machined, made of forged alloy steel, with a chromium content between 0.65% and 1.00%, a nickel content between 1.60% and 2.05%, and a net weight between 3,100 and 3,300 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Source: Compiled from data submitted in response to Commission questionnaires.

Import purchase cost data

Four importers reported useable import purchase cost data for products 1-5.[9] Purchase cost data reported by these firms accounted for ***.[10] Nine importers reported importing subject imports from China but did not provide any price or purchase cost data for these imports, despite staff communication.[11] *** were the largest importers of fluid end blocks for internal use. Landed duty-paid purchase cost data for subject imports are presented in tables V-9 to V-14, along with U.S. producers' sales prices.[12]

Importers reporting import purchase cost data were asked to provide additional information regarding the costs and benefits of importing fluid end blocks directly.

Three importers (***) reported that they incurred additional costs beyond landed duty-paid costs by importing fluid end blocks directly rather than purchasing from a U.S. producer or U.S. importer. Of these, two importers (***) estimated that the total additional costs incurred were 1 and 5 percent, respectively, of the landed duty-paid value. Firms were also asked to identify specific additional costs they incurred as a result of importing fluid end blocks. Reported costs include logistics and ocean freight (*** percent each), and customs and port terminal fees (*** percent).

Firms were also asked to describe how the additional costs incurred as a result of importing fluid end blocks directly compared with additional costs incurred when purchasing from a U.S. producer or U.S. importer. Importer/purchaser *** reported that the costs were similar compared to U.S.-produced fluid end blocks, but that there were differences in delivery, quality, and total cost of ownership.

All importers were asked whether they compare the costs of importing to the cost of purchasing from a U.S. producer or U.S. importer in determining whether to import fluid end blocks. Eight importers reported that they compare the costs of importing to the cost of purchasing from a U.S. producer. Five importers compare the cost of importing to the cost of

[9] Import purchase cost data was reported for products 3 and 4 from Germany, products 1 and 5 from India, and products 1, 2, 4, and 5 from Italy. No importers reported purchase cost data for product 6.

[10] Purchase cost coverage is based on imports reported in questionnaires.

[11] Purchase cost data were revised for India, based on ***.

[12] LDP import value does not include any potential additional costs that a purchaser may incur by importing rather than purchasing from another importer or U.S. producer. Price-cost differentials are based on LDP import values whereas margins of underselling/overselling are based on importers' sales prices.

purchasing from a U.S. importer, and 7 importers do not compare costs of purchasing from either U.S. producers or importers.[13]

Four importers identified benefits from importing fluid end blocks directly instead of purchasing from U.S. producers or importers; the reported benefits included quality, specifications, availability of stainless steel, available capacity, excess overseas inventory, cost of ownership, supply chain optimization, and on time delivery. Importers also reported foreign firm affiliations as a benefit.

Firms were also asked whether the import purchase cost (both excluding and including additional costs) of fluid end blocks they imported are lower than the price of purchasing fluid end blocks from a U.S. producer or importer. Firms were asked how much they saved by importing directly. Two importers estimated that they saved *** percent and *** percent of the purchase price by importing fluid end blocks rather than purchasing from a U.S. importer, and four importers estimated saving between *** percent compared to purchasing the product from a U.S. producer.[14]

[13] ***.

[14] Five firms reported that they based their estimates on previous company transactions, none reported basing their estimates on market research, and two reported other bases for their estimates, including quote comparisons.

Table V-9
Fluid end blocks: Import landed duty-paid purchase costs and domestic prices, and quantities of product 1, and price-cost differentials, by quarter, January 2017-June 2020

Period	United States		China			Germany		
	Price (per unit)	Quantity (units)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)
2017: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***

Period	India			Italy		
	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)
2017: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***

Note: Product 1: 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 7,300 and 7,550 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).
Note: U.S. producer price data is the same as that presented in table V-3.

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-10
Fluid end blocks: Import landed duty-paid purchase costs and domestic prices, and quantities of product 2, and price-cost differentials, by quarter, January 2017-June 2020

Period	United States		China			Germany		
	Price (per unit)	Quantity (units)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)
2017: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***

Period	India			Italy		
	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)
2017: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***

Note: Product **2**: 17-4 Solid Quint. Quintuplex fluid end block that has been rough machined but not drilled, made of forged stainless steel, with a chromium content between 14.50% and 18.00%, a nickel content between 2.90% and 5.10%, and a net weight between 7,500 and 9,300 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Note: U.S. producer price data is the same as that presented in table V-4.

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-11
Fluid end blocks: Import landed duty-paid purchase costs and domestic prices, and quantities of product 3, and price-cost differentials, by quarter, January 2017-June 2020

Period	United States		China			Germany		
	Price (per unit)	Quantity (units)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)
2017: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***

Period	India			Italy		
	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)
2017: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***

Note: Product 3: 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 6,950 and 7,250 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Note: U.S. producer price data is the same as that presented in table V-5**.**

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-12
Fluid end blocks: Import landed duty-paid purchase costs and domestic prices, and quantities of product 4, and price-cost differentials, by quarter, January 2017-June 2020

Period	United States		China			Germany		
	Price (per unit)	Quantity (units)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)
2017: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***

Period	India			Italy		
	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)
2017: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***

Note: Product 4: 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, undergone additional machining and finishing but not in a fully finished condition, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 4,000 and 4,700 lbs.

Note: U.S. producer price data is the same as that presented in table V-6**.**

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-13
Fluid end blocks: Import landed duty-paid purchase costs and domestic prices, and quantities of product 5, and price-cost differentials, by quarter, January 2017-June 2020

Period	United States		China			Germany		
	Price (per unit)	Quantity (units)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)
2017: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***

Period	India			Italy		
	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)
2017: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***

Note: Product 5: 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and finished machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 4,500 and 5,000 lbs.

Note: U.S. producer price data is the same as that presented in table V-7**.**

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-14
Fluid end blocks: Import landed duty-paid purchase costs and domestic prices, and quantities of product 6, and price-cost differentials, by quarter, January 2017-June 2020

Period	United States		China			Germany		
	Price (per unit)	Quantity (units)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)
2017: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***	***	***

Period	India			Italy		
	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)	Unit LDP value (dollars per unit)	Quantity (units)	Price / cost differential (percent)
2017: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2018: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2019: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***
July-Sept.	***	***	***	***	***	***
Oct.-Dec.	***	***	***	***	***	***
2020: Jan.-Mar.	***	***	***	***	***	***
Apr.-June	***	***	***	***	***	***

Note: Product 6: 4330mod Drilled Mud Pump Block. Fluid end block that has been drilled with no more than one hole per face, rough machined, made of forged alloy steel, with a chromium content between 0.65% and 1.00%, a nickel content between 1.60% and 2.05%, and a net weight between 3,100 and 3,300 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Note: U.S. producer price data is the same as that presented in table V-8**.**

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-8
Fluid end blocks: U.S. producer prices and import purchase costs, and quantities, of product 1, by quarter, January 2017-June 2020

* * * * * * *

Note: Product 1: 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 7,300 and 7,550 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-9
Fluid end blocks: U.S. producer prices and import purchase costs, and quantities, of product 2, by quarter, January 2017-June 2020

* * * * * * *

Note: Product 2: 17-4 Solid Quint. Quintuplex fluid end block that has been rough machined but not drilled, made of forged stainless steel, with a chromium content between 14.50% and 18.00%, a nickel content between 2.90% and 5.10%, and a net weight between 7,500 and 9,300 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-10
Fluid end blocks: U.S. producer prices and import purchase costs, and quantities, of product 3, by quarter, January 2017-June 2020

* * * * * * *

Note: Product 3: 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 6,950 and 7,250 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-11
Fluid end blocks: U.S. producer prices and import purchase costs, and quantities, of product 4, by quarter, January 2017-June 2020

* * * * * * *

Note: Product 4: 15-5 Drilled Quint. Quintuplex fluid end block that has been drilled and rough machined, undergone additional machining and finishing but not in a fully finished condition, made of forged stainless steel, with a chromium content between 13.50% and 16.50%, a nickel content between 3.90% and 6.10%, and a net weight between 4,000 and 4,700 lbs.

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-12
Fluid end blocks: U.S. producer prices and import purchase costs, and quantities, of product 5, by quarter, January 2017-June 2020

* * * * * * *

Note: Product 5: 4330mod Drilled Quint. Quintuplex fluid end block that has been drilled and finished machined, made of forged alloy steel, with a chromium content between 1.30% and 1.65%, a nickel content between 2.90% and 3.60%, and a net weight between 4,500 and 5,000 lbs.

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-13
Fluid end blocks: U.S. producer prices and import purchase costs, and quantities, of product 6, by quarter, January 2017-June 2020

* * * * * * *

Note: Product 6: 4330mod Drilled Mud Pump Block. Fluid end block that has been drilled with no more than one hole per face, rough machined, made of forged alloy steel, with a chromium content between 0.65% and 1.00%, a nickel content between 1.60% and 2.05%, and a net weight between 3,100 and 3,300 lbs. Do not include FEBs that have been more than rough machined (e.g., finish machining, prestressing, etc.).

Source: Compiled from data submitted in response to Commission questionnaires.

Price and purchase cost trends

Table V-15 summarizes the price trends and purchase cost trends, by country and by product. Prices and purchase costs generally decreased between 2019 and 2020.

Table V-15
Fluid end blocks: Summary of weighted-average f.o.b. prices and purchase costs for products 1-6 from the United States and China

Item	Number of quarters	Low price (per unit)	High price (per unit)	Quarterly change (percent)
Product 1				
United States	***	***	***	***
China	***	***	***	***
China (purchase cost)	***	***	***	***
Germany	***	***	***	***
Germany (purchase cost)	***	***	***	***
India	***	***	***	***
India (purchase cost)	***	***	***	***
Italy	***	***	***	***
Italy (purchase cost)	***	***	***	***
Product 2				
United States	***	***	***	***
China	***	***	***	***
China (purchase cost)	***	***	***	***
Germany	***	***	***	***
Germany (purchase cost)	***	***	***	***
India	***	***	***	***
India (purchase cost)	***	***	***	***
Italy	***	***	***	***
Italy (purchase cost)	***	***	***	***
Product 3				
United States	***	***	***	***
China	***	***	***	***
China (purchase cost)	***	***	***	***
Germany	***	***	***	***
Germany (purchase cost)	***	***	***	---
India	***	***	***	***
India (purchase cost)	***	***	***	***
Italy	***	***	***	***
Italy (purchase cost)	***	***	***	***
Product 4				
United States	***	***	***	***
China	***	***	***	***
China (purchase cost)	***	***	***	***
Germany	***	***	***	***
Germany (purchase cost)	***	***	***	***
India	***	***	***	***
India (purchase cost)	***	***	***	***
Italy	***	***	***	***
Italy (purchase cost)	***	***	***	***

Table continued on next page.

Table V-15--Continued
Fluid end blocks: Summary of weighted-average f.o.b. prices and purchase costs for products 1-6 from the United States and China

Item	Number of quarters	Low price (per unit)	High price (per unit)	Quarterly change (percent)
Product 5				
United States	***	***	***	***
China	***	***	***	***
China (purchase cost)	***	***	***	***
Germany	***	***	***	***
Germany (purchase cost)	***	***	***	***
India	***	***	***	***
India (purchase cost)	***	***	***	***
Italy	***	***	***	***
Italy (purchase cost)	***	***	***	***
Product 6				
United States	***	***	***	***
China	***	***	***	***
China (purchase cost)	***	***	***	***
Germany	***	***	***	***
Germany (purchase cost)	***	***	***	***
India	***	***	***	***
India (purchase cost)	***	***	***	***
Italy	***	***	***	***
Italy (purchase cost)	***	***	***	***

Note.-- The quarterly change represents the compound average quarterly rate of change of the period for which data are available for a given product / source. This calculation controls for differences between the first quarter available and the last quarter available.

Source: Compiled from data submitted in response to Commission questionnaires.

Price comparisons

As shown in table V-16, prices for fluid end blocks imported and commercially sold from subject countries were below the price of U.S.-produced fluid end blocks in 28 of 41 instances (4,118 units); margins of underselling ranged from 0.02 to 39.7 percent. No price data were reported for fluid end blocks imported from China. Prices for fluid end blocks imported from Germany were below those for U.S.-produced fluid end blocks in all 10 instances (*** units). Margins of underselling for fluid end blocks imported from Germany ranged from *** percent. Prices for product imported from India were below those for U.S.-produced product in 7 of 13 instances (*** units); margins of underselling ranged from *** percent. In the remaining 6 instances (*** units), prices for fluid end blocks imported from India were between *** percent above prices for the domestic product. Prices for fluid end blocks imported from Italy were below those for U.S.-produced product in 11 of 18 instances (*** units); margins of underselling ranged from *** percent. In the remaining 7 instances (*** units), prices for product from Italy were between *** percent above prices for the domestic product. No price comparisons were available for subject fluid end blocks imported from China.

Table V-16

Fluid end blocks: Instances of underselling/overselling and the range and average of margins, by product and by country, January 2017-June 2020

Source	Underselling				
	Number of quarters	Quantity (units)	Average margin (percent)	Margin range (percent)	
				Min	Max
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Product 3	***	***	***	***	***
Product 4	***	***	***	***	***
Product 5	***	***	***	***	***
Product 6	***	***	***	***	***
Total, underselling	28	4,118	21.0	0.02	39.7
China	---	***	***	***	***
Germany	10	***	***	***	***
India	7	***	***	***	***
Italy	11	***	***	***	***
Total, underselling	28	4,118	21.0	0.02	39.7
2017	***	***	***	***	***
2018	***	***	***	***	***
2019	***	***	***	***	***
2020 Jan-Jun	***	***	***	***	***
Total, underselling	28	4,118	21.0	0.0	39.7
Source	**(Overselling)**				
	Number of quarters	Quantity[1] (units)	Average margin (percent)	Margin range (percent)	
				Min	Max
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Product 3	***	***	***	***	***
Product 4	***	***	***	***	***
Product 5	***	***	***	***	***
Product 6	***	***	***	***	***
Total, overselling	13	1,265	(49.7)	(1.9)	(96.1)
China	---	***	***	***	***
Germany	---	***	***	***	***
India	6	***	***	***	***
Italy	7	***	***	***	***
Total, overselling	13	1,265	(49.7)	(1.9)	(96.1)
2017	***	***	***	***	***
2018	***	***	***	***	***
2019	***	***	***	***	***
2020 Jan-Jun	***	***	***	***	***
Total, overselling	13	1,265	(49.7)	(1.9)	(96.1)

Note: These data include only quarters in which there is a comparison between the U.S. and subject product. There were no underselling/overselling comparisons available for subject fluid end blocks imported from China.

Source: Compiled from data submitted in response to Commission questionnaires.

Price-cost comparisons

As shown in table V-17, landed duty-paid costs for fluid end blocks imported from subject countries were below the price of U.S.-produced fluid end blocks in 14 of 24 instances (1,079 units); price-cost differentials ranged from ***. No purchase cost data were available for China.[15] The landed duty-paid cost for fluid end blocks imported from Germany was above the sales price for U.S.-produced product in the only instance available (*** units); the price-cost differential was *** percent. Landed duty-paid costs for fluid end blocks imported from India were below the sales price for U.S.-produced product in 1 of 5 instances (*** units); the price-cost differential was *** percent. In the remaining 4 instances (*** units), landed duty-paid costs for fluid end blocks from India were between *** percent above sales prices for the domestic product. Landed duty-paid costs for fluid end blocks imported from Italy were below the sales price for U.S.-produced product in 13 of 18 instances (*** units); price-cost differentials ranged from *** percent. In the remaining 5 instances ***, landed duty-paid costs for fluid end blocks from Italy were between *** percent above sales prices for the domestic product.

[15] ***.

Table V-17
Fluid end blocks: Comparisons of import purchase costs and U.S.-producer sales prices, by product and country, January 2017-June 2020

Source	Import purchase cost data lower than U.S. price				
	Number of quarters	Quantity[1] (units)	Price-Cost Difference (percent)	Price-Cost Difference (percent)	
				Min	Max
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Product 3	***	***	***	***	***
Product 4	***	***	***	***	***
Product 5	***	***	***	***	***
Product 6	***	***	***	***	***
Total, lower than U.S.	14	1,079	9.8	0.5	28.5
China	---	***	***	***	***
Germany	---	***	***	***	***
India	1	***	***	***	***
Italy	13	***	***	***	***
Total, lower than U.S.	14	1,079	9.8	0.5	28.5
2017	***	***	***	***	***
2018	***	***	***	***	***
2019	***	***	***	***	***
2020 Jan-Jun	***	***	***	***	***
Total, lower than U.S.	14	1,079	9.8	0.5	28.5

Table continued on next page.

Table V-17--Continued
Fluid end blocks: Comparisons of import purchase costs and U.S.-producer sales prices, by product and country, January 2017-June 2020

Source	Import purchase cost data being higher than U.S. price				
	Number of quarters	Quantity[1] (units)	Price-Cost Difference (percent)	Price-Cost Difference (percent)	
				Min	Max
Product 1	***	***	***	***	***
Product 2	***	***	***	***	***
Product 3	***	***	***	***	***
Product 4	***	***	***	***	***
Product 5	***	***	***	***	***
Product 6	***	***	***	***	***
Total, higher than U.S.	10	1,019	(54.5)	(4.5)	(110.4)
China	---	***	***	***	***
Germany	1	***	***	***	***
India	4	***	***	***	***
Italy	5	***	***	***	***
Total, higher than U.S.	10	1,019	(54.5)	(4.5)	(110.4)
2017	***	***	***	***	***
2018	***	***	***	***	***
2019	***	***	***	***	***
2020 Jan-Jun	***	***	***	***	***
Total, higher than U.S.	10	1,019	(54.5)	(4.5)	(110.4)

Note: These data include only quarters in which there is a comparison between the U.S. and subject product.
Note: All other includes all other sources and unknown sources.
Note: Percentage points (pp) change: Change in the share of the firm's total purchases of domestic and/or subject country imports between first and last years.

Source: Compiled from data submitted in response to Commission questionnaires.

Lost sales and lost revenue

In the preliminary phase of these investigations, the Commission requested that U.S. producers of fluid end blocks report purchasers with which they experienced instances of lost sales or revenue due to competition from imports of fluid end blocks from China, Germany, India, and/or Italy during January 2016-September 2019. Two U.S. producers submitted lost sales and lost revenue allegations. The two responding U.S. producers identified 23 firms with which they lost sales or revenue (10 consisting lost sales allegations, 1 consisting of lost revenue allegations, and 10 consisting of both types of allegations).

In the final phase of these investigations, of six responding U.S. forger/finishers, six reported that they had to reduce prices, two reported they had to roll back announced price increases, and six reported that they had lost sales.

Staff contacted 40 purchasers and received responses from 15 purchasers.[16] Responding purchasers reported purchasing/importing *** units of fluid end blocks during January 2017-June 2020 (table V-18).

[16] Four purchasers submitted lost sales lost revenue survey responses in the preliminary phase, but did not submit purchaser questionnaire responses in the final phase.

Table V-18
Fluid end blocks: Purchasers' reported purchases and imports, January 2017-June 2020

Purchaser	Purchases and imports in January 2017-June 2020 (units)				Change in domestic share (pp, 2017-19)	Change in subject country share (pp, 2017-19)	Share of total purchases (percent)
	Domestic	Subject	All other	Total			
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
***	***	***	***	***	***	***	***
Total	***	***	***	***	***	***	***

Note: All other includes all other sources and unknown sources.
Note: Percentage points (pp) change: Change in the share of the firm's total purchases of domestic and/or subject country imports between first and last years.

Note: ***.

Source: Compiled from data submitted in response to Commission questionnaires.

Of the 15 responding purchasers, 10 reported that, since 2017, they had purchased fluid end blocks from Italy, 4 had purchased imported fluid end blocks from China, and 3 purchased imported fluid end blocks from Germany instead of U.S.-produced fluid end blocks; none reported purchasing fluid end blocks imported from India instead of domestically produced fluid end blocks (tables V-19 and V-20). Respectively, 4 (Italy), 3 (China), and 2 (Germany) of these purchasers reported that subject import prices were lower than U.S.-produced product. Three purchasers reporting purchases of fluid end blocks from China and one purchaser of product imported from Italy reported that price was a primary reason for the decision to purchase product imported from China rather than U.S.-produced product, while none reported price as a primary reason for Germany. Three purchasers estimated the quantity of fluid end blocks from subject sources purchased instead of domestic product; quantities ranged from *** to *** units. Purchasers identified quality/performance, new product/steel

specification, and lead time as non-price reasons for purchasing imported rather than U.S.-produced product.

Of the 15 responding purchasers, one reported that U.S. producers had reduced prices in order to compete with lower-priced imports from subject countries. Three purchasers reported U.S. producers had not reduced prices to compete with lower-priced imports from China, Germany, and India, while seven reported that U.S. producers had not reduced prices to compete with lower-priced imports from Italy. Ten reported that they did not know. Only one purchaser (***) provided price reduction estimates; ***. In describing the price reductions, purchaser *** indicated that the reductions were “to compete with low price subject imports.”

Table V-19
Fluid end blocks: Purchasers' responses to purchasing subject instead of domestic, by firm

Purchaser	Subject imports purchased instead of domestic (Y/N)	Imports priced lower (Y/N)	If purchased subject imports instead of domestic, was price a primary reason		
			Y/N	If Yes, quantity (units)	If No, non-price reason
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
***	***	***	***	***	***
Total	Yes--12; No--3	Yes--6; No--4	Yes--4; No--7	***	

Table V-20
Fluid end blocks: Purchasers' responses to purchasing subject imports instead of domestic product, by country

Source	Count of purchasers reporting subject instead of domestic	Count of purchasers reported that imports were priced lower	Count of purchasers reporting that price was a primary reason for shift	Quantity purchased instead of domestic (units)
China	4	3	3	***
Germany	3	2	---	---
India	---	---	---	---
Italy	10	4	1	***
Any subject source	12	6	4	***

Source: Compiled from data submitted in response to Commission questionnaires.

Part VI: Financial experience of U.S. producers

Background

The financial results of six U.S. forgers/finishers and eight toll finishers of fluid end blocks are presented in this part of the report.[1] Production is dispersed primarily among forgers/finishers and toll finishers. Most downstream OEM and non-OEM finishers of fluid end modules (sometimes abbreviated as "FEMs") were unable to provide financial data specific to fluid end block finishing.

With the exception of ***, which reported on the basis of International Financial Reporting Standards (IFRS), the responding U.S. forgers/finishers reported their financial results on the basis of Generally Accepted Accounting Principles (GAAP). All six U.S. forgers/finishers and toll finishers reported their financial results on a calendar-year basis. Figure VI-1 presents the share of the total reported net sales quantity of responding U.S. forgers/finishers in 2019. Each fluid end block is sold based on specific customer specification, resulting in a large variety of product mix.[2] Revenue primarily reflects commercial sales, but also includes a small amount of transfers to related firms reported by *** that accounted for four percent or less of net sales quantity during the period for which data were collected, and are not shown separately in this part of the report.[3] [4]

[1] Eastham, Ellwood, Finkl, Forged Products, Scot Forge, and Union Electric are the responding U.S. forgers/finishers; Acme, Bargo, Delaware Dynamics, Medart, Numerical Precision, Strohwig, TNN, and Trace-A-Matic are the responding U.S. toll finishers.

Staff conducted a verification of Ellwood's U.S. producer questionnaire. The verification adjustments have been incorporated into this report. ***. Staff verification report, Ellwood, December 16, 2020.

[2] Fluid end blocks are sold for the downstream production of fluid end modules. To qualify as a fluid end block supplier, U.S. forgers/finishers must meet customer specifications and requirements. Customer specifications include factors such as steel chemistry, level of forging/finishing, mechanical properties (e.g., hardness, tensile properties, impact properties), ultrasonic inspection, and design. Petition, p. 3; hearing transcript, p. 15 (Getlan), p. 22 (Boyd), p. 27 (Saunders); U.S. purchaser questionnaires, III-23; and, virtual plant tour of Ellwood, October 13, 2020, slides 45-47.

[3] ***. *** U.S. purchaser questionnaire, I-1a and III-1.

[4] No U.S. forger/finisher reported internal consumption of fluid end blocks.

Figure VI-1
Fluid end blocks: Share of net sales quantity of U.S. forgers/finishers, by company, 2019

* * * * * * *

Note: ***. *** U.S. producer questionnaire, II-3a.

Source: Compiled from data submitted in response to Commission questionnaires.

Operations on fluid end blocks by U.S. forgers/finishers

Table VI-1 presents aggregated data on U.S. forgers/finishers' operations on fluid end blocks from 2017 to January-June ("interim") 2020, while table VI-2 presents corresponding changes in average unit values ("AUV") data between periods.[5] Table VI-3 presents selected company-specific financial data of U.S. forgers/finishers.

[5] Tables VI-1 and VI-5 present data on the financial results of operations by U.S. forgers/finishers and toll finishers, respectively. These data are presented separately to prevent the distortion of ratio analyses and the double counting of certain measures.

Table VI-1
Fluid end blocks: Results of operations of U.S. forgers/finishers, 2017-19, January-June 2019, and January-June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
Total net sales	***	***	***	***	***
	Value (1,000 dollars)				
Total net sales	***	***	***	***	***
Cost of goods sold.-- Raw materials	***	***	***	***	***
Energy costs	***	***	***	***	***
Direct labor	***	***	***	***	***
Other factory costs	***	***	***	***	***
Total COGS	***	***	***	***	***
Gross profit	***	***	***	***	***
SG&A expense	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***
Other expenses or (income), net	***	***	***	***	***
Net income or (loss)	***	***	***	***	***
Depreciation/amortization	***	***	***	***	***
Cash flow	***	***	***	***	***
	Ratio to net sales (percent)				
Cost of goods sold.-- Raw materials	***	***	***	***	***
Energy costs	***	***	***	***	***
Direct labor	***	***	***	***	***
Other factory costs	***	***	***	***	***
Average COGS	***	***	***	***	***
Gross profit	***	***	***	***	***
SG&A expense	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***
Net income or (loss)	***	***	***	***	***

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Table VI-1—Continued
Fluid end blocks: Results of operations of U.S. forgers/finishers, 2017-19, January-June 2019, and January-June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Ratio to total COGS (percent)				
Cost of goods sold.-- Raw materials	***	***	***	***	***
Energy costs	***	***	***	***	***
Direct labor	***	***	***	***	***
Other factory costs	***	***	***	***	***
Average COGS	***	***	***	***	***
	Unit value (dollars per unit)				
Total net sales	***	***	***	***	***
Cost of goods sold.-- Raw materials	***	***	***	***	***
Energy costs	***	***	***	***	***
Direct labor	***	***	***	***	***
Other factory costs	***	***	***	***	***
Average COGS	***	***	***	***	***
Gross profit	***	***	***	***	***
SG&A expense	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***
Net income or (loss)	***	***	***	***	***
	Number of firms reporting				
Operating losses	***	***	***	***	***
Net losses	***	***	***	***	***
Data	***	***	***	***	***

Note: ***. *** U.S. producer questionnaire, II-3a.

Source: Compiled from data submitted in response to Commission questionnaires.

Table VI-2
Fluid end blocks: Changes in AUVs of U.S. forgers/finishers between calendar years and partial year periods

Item	Between calendar years			Between partial year period
	2017-19	2017-18	2018-19	2019-20
	Change in AUVs (percent)			
Total net sales	▲***	▲***	▼***	▲***
Cost of goods sold.-- Raw materials	▲***	▲***	▼***	▲***
Energy costs	▲***	▲***	▲***	▲***
Direct labor	▲***	▲***	▲***	▲***
Other factory costs	▲***	▲***	▲***	▲***
Average COGS	▲***	▲***	▲***	▲***
	Change in AUVs (dollars per unit)			
Total net sales	▲***	▲***	▼***	▲***
Cost of goods sold.-- Raw materials	▲***	▲***	▼***	▲***
Energy costs	▲***	▲***	▲***	▲***
Direct labor	▲***	▲***	▲***	▲***
Other factory costs	▲***	▲***	▲***	▲***
Average COGS	▲***	▲***	▲***	▲***
Gross profit	▼***	▼***	▼***	▼***
SG&A expense	▲***	▲***	▲***	▲***
Operating income or (loss)	▼***	▼***	▼***	▼***
Net income or (loss)	▼***	▼***	▼***	▼***

Source: Compiled from data submitted in response to Commission questionnaires.

Table VI-3
Fluid end blocks: Results of operations of U.S. forgers/finishers, by firm, 2017-19, January-June 2019, and January-June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Total net sales (units)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Total net sales (1,000 dollars)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Cost of goods sold (1,000 dollars)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***

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Table VI-3—Continued
Fluid end blocks: Results of operations of U.S. forgers/finishers, by firm, 2017-19, January-June 2019, and January-June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Gross profit or (loss) (1,000 dollars)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	SG&A expenses (1,000 dollars)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Operating income or (loss) (1,000 dollars)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***

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Table VI-3—Continued
Fluid end blocks: Results of operations of U.S. forgers/finishers, by firm, 2017-19, January-June 2019, and January-June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Net income or (loss) (1,000 dollars)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	COGS to net sales ratio (percent)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Gross profit or (loss) to net sales ratio (percent)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***

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Table VI-3—Continued
Fluid end blocks: Results of operations of U.S. forgers/finishers, by firm, 2017-19, January-June 2019, and January-June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	SG&A expense to net sales ratio (percent)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Operating income or (loss) to net sales ratio (percent)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Net income or (loss) to net sales ratio (percent)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***

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Table VI-3—Continued
Fluid end blocks: Results of operations of U.S. forgers/finishers, by firm, 2017-19, January-June 2019, and January-June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Unit net sales value (dollars per unit)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Unit raw materials (dollars per unit)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Unit energy costs (dollars per unit)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Unit direct labor (dollars per unit)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***

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Table VI-3—Continued
Fluid end blocks: Results of operations of U.S. forgers/finishers, by firm, 2017-19, January-June 2019, and January-June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Unit other factory costs (dollars per unit)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Unit COGS (dollars per unit)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Unit gross profit or (loss) (dollars per unit)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***

Table continued on next page.

Table VI-3—Continued
Fluid end blocks: Results of operations of U.S. forgers/finishers, by firm, 2017-19, January-June 2019, and January-June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Unit SG&A expenses (dollars per unit)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Unit operating income or (loss) (dollars per unit)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forgers/finishers	***	***	***	***	***
	Unit net income or (loss) (dollars per unit)				
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
All forger/finishers	***	***	***	***	***

Note: When sales of fluid end blocks fell sharply in 2019 and interim 2020, other factory costs as COGS to net sales and in unit values increased substantially for most U.S. forgers/finishers because other factory costs contain both variable and fixed costs. Fixed other factory costs are not reduced when sales decline, negatively impacting profitability measures. See footnote 15 in this part of the report on the specific details of the U.S. forger/finisher *** that reported the highest average per unit other factory costs in 2019, interim 2019, and interim 2020.

Source: Compiled from data submitted in response to Commission questionnaires.

Net sales of U.S. forgers/finishers

As presented in table VI-1, the net sales quantity of U.S. forgers/finishers decreased by *** percent and net sales value decreased by *** percent from 2017 to 2019.[6] [7] Net sales quantity and value both were lower in interim 2020 than in interim 2019. On a company-specific basis, all but one U.S. forger/finisher reported declines in net sales quantity and value from 2017 to 2019. *** reported fluctuating net sales quantity and value, increasing from 2017 to 2018 before declining from 2018 to 2019. All responding U.S. forgers/finishers reported lower net sales quantity and value in interim 2020 than in interim 2019.

The average unit value ("AUV") of U.S. forgers/finishers fluctuated from 2017 to 2019, increasing from $*** per unit to $*** per unit before decreasing slightly to $*** per unit in 2019; AUVs were higher in interim 2020 than in interim 2019. On a company-specific basis, U.S. forger/finisher *** reported declining AUVs from 2017 to 2019 while ***'s AUV increased from 2017 to 2018 but declined from 2018 to 2019. Two U.S. forgers/finishers (*** reported lower AUVs in interim 2020 than in interim 2019. Out of all responding U.S. forgers/finishers, *** reported the highest AUVs in all five data periods primarily due to *** focus on the production of higher valued fluid end blocks which were ***.[8]

[6] ***. *** U.S. producer questionnaire, II-3a, III-5a, III-9a, and III-9i.

[7] ***. Email from *** and *** U.S. producer questionnaire, II-2a, III-9i, III-15, III-16, and III-17.

[8] ***. *** U.S. producer questionnaire, II-13, II-14, III-9a, and email from ***, October 23, 2020.

Cost of goods sold and gross profit or loss of U.S. forgers/finishers

The U.S. forgers/finishers raw material costs accounted for between *** percent and *** percent of total COGS during the period for which data were collected, and were the largest component of COGS in 2017, 2018, and 2019 but not in interim 2020. The sharp declines in fluid end blocks sold by U.S. forgers/finishers resulted in the decline of raw materials costs as measured by absolute values from 2017 to 2019 and were lower in interim 2020 than in interim 2019. On a per unit basis, raw materials costs fluctuated from $*** in 2017 to $*** in 2018 then to $*** in 2019; average per unit raw material costs were higher in interim 2020 than in interim 2019. As a ratio to net sales, raw materials costs increased irregularly from *** percent in 2017 to *** percent in 2018 then to *** percent in 2019 and were lower in interim 2020 than in interim 2019. As presented in table VI-3, average raw materials per unit ranged widely from company to company, primarily the result of the product mix variations and the level of upstream integration. *** reported much higher average raw material costs than those reported by upstream integrated U.S. forgers/finishers *** who make their own stainless and non-stainless steel ingots for use in fluid end block production.[9] *** U.S. forgers/finishers *** reported selling virtually all fluid end blocks using the much more expensive stainless steel raw materials while *** sold both stainless and non-stainless fluid end blocks.[10] [11] As presented in table VI-4, stainless steel accounted for *** percent of total raw material costs and was

[9] Stainless steel fluid end block forgers/finishers ***. ***. Email from ***, October 23, 2020.

[10] U.S. forgers/finisher questionnaires, II-13 and table IV-4 of this report.

[11] Small U.S. forger/finisher *** reported selling stainless steel fluid end blocks with a very wide range of average unit raw material costs in 2018 and 2019, reflecting the wide range of its average unit net sales as a result of product mix variations for the two years (2018 and 2019) it reported sales of fluid end blocks. *** U.S. producer questionnaire, III-9i.

$*** per unit compared to the lower non-stainless steel raw material cost of $*** per unit.[12] [13]

Table VI-4
Fluid end blocks: U.S. forgers/finishers' raw materials by type, 2019

Raw materials	Calendar 2019		
	Value (1,000 dollars)	Unit value (dollars per unit)	Share of value (percent)
Stainless steel	***	***	***
Non-stainless steel	***	***	***
Total, raw materials	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Other factory costs were generally the second largest component of COGS and accounted for between *** percent and *** percent of overall COGS during the period for which data were collected.[14] As with raw material costs, the total value of other factory costs decreased from 2017 to 2019 and were lower in interim 2020 than in interim 2019. However, as a ratio to sales, other factory costs increased from 2017 to 2019 and were higher in interim 2020 than in interim 2019. On a per unit basis, other factory costs increased from $*** in 2017 to $*** in 2019, and were higher in interim 2020 than in interim 2019.[15] The increases in other factory costs as a ratio to net sales and average unit values primarily reflect the larger decline in net sales quantity and value from 2017 to June 2020. With respect to their U.S.

[12] ***.

[13] U.S. forgers/finishers' level of upstream integration varied ***.

[14] Other factory costs were the largest component of COGS in interim 2020. Net sales of fluid end blocks decreased dramatically in interim 2020, resulting in all components of COGS also decreasing dramatically on an absolute value basis. However, due to the fact that other factory costs contain both variable and fixed costs, it decreased proportionally less than raw materials and direct labor.

[15] *** a smaller fluid end block forger/finisher reported the ***. U.S. forgers/finishers' questionnaire response, III-9i and email from *** November 4, 2020.

operations, *** reported toll arrangements with machine shops to provide additional finishing operations for a limited portion of their fluid end block sales.[16]

Direct labor and energy costs represent the smallest shares of total COGS; direct labor's share of total COGS ranged from *** percent and *** percent and energy costs' share ranged from *** percent to *** percent during the period for which data were collected. As sales of fluid end blocks declined, direct labor costs decreased in absolute values but increased as a ratio to net sales. Energy costs decreased in absolute values from 2017 to 2019 but increased as a ratio to net sales. On a per unit basis, direct labor increased from $*** in 2017 to $*** in 2019, and were higher in interim 2020 than in interim 2019. Average per unit energy costs increased from $*** per unit to $*** per unit from 2017 to 2019 and were higher in interim 2020 than in interim 2019. U.S. forgers/finishers cited reasons such as decreases in sales quantities and changes to product mix (more finishing) for the increases in direct labor and energy costs per unit.[17]

The U.S. forgers/finishers' total COGS decreased by *** from 2017 to 2019 and were lower in interim 2020 than in interim 2019. The decrease of total COGS were lower than the decrease of net sales value, resulting in a *** percent decline of gross profit from 2017 to 2019. Gross profit was lower in interim 2020 than in interim 2019.

SG&A expenses and operating income or loss of U.S. forgers/finishers

As presented in table VI-1, the U.S. forgers/finishers' SG&A expense ratio (i.e., total SG&A expenses divided by total revenue) increased each year, from *** percent in 2017 to *** percent in 2019 and was higher in interim 2020 than in interim 2019. Table VI-3 shows that the pattern of company-specific SG&A expense ratios also increased for all U.S. forgers/finishers from 2017 to 2019, with SG&A expense ratios continuing to be higher in interim 2020 than in interim 2019.[18] Total SG&A expenses declined from 2017 to 2019 and were lower between the comparable interim periods, but the greater decline in net sales

[16] ***. See table VI-5 for data on U.S. toll finishers' operations.

[17] U.S. forgers/finishers' questionnaire response, III-9i.

[18] Fluid end blocks account for a minor share of overall net sales relative to out-of-scope products for U.S. forgers/finishers; corporate allocation methodologies resulted in much higher than industry average SG&A expenses for *** when its sales of fluid end blocks dropped precipitously. U.S. forgers/finishers' questionnaire response, III-5 and III-9i.

quantity and value resulted in increases in the SG&A expense ratios and per unit SG&A values during the period examined.

Operating income followed the same trend as gross profit, decreasing from $*** in 2017 to $*** in 2018 and decreased further to a loss of $*** in 2019. U.S. forgers/finishers reported operating losses in interim 2020 compared to a positive operating income in interim 2019. Individually, all responding U.S. forgers/finishers reported decreases in operating income from 2017 to 2019 that continued into interim 2020.[19]

All other expenses and net income or loss of U.S. forgers/finishers

Classified below the operating income level are interest expense, other expenses, and other income, which are usually allocated to the product line from high levels in the corporation. Table VI-1 presents the net amount of these items. The U.S. forgers/finishers net amount of all other expenses fluctuated, *** in 2017, *** in 2018, and $*** in 2019; all other expenses were lower in interim 2020 than in interim 2019. *** accounted for *** of all other expenses during the period for which data were collected, with ***.

Net income followed a similar trend to gross profit and operating income, decreasing from $*** in 2017 to $*** in 2018 and decreased further in 2019, resulting in a net loss of $***. U.S. forgers/finishers reported a small net income in interim 2019 but notable net losses in interim 2020. Individually, all responding U.S. forgers/finishers reported decreases in net income from 2017 to 2019 that continued into interim 2020, with *** accounting for the *** of net losses in 2019.[20] [21]

[19] ***.

[20] ***.

[21] A variance analysis is not shown due to the large variety of product mixes (such as stainless and non-stainless alloy steel fluid end blocks) and cost structures among the reporting U.S. forgers/finishers. In addition, two firms (***) did not have revenue and cost data in all reporting periods, which also makes variance analysis less meaningful.

Tolling operations

In a tolling arrangement, one firm (the tollee) provides the input material (retaining title to the input) to another firm (the toller) which upgrades the input to the desired form and quality. In fluid end block production, toll finishers perform a variety of processes, including milling, contouring, drilling, and threading of fluid end blocks based on customer specifications. Eight U.S. toll finishers (Acme, Bargo, Delaware Dynamics, Medart, Numerical Precision, Strohwig, TNN, and Trace-A-Matic) provided data on their tolling operations. Table VI-5 presents aggregated data on reporting toll finishers' operations in relation to fluid end blocks. *** were the four largest toll finishers, accounting for more than 85 percent of the reported tolling values from 2017 to 2019 and in both interim periods.

As presented in table VI-5, the net tolling quantities of fluid end blocks fluctuated, increasing from 7,120 units in 2017 to 7,707 units in 2018 before decreasing to 3,365 units in 2019. Net tolling revenues (the fees paid by the tollee to the toller) increased from $57.9 million in 2017 to $73.9 million in 2018 before decreasing to $37.4 million in 2019.[22] Both net tolling quantities and revenues were lower in interim 2020 than in interim 2019. The average unit value of the tolling revenues increased each year, from $8,145 per unit in 2017 to $11,111 per unit in 2019; the average unit value of the tolling revenue was lower in interim 2020 than in interim 2019. The highest average unit value of the tolling revenue was for fluid end blocks being toll finished for U.S. purchasers, followed by those being toll finished for U.S. importers. The lowest average unit value of tolling revenue was for fluid end blocks that were toll finished for U.S. forgers/finishers.

[22] The majority of toll-processed fluid end blocks was ***. Fluid end blocks toll-processed for U.S. forgers/finishers ranged between *** of the total quantity of toll-processed fluid end blocks from 2017 to 2019. See table III-9 for additional data on toll finishers' production by type of tollee.

Table VI-5
Fluid end blocks: Results of operations of U.S. toll finishers, 2017-19, January-June 2019, and January-June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
Net tolling quantities	7,120	7,707	3,365	2,180	509
	Value (1,000 dollars)				
Net tolling revenues	57,916	73,906	37,362	23,932	3,251
Cost of tolling services.-- Additional raw materials	***	***	***	***	***
Energy costs	***	***	***	***	***
Direct labor	***	***	***	***	***
Other factory costs	***	***	***	***	***
Total COGS	40,450	54,185	31,066	19,626	3,399
Gross profit	17,466	19,722	6,296	4,306	(148)
SG&A expense	6,336	7,770	3,790	2,468	564
Operating income or (loss)	11,130	11,952	2,506	1,838	(712)
Other expenses or (income), net	***	***	***	***	***
Net income or (loss)	***	***	***	***	***
Depreciation/amortization	***	***	***	***	***
Cash flow	***	***	***	***	***
	Ratio to net sales (percent)				
Cost of tolling services.-- Additional raw materials	***	***	***	***	***
Energy costs	***	***	***	***	***
Direct labor	***	***	***	***	***
Other factory costs	***	***	***	***	***
Average COGS	69.8	73.3	83.1	82.0	104.6
Gross profit	30.2	26.7	16.9	18.0	(4.6)
SG&A expense	10.9	10.5	10.1	10.3	17.3
Operating income or (loss)	19.2	16.2	6.7	7.7	(21.9)
Net income or (loss)	***	***	***	***	***

Table continued on next page.

Table VI-5--Continued
Fluid end blocks: Results of operations of U.S. toll finishers, 2017-19, January-June 2019, and January-June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Ratio to total COGS (percent)				
Cost of tolling services.-- Additional raw materials	***	***	***	***	***
Energy costs	***	***	***	***	***
Direct labor	***	***	***	***	***
Other factory costs	***	***	***	***	***
Average COGS	***	***	***	***	***
	Unit value (dollars per unit)				
Net tolling revenues: Returned to U.S. producers	***	***	***	***	***
Net tolling revenues: Returned to U.S. importers	***	***	***	***	***
Net tolling revenues: Returned to U.S. purchasers	***	***	***	***	***
Total net tolling revenues	8,145	9,600	11,111	10,989	6,409
Cost of tolling services.-- Additional raw materials	***	***	***	***	***
Energy costs	***	***	***	***	***
Direct labor	***	***	***	***	***
Other factory costs	***	***	***	***	***
Average COGS	5,681	7,031	9,232	9,003	6,678
Gross profit	2,453	2,559	1,871	1,975	(291)
SG&A expense	890	1,008	1,126	1,132	1,108
Operating income or (loss)	1,563	1,551	745	843	(1,399)
Net income or (loss)	***	***	***	***	***
	Number of toll finishers reporting				
Operating losses	***	***	***	***	***
Net losses	***	***	***	***	***
Data	***	***	***	***	***

Note: Not all responding toll finishers reported toll operations in for all periods for which data were collected. ***.

Source: Compiled from data submitted in response to Commission questionnaires.

The total cost of tolling services includes direct labor, other factory costs, energy costs, and any additional raw materials the toller uses in its processing activities (outside of the raw materials provided by the tollee). The additional raw materials were reported by *** and accounted for *** percent to *** percent of the total cost of tolling services during the period for which data were collected. The toll finishers' direct labor ranged from *** percent to *** percent of the total cost of tolling services while other factory costs ranged from *** percent to *** percent from 2017 to interim 2020.[23] The toll finishers' gross profit fluctuated, but decreased overall from $17.5 million in 2017 to $6.3 million in 2019; gross profit was lower in interim 2020 than in interim 2019.

Toll finishers' SG&A expenses also fluctuated, but decreased overall from $6.3 million in 2017 to $3.8 million in 2019 and were lower in interim 2020 than in interim 2019. Like gross profit, operating income fluctuated from $11.1 million in 2017 to $12.0 million in 2018 then to $2.5 million in 2019; toll finishers reported an operating loss in interim 2020 while interim 2019 had a positive operating income. Net income of toll finishers increased from $*** in 2017 to $*** in 2018 but decreased to a net loss of $*** in 2019, with further net losses in interim 2020 compared with a net income in interim 2019.

Capital expenditures and research and development expenses

Table VI-6 presents capital expenditures and research and development ("R&D") expenses of U.S. forgers/finishers and U.S. toll finishers by firm. Table VI-7 provides these firms' narrative responses regarding the nature and focus of their capital expenditures and R&D expenses. *** accounted for the vast majority of company-specific amounts of capital expenditures during the period for which data were collected. Total reported capital expenditures for U.S. forgers/finishers decreased from $*** in 2017 to $*** in 2019 and were lower in interim 2020 than in interim 2019. Toll finishers' capital expenditures fluctuated from $*** in 2017 to $*** in 2018 to $*** in 2019 and were lower in interim 2020 than in interim 2019.

[23] Estimated value added (total conversion costs inclusive of energy costs, direct labor and other factory costs) as a share of total COGS) for U.S. toller finishers were *** percent in 2017, *** in 2018, *** in 2019, *** in interim 2019, and *** in interim 2020. See page III-9, footnote 9 for additional information.

Table VI-6
Fluid end blocks: Capital expenditures and R&D expenses of U.S. forgers/finishersand U.S. toll finishers, 2017-19, January-June 2019, and January-June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Capital expenditures (1,000 dollars)				
U.S. forgers/finishers:					
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
U.S. forgers/finishers, subtotal	***	***	***	***	***
U.S. toll finishers:					
Acme	***	***	***	***	***
Bargo	***	***	***	***	***
Delaware Dynamics	***	***	***	***	***
Medart	***	***	***	***	***
Numerical Precision	***	***	***	***	***
Strohwig	***	***	***	***	***
TNN	***	***	***	***	***
Trace-A-Matic	***	***	***	***	***
Toll finishers, subtotal	***	***	***	***	***
U.S. forgers/finishers and toll finishers, total	***	***	***	***	***
	R&D expenses (1,000 dollars)				
U.S. forgers/finishers:					
Eastham	***	***	***	***	***
Ellwood	***	***	***	***	***
Finkl	***	***	***	***	***
Forged Products	***	***	***	***	***
Scot Forge	***	***	***	***	***
Union Electric	***	***	***	***	***
U.S. forgers/finishers, subtotal	***	***	***	***	***
U.S. toll finishers:					
Acme	***	***	***	***	***
Bargo	***	***	***	***	***
Delaware Dynamics	***	***	***	***	***
Medart	***	***	***	***	***
Numerical Precision	***	***	***	***	***
Strohwig	***	***	***	***	***
TNN	***	***	***	***	***
Trace-A-Matic	***	***	***	***	***
Toll finishers, subtotal	***	***	***	***	***
U.S. forgers/finishers and toll finishers, total	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Table VI-7
Fluid end blocks: Firms' narrative responses relating to capital expenditures and R&D expenses since January 1, 2017

Item / Firm	Narrative
	Capital Expenditures
U.S. forgers/finishers	
***	***
***	***
***	***
***	***
***	***
***	***
Toll finishers	
***	***
***	***
***	***
***	***
***	***
***	***
	R&D expenses
U.S. forgers/finishers	
***	***
***	***
***	***
Toll finishers	
***	***
***	***
***	***
***	***
***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Assets and return on assets

Table VI-8 presents data on the U.S. forgers/finishers and toll finishers' total assets and their return on assets ("ROA").[24] The industry's total assets decreased from $*** in 2017 to $*** in 2019. U.S. forgers/finishers' total assets used for fluid end blocks decreased from $*** in 2017 to $*** in 2019. Toll finishers' total assets declined from $*** in 2017 to $*** in 2019. The company-specific trends in total assets were mixed with *** reporting a decrease or unchanged net assets allocated to fluid end blocks from 2017 to 2019. Most toll finishers (except for ***) reported decreasing or unchanged net assets used for fluid end block toll processing. The combined average ROA of U.S. forgers/finishers and toll finishers' declined in each year from 2017 to 2019, attributable to the larger decline in operating income relative to total assets.

[24] With respect to a company's overall operations, staff notes that total asset value (i.e., the bottom line number on the asset side of a company's balance sheet) reflects an aggregation of a number of assets which are generally not product specific. Accordingly, high level corporate allocations may be required in order to report a total asset value for fluid end blocks.

Table VI-8
Fluid end blocks: U.S. forgers/finishers and toll finishers' total assets and return on assets, by firm, 2017-19

Firm	Calendar years		
	2017	2018	2019
	Total net assets (1,000 dollars)		
U.S. forgers/finishers:			
Eastham	***	***	***
Ellwood	***	***	***
Finkl	***	***	***
Forged Products	***	***	***
Scot Forge	***	***	***
Union Electric	***	***	***
U.S. forgers/finishers, subtotal	***	***	***
U.S. toll finishers:			
Acme	***	***	***
Bargo	***	***	***
Delaware Dynamics	***	***	***
Medart	***	***	***
Numerical Precision	***	***	***
Strohwig	***	***	***
TNN	***	***	***
Trace-A-Matic	***	***	***
Toll finishers, subtotal	***	***	***
U.S. forgers/finishers and toll finishers, total	***	***	***
	Operating ROA (percent)		
U.S. forgers/finishers:			
Eastham	***	***	***
Ellwood	***	***	***
Finkl	***	***	***
Forged Products	***	***	***
Scot Forge	***	***	***
Union Electric	***	***	***
U.S. forgers/finishers, average	***	***	***
U.S. toll finishers:			
Acme	***	***	***
Bargo	***	***	***
Delaware Dynamics	***	***	***
Medart	***	***	***
Numerical Precision	***	***	***
Strohwig	***	***	***
TNN	***	***	***
Trace-A-Matic	***	***	***
Toll finishers, average	***	***	***
U.S. forgers/finishers and toll finishers, average	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Capital and investment

The Commission requested that U.S. forgers/finishers of fluid end blocks describe any actual or potential negative effects of imports of fluid end blocks from China, Germany, India, and/or Italy on their firms' growth, investment, ability to raise capital, development and production efforts, or the scale of capital investments. Table VI-9 presents the number of U.S. forgers/finishers reporting an impact in each category and table VI-10 provides their narrative responses.

Table VI-9
Fluid end blocks: U.S. forgers/finishers' actual and anticipated negative effects of imports on investment, growth, and development, since January 1, 2017

Item	No	Yes
Negative effects on investment	0	6
Cancellation, postponement, or rejection of expansion projects		2
Denial or rejection of investment proposal		1
Reduction in the size of capital investments		1
Return on specific investments negatively impacted		2
Other		3
Negative effects on growth and development	0	6
Rejection of bank loans		0
Lowering of credit rating		0
Problem related to the issue of stocks or bonds		0
Ability to service debt		0
Other		6
Anticipated negative effects of imports	0	6

Source: Compiled from data submitted in response to Commission questionnaires.

Table VI-10
Fluid end blocks: U.S. forgers/finishers' narratives relating to actual and anticipated negative effects of imports on investment, growth, and development, since January 1, 2017

Item / Firm	Narrative
Cancellation, postponement, or rejection of expansion projects:	
***	***
***	***
Denial or rejection of investment proposal:	
***	***
Reduction in the size of capital investments:	
***	***
Return on specific investments negatively impacted:	
***	***
***	***
Other negative effects on investments:	
***	***
***	***
***	***

Table continued on next page.

Table VI-10—Continued
Fluid end blocks: U.S. forgers/finishers' narratives relating to actual and anticipated negative effects of imports on investment, growth, and development, since January 1, 2017

Item / Firm	Narrative
Other effects on growth and development:	
***	***
***	***
***	***
***	***
***	***
***	***
Anticipated effects of imports:	
***	***
***	***
***	***
***	***
***	***
***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Part VII: Threat considerations and information on nonsubject countries

Section 771(7)(F)(i) of the Act (19 U.S.C. § 1677(7)(F)(i)) provides that—

> *In determining whether an industry in the United States is threatened with material injury by reason of imports (or sales for importation) of the subject merchandise, the Commission shall consider, among other relevant economic factors*[1]*--*
>
> *(I) if a countervailable subsidy is involved, such information as may be presented to it by the administering authority as to the nature of the subsidy (particularly as to whether the countervailable subsidy is a subsidy described in Article 3 or 6.1 of the Subsidies Agreement), and whether imports of the subject merchandise are likely to increase,*
>
> *(II) any existing unused production capacity or imminent, substantial increase in production capacity in the exporting country indicating the likelihood of substantially increased imports of the subject merchandise into the United States, taking into account the availability of other export markets to absorb any additional exports,*
>
> *(III) a significant rate of increase of the volume or market penetration of imports of the subject merchandise indicating the likelihood of substantially increased imports,*
>
> *(IV) whether imports of the subject merchandise are entering at prices that are likely to have a significant depressing or suppressing effect on domestic prices, and are likely to increase demand for further imports,*
>
> *(V) inventories of the subject merchandise,*

---

[1] Section 771(7)(F)(ii) of the Act (19 U.S.C. § 1677(7)(F)(ii)) provides that "The Commission shall consider {these factors} . . . as a whole in making a determination of whether further dumped or subsidized imports are imminent and whether material injury by reason of imports would occur unless an order is issued or a suspension agreement is accepted under this title. The presence or absence of any factor which the Commission is required to consider . . . shall not necessarily give decisive guidance with respect to the determination. Such a determination may not be made on the basis of mere conjecture or supposition."

(VI) the potential for product-shifting if production facilities in the foreign country, which can be used to produce the subject merchandise, are currently being used to produce other products,

(VII) in any investigation under this title which involves imports of both a raw agricultural product (within the meaning of paragraph (4)(E)(iv)) and any product processed from such raw agricultural product, the likelihood that there will be increased imports, by reason of product shifting, if there is an affirmative determination by the Commission under section 705(b)(1) or 735(b)(1) with respect to either the raw agricultural product or the processed agricultural product (but not both),

(VIII) the actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and

(IX) any other demonstrable adverse trends that indicate the probability that there is likely to be material injury by reason of imports (or sale for importation) of the subject merchandise (whether or not it is actually being imported at the time).[2]

Information on the nature of the subsidies was presented earlier in this report; information on the volume and pricing of imports of the subject merchandise is presented in *Parts IV* and *V*; and information on the effects of imports of the subject merchandise on U.S. producers' existing development and production efforts is presented in *Part VI*. Information on inventories of the subject merchandise; foreign producers' operations, including the potential for "product-shifting;" any other threat indicators, if applicable; and any dumping in third-country markets, follows. Also presented in this section of the report is information obtained for consideration by the Commission on nonsubject countries.[3]

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[2] Section 771(7)(F)(iii) of the Act (19 U.S.C. § 1677(7)(F)(iii)) further provides that, in antidumping investigations, ". . . the Commission shall consider whether dumping in the markets of foreign countries (as evidenced by dumping findings or antidumping remedies in other WTO member markets against the same class or kind of merchandise manufactured or exported by the same party as under investigation) suggests a threat of material injury to the domestic industry."

[3] Information on exports for each subject country are not presented, as GTA data include a substantial amount of out of scope merchandise. The United States is the only major market for fluid end blocks known to Petitioners. Petitioners' postconference brief, p. II-11. U.S. purchaser ST9 similarly stated that "the majority of the market" for fluid end blocks is in the United States and most OEMs are in the United States. Conference transcript, p. 136 (Poradek).

The industry in China

The Commission issued foreign producers' or exporters' questionnaires to 37 firms believed to produce and/or export fluid end blocks from China.[4] Yantai Jereh Petroleum Equipment & Technologies Co., Ltd. ("Yantai Jereh") was the only Chinese producer that provided a usable response to the Commission's questionnaire. Yantai Jereh's questionnaire response accounted for *** U.S. imports of fluid end blocks from China in 2019.[5] Yantai Jereh estimates its production of fluid end blocks in China accounts for approximately *** percent of overall production of fluid end blocks in China.

Petitioners estimate *** fluid end blocks were exported from China to the United States in 2018 and listed 38 producers and exporters of fluid end blocks in China.[6] According to the responses Commerce received to its Q&V questionnaire, China Machinery Industrial Products Co., Ltd. ("CMIPC") and Shanghai Qinghe Machinery Co., Ltd. ("Qinghe") were the largest producers/exporters of fluid end blocks, by quantity, during Commerce's period of investigation.[7] U.S. importers reported importing fluid end blocks from the following Chinese firms: ***.

The majority of the firms identified by Petitioners are metal forgers with the ability to produce castings and forgings of non-stainless alloy, stainless alloy, and carbon steel.[8] Chinese fluid end block supplier, Haimo Technologies Group Corporation, is a multinational company

[4] These firms were identified through a review of information submitted in the petitions.

[5] Yantai Jereh reported *** to the United States in ***.

[6] Petitions, Exh. GEN-2 and Section IV pp. 13-17.

[7] Commerce selected CMIPC and Qinghe as mandatory respondents for its countervailing duty investigation on fluid end blocks from China. CMIPC notified Commerce that it would not participate as it no longer exports subject merchandise to the United States. Commerce subsequentially selected Nanjing Development Advanced Manufacturing Co. Ltd. ("Nanjing") as an additional mandatory respondent. 85 FR 31457, May 26, 2020. See Decision Memorandum for the Preliminary Determination of the Countervailing Duty Investigation of Forged Steel Fluid End Blocks from the People's Republic of China, p. 3. ***.

[8] Publicly available information indicates that Chinese fluid end block producers have existing unused capacity. Petitioners point to the government of China's announcement that it suffers from "severe excessive capacity in the industries of steel." Petitioners' postconference brief, p. I-45.

listed on the Shenzhen GEM stock exchange specializing in oilfield equipment and instruments. Its website states that it is the major manufacturer of hydraulic fracturing pump fluid end modules in China, providing products to domestic and international oilfield service companies. Haimo employs approximately 1,000 employees and manufacturers alloy steel fluid end modules, including fluid end blocks, that comply with SAE 4330V material standards.[9]

Table VII-1 presents information on the fluid end block operations of Yantai Jereh in China.

Table VII-1
Fluid end blocks: Summary data on Chinese producer Yantai Jereh, 2019

Firm	Production (units)	Share of reported production (percent)	Exports to the United States (units)	Share of reported exports to the United States (percent)	Total shipments (units)	Share of firm's total shipments exported to the United States (percent)
Yantai Jereh	***	***	***	***	***	***
All firms	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Changes in operations

Yantai Jereh reported one change in operations since January 1, 2017 – ***.

[9] Haimo Technologies, http://www.haimotech.com/Products-and-Services/Fracturing-Equipment-and-Services/Fluid-End-Assembly-Accessories.html, retrieved January 17, 2020.

Operations on fluid end blocks

Table VII-2 presents information on the fluid end block operations of Yantai Jereh. There was *** in capacity between 2017 and 2019. Capacity was *** percent higher in interim 2020 than in interim 2019, and is expected to increase by *** percent from 2019 to 2020. Production increased by *** percent from 2017 to 2019, and was *** percent higher in interim 2020 than in interim 2019. Production is expected to increase by *** percent from 2019 to 2020, and then decrease by *** percent from 2020 to 2021. Given the greater percentage increase in production relative to capacity, capacity utilization increased by *** percentage points from 2017 to 2019. Capacity utilization was *** percentage points lower in interim 2020 than in interim 2019 and is expected to decrease by *** percentage points from 2020 to 2021.

End-of-period inventories increased by *** percent from 2017 to 2019, and were *** percent higher in interim 2020 than in interim 2019. End-of-period inventories are projected to decrease by *** percent from 2020 to 2021.

*** of Yantai Jereh's shipments consisted of internal consumption to produce ***.[10] However, the percentage of total shipments consisting of internal consumption declined by *** percentage points from 2017 to 2019, as the percentage of commercial home market shipments and exports shipments increased by *** and *** percentage points, respectively. Export shipments ranged from *** to *** percent of total shipments. *** was exported to the U.S. and the remaining fluid end blocks were exports to ***.

[10] Email from ***.

Table VII-2
Fluid end blocks: Data on Chinese producer Yantai Jereh, 2017-19, January to June 2019, and January to June 2020 and projection calendar years 2020 and 2021

Item	Actual experience					Projections	
	Calendar year			January to June		Calendar year	
	2017	2018	2019	2019	2020	2020	2021
	Quantity (units)						
Capacity	***	***	***	***	***	***	***
Production	***	***	***	***	***	***	***
End-of-period inventories	***	***	***	***	***	***	***
Shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***
	Ratios and shares (percent)						
Capacity utilization	***	***	***	***	***	***	***
Inventories/production	***	***	***	***	***	***	***
Inventories/total shipments	***	***	***	***	***	***	***
Share of shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Alternative products

Yantai Jereh reported that it has produced *** on the same machinery used to produce fluid end blocks, ***.

The industry in Germany

The Commission issued foreign producers' or exporters' questionnaires to five firms believed to produce and/or export fluid end blocks from Germany.[11] Usable responses to the Commission's questionnaire were received from two firms: BGH Edelstahl Siegen GmbH ("BGH") and Schmiedewerke Gröditz GmbH ("SWG").[12] Staff believe the production of fluid end blocks in Germany reported in questionnaires accounts for approximately *** percent of overall production of fluid end blocks in Germany and *** percent of 2019 fluid end block exports from Germany to the U.S.[13] [14] Table VII-3 presents information on the fluid end block operations of the responding producers and exporters in Germany.

[11] These firms were identified through a review of information submitted in the petitions.

[12] One firm, *** certified during the preliminary phase of the investigations that it has not produced or exported fluid end blocks into the United States since January 1, 2016.

[13] Respondent estimates were inconsistent with their associated 2019 production and U.S. exports. Using BGH's production and U.S. export estimates, BGH and SWG's 2019 production account for *** percent of 2019 German fluid end block production, and their U.S. exports account for *** percent of Germany's 2019 U.S. exports of fluid end blocks. Using SWG's production and U.S. export estimates, BGH and SWG's production account for *** percent of 2019 German fluid end block production, and their U.S. exports account for *** percent of Germany's 2019 U.S. exports of fluid end blocks. Staff calculated the median value between the two estimates, to arrive at a 2019 production coverage estimate of *** percent and a 2019 U.S. export coverage estimate of *** percent. BHG believes that, in addition to itself and SWG, ***. Email from ***. There has been no indication that *** is a larger producer or exporter than the other *** German producers/exporters (*** reported importing *** fluid end blocks from ***).

[14] Foreign producer questionnaire responses reported *** fluid end block exports from Germany to the United States from 2017 to 2019, compared to *** fluid end block imports from Germany reported in importer questionnaire responses.

Table VII-3
Fluid end blocks: Summary data on firms in Germany, 2019

Firm	Production (units)	Share of reported production (percent)	Exports to the United States (units)	Share of reported exports to the United States (percent)	Total shipments (units)	Share of firm's total shipments exported to the United States (percent)
BGH	***	***	***	***	***	***
SWG	***	***	***	***	***	***
All firms	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Changes in operations

No responding producer in Germany reported any changes in operations since January 1, 2017.

Operations on fluid end blocks

Table VII-4 presents information on the fluid end block operations of the responding producers and exporters in Germany. Capacity decreased by *** percent from 2017 to 2019, and was *** percent lower in interim 2020 than in interim 2019. Capacity is projected to decrease by *** percent between 2020 and 2021.[15] Production increased by *** percent from 2017 to 2018, then decreased by *** percent from 2018 to 2019, for an overall decrease of *** percent from 2017 to 2019. Production was *** percent lower in interim 2020 than in interim 2019, but is projected to increase by *** percent from 2020 to 2021.[16] Capacity utilization decreased by *** percentage points from 2017 to 2019 and was *** percentage points lower in interim 2020 than in interim 2019.

[15] ***. Foreign Producers' questionnaire response, question II-3d and II-8. SWG reported that it has not been negatively affected by COVID-19 in terms of production output or employment levels and continue to be ready to make forgings wherever they might be needed. Hearing transcript, pp. 203-204 (Bell).

[16] While ***. Foreign Producers' questionnaire response, question II-8.

End-of-period inventories were only reported in ***, representing *** percent of 2019 production.[17]

The *** of German producers' total shipments were exports to the United States, but its share of total shipments has decreased by *** percentage points from 2017 to 2019 as the share of commercial home shipments has increased by *** percentage points during this period. The share of exports to other markets (***) ranged from *** percent from 2017 to 2019.[18]

[17] ***. Foreign Producers' questionnaire response, question II-12.

[18] The share of exports to other markets increased to *** percent in interim 2020, as ***. Foreign Producers' questionnaire response, question II-8.

Table VII-4
Fluid end blocks: Data on industry in Germany, 2017-19, January to June 2019, and January to June 2020 and projection calendar years 2020 and 2021

Item	Actual experience					Projections	
	Calendar year			January to June		Calendar year	
	2017	2018	2019	2019	2020	2020	2021
	Quantity (units)						
Capacity	***	***	***	***	***	***	***
Production	***	***	***	***	***	***	***
End-of-period inventories	***	***	***	***	***	***	***
Shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***
	Ratios and shares (percent)						
Capacity utilization	***	***	***	***	***	***	***
Inventories/production	***	***	***	***	***	***	***
Inventories/total shipments	***	***	***	***	***	***	***
Share of shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Alternative products

As shown in table VII-5, responding German firms produced other products on the same equipment and machinery used to produce fluid end blocks. The majority of production consisted of other products, ranging from *** to *** percent of total production, in pounds.[19] Other products produced on the same machinery as fluid end blocks consisted of ***.

Table VII-5
Fluid end blocks: Overall capacity and production on the same equipment as in-scope production by producers in Germany, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds)				
Overall forging capacity	***	***	***	***	***
Overall finishing capacity	***	***	***	***	***
Max overall capacity	***	***	***	***	***
Production:					
Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Ratios and shares (percent)				
Overall capacity utilization	***	***	***	***	***
Share of production:					
Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Quantity (units)				
Overall forging capacity	***	***	***	***	***
Overall finishing capacity	***	***	***	***	***
Max overall capacity	***	***	***	***	***
Production:					
Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Ratios and shares (percent)				
Overall capacity utilization	***	***	***	***	***
Share of production:					
Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

[19] Overall capacity and total production were also collected in units, but are more variable, as forgers/finishers often produce forgings with a range of sizes and weights. Overall capacity and production in units will vary depending on the product mix in a given period.

The industry in India

The Commission issued foreign producers' or exporters' questionnaires to two firms believed to produce and/or export fluid end blocks from India.[20] A usable response to the Commission's questionnaire was received from Bharat Forge Limited ("Bharat").[21] Bharat estimated that its production of fluid end blocks in India accounts for *** percent of overall production of product in India. Bharat also estimated that its exports of fluid end blocks to the United States account for *** percent of total exports of fluid end blocks from India to the United States.[22] Table VII-6 presents information on the fluid end block operations of Bharat.

Table VII-6
Fluid end blocks: Summary data on Indian producer Bharat, 2019

Firm	Production (units)	Share of reported production (percent)	Exports to the United States (units)	Share of reported exports to the United States (percent)	Total shipments (units)	Share of firm's total shipments exported to the United States (percent)
Bharat Forge	***	***	***	***	***	***
All firms	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

[20] These firms were identified through a review of information submitted in the petitions.

[21] ***.

[22] Staff believes Bharat accounts for *** fluid end block exports from India to the United States, as no other exporter from India has been identified by petitioners, respondents, or any questionnaire responses.

Changes in operations

As presented in table VII-7, Bharat reported several operational and organizational changes since January 1, 2017.

Table VII-7
Fluid end blocks: Reported changes in operations by Indian producer Bharat, since January 1, 2017

Item / Firm	Reported changed in operations
Expansions:	
***	***
Prolonged shutdowns or curtailments:	
***	***
Other:	
***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Operations on fluid end blocks

Table VII-8 presents information on the fluid end block operations of Indian producer Bharat. Capacity increased by *** percent between 2018 and 2019. Capacity was *** in interim 2019 and interim 2020, and is ***.

Given that *** shipments reported were exports to the United States and *** were reported, export shipments to the United States and production were ***. Export shipments to the United States and production both increased *** percent from 2017 to 2018, then decreased by *** percent from 2018 to 2019, and was *** percent lower in interim 2020 than in interim 2019. Based on Bharat's ***, it projects exports shipments to the United States and production will increase by *** percent from 2020 to 2021.

Given the increase in capacity and decrease in production, capacity utilization decreased by *** percentage points from 2017 to 2019, and was *** percentage points lower in interim 2020 than in interim 2019.

Table VII-8
Fluid end blocks: Data on Indian producer Bharat, 2017-19, January to June 2019, and January to June 2020 and projection calendar years 2020 and 2021

Item	Actual experience					Projections	
	Calendar year			January to June		Calendar year	
	2017	2018	2019	2019	2020	2020	2021
	Quantity (units)						
Capacity	***	***	***	***	***	***	***
Production	***	***	***	***	***	***	***
End-of-period inventories	***	***	***	***	***	***	***
Shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***
	Ratios and shares (percent)						
Capacity utilization	***	***	***	***	***	***	***
Inventories/production	***	***	***	***	***	***	***
Inventories/total shipments	***	***	***	***	***	***	***
Share of shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Alternative products

As shown in table VII-9, Bharat produced other products on the same equipment and machinery used to produce fluid end blocks. Overall forging capacity, in pounds, *** from 2017 to 2019 and was *** percent lower in interim 2020 than in interim

2019.[23] The share of out-of-scope production on the same machinery used to produce fluid end blocks was greater than in-scope production during all periods for which data were collected, and increased by *** percentage points from 2017 to 2019. Other products produced on the same machinery as fluid end blocks included ***.

Table VII-9
Fluid end blocks: Overall capacity and production on the same equipment as in-scope production by India producer Bharat, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds)				
Overall forging capacity	***	***	***	***	***
Overall finishing capacity	***	***	***	***	***
Max overall capacity	***	***	***	***	***
Production: Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Ratios and shares (percent)				
Overall capacity utilization	***	***	***	***	***
Share of production: Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Quantity (units)				
Overall forging capacity	***	***	***	***	***
Overall finishing capacity	***	***	***	***	***
Max overall capacity	***	***	***	***	***
Production: Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Ratios and shares (percent)				
Overall capacity utilization	***	***	***	***	***
Share of production: Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

[23] Overall capacity and total production were also collected in units, but are more variable, as forgers/finishers often produce forgings in a range of sizes and weights. Overall capacity and production in units will vary depending on the product mix in a given period.

The industry in Italy

The Commission issued foreign producers' or exporters' questionnaires to 18 firms believed to produce and/or export fluid end blocks from Italy.[24] Usable responses to the Commission's questionnaire were received from five firms: Cogne Acciai Speciali S.p.A. ("Cogne Acciai"), Forge Monchieri S.p.A. ("Forge Monchieri"), Lucchini Mamè Forge S.p.A. ("Lucchini"), Metalcam S.p.A. ("Metalcam"), Officina Meccanica Roselli srl ("Roselli"),[25] and Ringmill S.p.A. ("Ringmill").[26] Staff believe these firms' exports to the United States accounted for approximately *** percent of U.S. imports of fluid end blocks from Italy in 2019 and ***

[24] These firms were identified through a review of information submitted in the petitions.

[25] Roselli ***.

[26] One firm, ***, submitted a foreign producer questionnaire during the preliminary phase of the investigations and ***. Email from ***. During the preliminary phase of the investigations, *** produced and exported to the United States *** fluid end blocks in 2018, representing *** percent of total reported exports to the United States. Three firms, *** certified that they have not produced or exported fluid end blocks into the United States since January 1, 2017. During the preliminary phase of the investigations, *** certified that they had not produced or exported fluid end blocks into the United States since January 1, 2016. One firm *** responded that it is not a fluid end block producer. Email from ***. None of the four nonresponsive firms were mentioned in importer questionnaire responses as sources of imports.

percent of fluid end block production in Italy.[27] Table VII-10 presents information on the fluid end block operations of the responding producers and exporters in Italy.

Table VII-10
Fluid end blocks: Summary data on firms in Italy, 2019

Firm	Production (units)	Share of reported production (percent)	Exports to the United States (units)	Share of reported exports to the United States (percent)	Total shipments (units)	Share of firm's total shipments exported to the United States (percent)
Cogne Acciai	***	***	***	***	***	***
Forge Monchieri	***	***	***	***	***	***
Lucchini	***	***	***	***	***	***
Metalcam	***	***	***	***	***	***
Ring Mill	***	***	***	***	***	***
All firms	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Changes in operations

One producer in Italy reported changes in operations since January 1, 2017. *** reported ***.

[27] Respondents estimated that they accounted for *** percent of 2019 fluid end block production from Italy and *** percent of 2019 fluid end block exports from Italy to the United States. However, respondent estimates were inconsistent with their associated 2019 production and U.S. exports. Foreign producer questionnaires reported *** fluid end blocks exported to the United States in 2019, compared to *** fluid end blocks reported in importer questionnaires. Petitioners estimated that *** fluid end blocks were exported from Italy to the United States in 2018 (see Petitioners, Exh. Gen-2), and *** fluid end blocks exports in 2018 were reported in foreign producer questionnaire responses. Given this information and the fact that only one confirmed foreign producer, ***, that accounted for *** percent of 2018 production and exports to the United States, did not submit a questionnaire response, staff believes foreign producer questionnaire responses account for *** percent of 2019 exports from Italy to the United States and *** percent of fluid end block production in Italy.

Operations on fluid end blocks

Table VII-11 presents information on the fluid end block operations of the responding producers and exporters in Italy. Capacity increased by *** percent from 2017 to 2018, then decreased by *** percent from 2018 to 2019, for an overall decrease of *** percent from 2017 to 2019. Capacity was *** percent lower in interim 2020 than in interim 2019 and is projected to decrease by *** percent from 2020 to 2021.[28] With the exception of ***, all producers from Italy reported decreases in production from 2017 to 2019.[29] Production increased by *** percent from 2017 to 2018, then decreased by *** percent from 2018 to 2019, for an overall decrease of *** percent from 2017 to 2019. Production was *** percent lower in interim 2020 than in interim 2019 and is projected to decrease by *** percent from 2020 to 2021. Capacity utilization decreased by *** percentage points from 2017 to 2019 and was *** percentage points lower in interim 2020 than in interim 2019.

In 2017 and 2018, *** shipments were exports to the United States. Similar to production, export shipments to the United States increased by *** percent from 2017 to 2018, then decreased by *** percent from 2018 to 2019, for an overall decrease of *** percent from 2017 to 2019. Exports to the United states were *** percent lower in interim 2020 than in interim 2019 and are projected to decrease by *** percent from 2020 to 2021.

*** of the five producers from Italy, ***, reported home market commercial shipments beginning in 2019. *** projected its commercial home market shipments will increase between 2020 and 2021, from *** fluid end blocks.

End-of-period inventories were reported by *** firms, ***. Inventories as a share of total shipments ranged from *** percent in 2019 to *** percent in interim 2019.

[28] Changes in capacity were driven by ***. ***.

[29] *** fluid end block production increased by *** percent from 2017 to 2019.

Table VII-11
Fluid end blocks: Data on industry in Italy, 2017-19, January to June 2019, and January to June 2020 and projection calendar years 2020 and 2021

Item	Actual experience					Projections	
	Calendar year			January to June		Calendar year	
	2017	2018	2019	2019	2020	2020	2021
	Quantity (units)						
Capacity	***	***	***	***	***	***	***
Production	***	***	***	***	***	***	***
End-of-period inventories	***	***	***	***	***	***	***
Shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***
	Ratios and shares (percent)						
Capacity utilization	***	***	***	***	***	***	***
Inventories/production	***	***	***	***	***	***	***
Inventories/total shipments	***	***	***	***	***	***	***
Share of shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	***	***	***	***	***	***	***
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	***	***	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Alternative products

As shown in table VII-12, responding Italian firms produced other products on the same equipment and machinery used to produce fluid end blocks. From 2017 to 2019, overall capacity utilization, in pounds,[30] ranged from *** to *** percent and decreased to *** percent in interim 2020. The majority of overall production was out-of-scope production, which ranged from *** percent in 2017 to *** percent in interim 2020. Other products produced on the same machinery as fluid end blocks included ***.

[30] Overall capacity and total production were also collected in units, but are more variable, as forgers/finishers often produce forgings in a range of sizes and weights. Overall capacity and production in units will vary depending on the product mix in a given period.

Table VII-12
Fluid end blocks: Overall capacity and production on the same equipment as in-scope production by producers in Italy, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds)				
Overall forging capacity	***	***	***	***	***
Overall finishing capacity	***	***	***	***	***
Max overall capacity	***	***	***	***	***
Production: Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Ratios and shares (percent)				
Overall capacity utilization	***	***	***	***	***
Share of production: Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Quantity (units)				
Overall forging capacity	***	***	***	***	***
Overall finishing capacity	***	***	***	***	***
Max overall capacity	***	***	***	***	***
Production: Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***
	Ratios and shares (percent)				
Overall capacity utilization	***	***	***	***	***
Share of production: Fluid end blocks	***	***	***	***	***
Out-of-scope production	***	***	***	***	***
Total production on same machinery	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Subject countries combined

Table VII-13 presents summary data on fluid end block operations of the reporting subject producers in the subject countries.

Table VII-13
Fluid end blocks: Data on industry in subject countries, 2017-19, January to June 2019, and January to June 2020 and projection calendar years 2020 and 2021

Item	Actual experience					Projections	
	Calendar year			January to June		Calendar year	
	2017	2018	2019	2019	2020	2020	2021
	Quantity (units)						
Capacity	13,867	14,025	14,104	7,298	6,503	11,634	11,084
Production	9,878	10,866	7,276	4,193	1,774	2,709	3,125
End-of-period inventories	***	***	***	***	***	***	***
Shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	9,270	10,120	6,222	3,784	1,176	1,790	2,075
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	9,862	10,826	7,231	4,088	1,796	2,748	3,130
	Ratios and shares (percent)						
Capacity utilization	71.2	77.5	51.6	57.5	27.3	23.3	28.2
Inventories/production	***	***	***	***	***	***	***
Inventories/total shipments	***	***	***	***	***	***	***
Share of shipments:							
Home market shipments:							
Internal consumption/ transfers	***	***	***	***	***	***	***
Commercial home market shipments	***	***	***	***	***	***	***
Total home market shipments	***	***	***	***	***	***	***
Export shipments to:							
United States	94.0	93.5	86.0	92.6	65.5	65.1	66.3
All other markets	***	***	***	***	***	***	***
Total exports	***	***	***	***	***	***	***
Total shipments	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

Table VII-14 presents data on overall capacity and production on the same equipment as in-scope production by producers in subject countries.

Table VII-14
Fluid end blocks: Overall capacity and production on the same equipment as in-scope production by producers in subject countries, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (1,000 pounds)				
Overall forging capacity	713,453	707,722	695,203	359,157	358,924
Overall finishing capacity	282,079	207,284	197,057	104,859	104,717
Max overall capacity	759,630	714,367	700,661	362,124	361,890
Production:					
Fluid end blocks	74,824	71,897	46,414	29,191	12,054
Out-of-scope production	496,603	509,245	472,987	259,005	217,493
Total production on same machinery	571,427	581,142	519,401	288,196	229,547
	Ratios and shares (percent)				
Overall capacity utilization	75.2	81.4	74.1	79.6	63.4
Share of production:					
Fluid end blocks	13.1	12.4	8.9	10.1	5.3
Out-of-scope production	86.9	87.6	91.1	89.9	94.7
Total production on same machinery	100.0	100.0	100.0	100.0	100.0
	Quantity (units)				
Overall capacity utilization	112,702	111,937	110,268	56,091	63,195
Overall finishing capacity	33,462	32,758	31,520	16,340	16,321
Max overall capacity	113,819	112,962	111,102	56,544	63,648
Production:					
Fluid end blocks	9,661	10,541	6,898	3,985	1,559
Out-of-scope production	72,339	75,271	67,436	37,149	49,251
Total production on same machinery	82,000	85,812	74,334	41,134	50,810
	Ratios and shares (percent)				
Overall capacity utilization	72.0	76.0	66.9	72.7	79.8
Share of production:					
Fluid end blocks	11.8	12.3	9.3	9.7	3.1
Out-of-scope production	88.2	87.7	90.7	90.3	96.9
Total production on same machinery	100.0	100.0	100.0	100.0	100.0

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. inventories of imported merchandise

Table VII-15 presents data on U.S. importers' reported inventories of fluid end blocks. End-of-period inventories increased from 2017 to 2019 for all import sources, including imports from China (23.3 percent), Germany (*** percent), India (*** percent), and Italy (74.4 percent), and nonsubject sources (*** percent), for an overall increase in U.S. importers' end-of-period inventories from all sources of *** percent from 2017 to 2019.[31] U.S. importers' end-of-period inventories from subject sources were 15.7 percent lower in interim 2020 than in interim 2019.

The ratio of inventories to U.S. imports and to U.S. shipments of imports increased substantially from 2017 to 2019, as inventories increased and U.S. shipments of imports decreased. The ratio of inventories to U.S. imports increased by *** percentage points from 2017 to 2019 and was *** percentage points higher in interim 2020 than in interim 2019. By interim 2020, end-of-period inventories from subject sources surpassed U.S. imports from subject sources, as the ratio of inventories to U.S. imports increased to ***.

[31] ***. Staff telephone interview with ***.

Table VII-15
Fluid end blocks: U.S. importers' end-of-period inventories of imports by source, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Inventories (units); Ratios (percent)				
Imports from China					
Inventories	266	422	328	***	***
Ratio to U.S. imports	19.2	34.1	119.7	***	***
Ratio to U.S. shipments of imports	23.0	39.7	102.5	***	***
Ratio to total shipments of imports	***	***	***	***	***
Imports from Germany					
Inventories	***	***	***	***	***
Ratio to U.S. imports	***	***	***	***	***
Ratio to U.S. shipments of imports	***	***	***	***	***
Ratio to total shipments of imports	***	***	***	***	***
Imports from India					
Inventories	***	***	***	***	***
Ratio to U.S. imports	***	***	***	***	***
Ratio to U.S. shipments of imports	***	***	***	***	***
Ratio to total shipments of imports	***	***	***	***	***
Imports from Italy					
Inventories	857	1,701	1,497	***	***
Ratio to U.S. imports	18.4	33.2	53.3	***	***
Ratio to U.S. shipments of imports	22.5	41.6	50.2	***	***
Ratio to total shipments of imports	***	***	***	***	***
Imports from subject sources					
Inventories	1,752	2,919	2,962	3,365	2,838
Ratio to U.S. imports	13.1	24.9	43.5	36.6	110.8
Ratio to U.S. shipments of imports	15.0	28.2	44.3	41.4	89.9
Ratio to total shipments of imports	***	***	***	***	***
Imports from nonsubject sources:					
Inventories	***	***	***	***	***
Ratio to U.S. imports	***	***	***	***	***
Ratio to U.S. shipments of imports	***	***	***	***	***
Ratio to total shipments of imports	***	***	***	***	***
Imports from all import sources:					
Inventories	***	***	***	***	***
Ratio to U.S. imports	***	***	***	***	***
Ratio to U.S. shipments of imports	***	***	***	***	***
Ratio to total shipments of imports	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. importers' outstanding orders

The Commission requested importers to indicate whether they imported or arranged for the importation of fluid end blocks from China, Germany, India, and Italy after June 30, 2020. These data are presented in table VII-16.

Table VII-16
Fluid end blocks: Arranged imports, July 2020 through June 2021

Item	Period				
	Jul-Sep 2020	Oct-Dec 2020	Jan-Mar 2021	Apr-Jun 2021	Total
	Quantity (units)				
Arranged U.S. imports from.--China	***	***	***	***	***
Germany	***	***	***	***	***
India	***	***	***	***	***
Italy	***	***	***	***	***
Subject sources	***	***	***	***	***
Nonsubject sources	***	***	***	***	***
All import sources	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires.

Third-country trade actions

There are no known trade actions on fluid end blocks in third-country markets.

Information on nonsubject countries

Petitioners contend that imports from nonsubject sources have had a minimal presence in the United States, with imports from nonsubject sources gaining approximately *** percentage points of market share from 2016 to 2018, and *** in market share across the interim periods.[32] Overall, petitioners stated that imports from nonsubject sources comprised less than 4 percent of apparent domestic consumption.[33] According to petitioners, the largest nonsubject import sources were Austria, Korea, and Romania, but petitioners believe that there may also be some imported volumes from Mexico and France.[34] [35] While the quantities reported were very small, imports from nonsubject sources included ***.[36] According to petitioners, the United States is the only major market for fluid end blocks.[37]

[32] Petitions, p. 38.
[33] Petitioners' postconference brief, p. II-11.
[34] Conference transcript, pp. 41-42 (Levy).
[35] Petitioners' postconference brief, II-11.
[36] Importers' questionnaire responses.
[37] Fluid end block exports to markets other than the U.S. domestic market constituted *** percent in 2016 and *** percent in 2018 of total global exports. Petitioners' postconference brief, Table 5.

APPENDIX A

FEDERAL REGISTER NOTICES

The Commission makes available notices relevant to its investigations and reviews on its website, www.usitc.gov. In addition, the following tabulation presents, in chronological order, *Federal Register* notices issued by the Commission and Commerce during the current proceeding.

Citation	Title	Link
84 FR 71462, December 27, 2019	*Fluid End Blocks From China, Germany, India, and Italy; Institution of Anti-Dumping and Countervailing Duty Investigations and Scheduling of Preliminary Phase Investigations*	https://www.govinfo.gov/content/pkg/FR-2019-12-27/pdf/2019-27881.pdf
85 FR 2385, January 15, 2020	*Forged Steel Fluid End Blocks From the Federal Republic of Germany, India, Italy and the People's Republic of China: Initiation of Countervailing Duty Investigations*	https://www.govinfo.gov/content/pkg/FR-2020-01-15/pdf/2020-00490.pdf
85 FR 2394, January 15, 2020	*Forged Steel Fluid End Blocks From the Federal Republic of Germany, India, and Italy: Initiation of Less-Than-Fair-Value Investigations*	https://www.govinfo.gov/content/pkg/FR-2020-01-15/pdf/2020-00493.pdf
85 FR 7330, February 7, 2020	*Fluid End Blocks From China, Germany, India, and Italy, Determinations*	https://www.govinfo.gov/content/pkg/FR-2020-02-07/pdf/2020-02420.pdf

Citation	Title	Link
85 FR 31457, May 26, 2020	*Forged Steel Fluid End Blocks From the People's Republic of China: Preliminary Affirmative Countervailing Duty Determination, and Alignment of Final Determination With Final Antidumping Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2020-05-26/pdf/2020-11231.pdf
85 FR 31454, May 26, 2020	*Forged Steel Fluid End Blocks From the Federal Republic of Germany: Preliminary Affirmative Countervailing Duty Determination, and Alignment of Final Determination With Final Antidumping Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2020-05-26/pdf/2020-11206.pdf
85 FR 31452, May 26, 2020	*Forged Steel Fluid End Blocks From India: Preliminary Affirmative Countervailing Duty Determination, and Alignment of Final Determination With Final Antidumping Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2020-05-26/pdf/2020-11229.pdf
85 FR 31460, May 26, 2020	*Forged Steel Fluid End Blocks From Italy: Preliminary Affirmative Countervailing Duty Determination, and Alignment of Final Determination With Final Antidumping Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2020-05-26/pdf/2020-11230.pdf

Citation	Title	Link
85 FR 44513, July 23, 2020	*Forged Steel Fluid End Blocks From the Federal Republic of Germany: Preliminary Affirmative Determination of Sales at Less Than Fair Value, Postponement of Final Determination, and Extension of Provisional Measures*	https://www.govinfo.gov/content/pkg/FR-2020-07-23/pdf/2020-15912.pdf
85 FR 44517, July 23, 2020	*Forged Steel Fluid End Blocks From India: Preliminary Negative Determination of Sales at Less Than Fair Value and Postponement of Final Determination*	https://www.govinfo.gov/content/pkg/FR-2020-07-23/pdf/2020-15914.pdf
85 FR 44500, July 23, 2020	*Forged Steel Fluid End Blocks From Italy: Preliminary Affirmative Determination of Sales at Less Than Fair Value, Postponement of Final Determination, and Extension of Provisional Measures*	https://www.govinfo.gov/content/pkg/FR-2020-07-23/pdf/2020-15915.pdf
85 FR 52151, August 24, 2020	*Fluid End Blocks From China, Germany, India, and Italy; Scheduling of the Final Phase of Countervailing Duty and Anti-Dumping Duty Investigations*	https://www.govinfo.gov/content/pkg/FR-2020-08-24/pdf/2020-18443.pdf

Citation	Title	Link
85 FR 80020, December 11, 2020	*Forged Steel Fluid End Blocks From the People's Republic of China: Final Affirmative Countervailing Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2020-12-11/pdf/2020-27330.pdf
85 FR 80011, December 11, 2020	*Forged Steel Fluid End Blocks From the Federal Republic of Germany: Final Affirmative Countervailing Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2020-12-11/pdf/2020-27335.pdf
85 FR 79999, December 11, 2020	*Forged Steel Fluid End Blocks from India: Final Affirmative Countervailing Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2020-12-11/pdf/2020-27333.pdf
85 FR 80022, December 11, 2020	*Forged Steel Fluid End Blocks from Italy: Final Affirmative Countervailing Duty Determination*	https://www.govinfo.gov/content/pkg/FR-2020-12-11/pdf/2020-27336.pdf
85 FR 80018, December 11, 2020	*Forged Steel Fluid End Blocks From the Federal Republic of Germany: Final Determination of Sales at Less Than Fair Value*	https://www.govinfo.gov/content/pkg/FR-2020-12-11/pdf/2020-27331.pdf
85 FR 80003, December 11, 2020	*Forged Steel Fluid End Blocks From India: Final Negative Determination of Sales at Less Than Fair Value*	https://www.govinfo.gov/content/pkg/FR-2020-12-11/pdf/2020-27332.pdf
85 FR 79996, December 11, 2020	*Forged Steel Fluid End Blocks From Italy: Final Affirmative Determination of Sales at Less Than Fair Value*	https://www.govinfo.gov/content/pkg/FR-2020-12-11/pdf/2020-27334.pdf
85 FR 83104, December 21, 2020	*Fluid End Blocks from India; Termination of Investigation*	https://www.govinfo.gov/content/pkg/FR-2020-12-21/pdf/2020-28108.pdf

APPENDIX B

LIST OF HEARING WITNESSES

CALENDAR OF PUBLIC HEARING

Those listed below appeared in the United States International Trade Commission's hearing via videoconference:

Subject: Fluid End Blocks from China, Germany, India, and Italy

Inv. Nos.: 701-TA-632-635 and 731-TA-1466-1468 (Final)

Date and Time: December 1, 2020 - 9:30 a.m.

FOREIGN DELEGATION WITNESS:

Delegation of the European Union to the United States of America
Trade and Agriculture Section
Washington, DC

Sibylle Zitko, Senior Legal Advisor

OPENING REMARKS:

Petitioners (**Myles S. Getlan**, Cassidy Levy Kent (USA) LLP)
Respondents (**Lian Yang**, Alston & Bird LLP)

In Support of the Imposition of
Antidumping and Countervailing Duty Orders:

Cassidy Levy Kent (USA) LLP
Washington, DC
on behalf of

FEB Fair Trade Coalition
Ellwood Group
Finkl Steel

Scott Boyd, President, Ellwood City Forge

Kathy Saunders, Director of Marketing, Ellwood City Forge

Guy Brada, Technical Sales Service Manager, Ellwood City Forge

In Support of the Imposition of
Antidumping and Countervailing Duty Orders (continued):

Mark Shirley, CEO, Finkl Steel

Mary Jane Alves)
Myles S. Getlan)
) – OF COUNSEL
Jack A. Levy)
Thomas M. Beline)

In Opposition to the Imposition of
Antidumping and Countervailing Duty Orders:

Faegre Drinker Biddle & Reath LLP
Van Bael & Bellis
Washington, DC
on behalf of

Cogne Acciai Speciali S.p.A.
Cogne Specialty Steel USA, Inc.
Metalcam S.p.A.
Officina Meccanica Roselli S.r.l.

Jean Paul Betemps, CEO, Cogne Specialty Steel USA, Inc.

Giulio Girivetto, Director, Stainless Steel Bars and Oil & Gas Sales, Cogne Acciai Speciali S.p.A.

Massimo Cocchi, Sales Manager, Metalcam S.p.A.

Douglas J. Heffner)
Richard P. Ferrin)
) – OF COUNSEL
Carrie Bethea)
Gabriele Coppo)

In Opposition to the Imposition of
Antidumping and Countervailing Duty Orders (continued):

Crowell & Moring, LLP
Washington, DC
on behalf of

Lucchini Mamé Forge S.p.A.

Nicholas Poradek, Co-Founder and Vice-President of Finance,
ST9 Gas + Oil LLC

Robert LaFrankie)
Vassilis Akritidis) – OF COUNSEL
Lorenzo Di Masi)

Alston & Bird LLP
Washington, DC
on behalf of

Schmiedewerke Gröditz GmbH

Tom Bell, Vice President Americas, Groditz Steel North America

Lian Yang) – OF COUNSEL

REBUTTAL/CLOSING REMARKS:

Petitioners (**Jack A. Levy**, Cassidy Levy Kent (USA) LLP)
Respondents (**Richard P. Ferrin**, Faegre Drinker Biddle & Reath LLP and **Nicholas Poradek**, ST9 Gas + Oil LLC)

-END-

APPENDIX C

SUMMARY DATA

Forgers/finishers and toll finishers

Table C-1
Fluid end blocks: Summary data concerning the U.S. market including forger/finishers and toll finishers, 2017-19, January to June 2019, and January to June 2020

(Quantity=units; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per unit; Productivity (units per 1,000 hours); Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to June		Comparison years			Jan-Jun
	2017	2018	2019	2019	2020	2017-19	2017-18	2018-19	2019-20
U.S. consumption quantity:									
Amount	***	***	***	***	***	▼***	▼***	▼***	▼***
Producers' share (fn1) (fn2)	***	***	***	***	***	▼***	▼***	▼***	▼***
Importers' share (fn1):									
China	***	***	***	***	***	▼***	▲***	▼***	▼***
Germany	***	***	***	***	***	▼***	▼***	▼***	▼***
India	***	***	***	***	***	▲***	▼***	▲***	▲***
Italy	***	***	***	***	***	▲***	▲***	▲***	▼***
Subject sources	***	***	***	***	***	▲***	▲***	▲***	▲***
Nonsubject sources	***	***	***	***	***	▼***	▲***	▼***	▲***
All import sources	***	***	***	***	***	▲***	▲***	▲***	▲***
U.S. consumption value:									
Amount	***	***	***	***	***	▼***	▼***	▼***	▼***
Producers' share (fn1) (fn2):									
Fully domestic value	***	***	***	***	***	▼***	▼***	▼***	▼***
Additional value added by toll finishers	***	***	***	***	***	▲***	▲***	▼***	▼***
Total	***	***	***	***	***	▼***	▲***	▼***	▼***
Importers' share (fn1):									
China	***	***	***	***	***	▼***	▼***	▼***	▼***
Germany	***	***	***	***	***	▼***	▼***	▼***	▼***
India	***	***	***	***	***	▲***	▼***	▲***	▲***
Italy	***	***	***	***	***	▲***	▲***	4	▲***
Subject sources	***	***	***	***	***	▲***	▼***	▲***	▲***
Nonsubject sources	***	***	***	***	***	▼***	▼***	▼***	▲***
All import sources	***	***	***	***	***	▲***	▼***	▲***	▲***
U.S. importers' U.S. shipments from:									
China:									
Quantity	1,158	1,064	320	***	***	▼(72.4)	▼(8.1)	▼(69.9)	▼***
Value	26,007	22,026	5,309	***	***	▼(79.6)	▼(15.3)	▼(75.9)	▼***
Unit value	$22,459	$20,701	$16,591	***	***	▼(26.1)	▼(7.8)	▼(19.9)	▼***
Ending inventory quantity	266	422	328	***	***	▲23.3	▲58.6	▼(22.3)	▼***
Germany									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▼***
Value	***	***	***	***	***	▼***	▼***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▲***
India:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▼***
Value	***	***	***	***	***	▼***	▼***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▼***
Italy:									
Quantity	3,807	4,085	2,985	***	***	▼(21.6)	▲7.3	▼(26.9)	▼***
Value	79,202	108,313	72,920	***	***	▼(7.9)	▲36.8	▼(32.7)	▼***
Unit value	$20,804	$26,515	$24,429	***	***	▲17.4	▲27.4	▼(7.9)	▲***
Ending inventory quantity	857	1,701	1,497	***	***	▲74.7	▲98.5	▼(12.0)	▼***
Subject sources:									
Quantity	11,709	10,335	6,685	4,065	1,579	▼(42.9)	▼(11.7)	▼(35.3)	▼(61.2)
Value	272,357	264,412	180,581	111,405	42,687	▼(33.7)	▼(2.9)	▼(31.7)	▼(61.7)
Unit value	$23,260	$25,584	$27,013	$27,406	$27,034	▲16.1	▲10.0	▲5.6	▼(1.4)
Ending inventory quantity	1,752	2,919	2,962	3,365	2,838	▲69.1	▲66.6	▲1.5	▼(15.7)
Nonsubject sources:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▼***
Value	***	***	***	***	***	▼***	▼***	▼***	▼***
Unit value	***	***	***	***	***	▼***	▼***	▼***	▲***
Ending inventory quantity	***	***	***	***	***	▲***	▼***	▲***	▲***
All import sources:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▼***
Value	***	***	***	***	***	▼***	▼***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Ending inventory quantity	***	***	***	***	***	▲***	▲***	▲***	▼***

Table continued on next page.

Table C-1--Continued
Fluid end blocks: Summary data concerning the U.S. market including forger/finishers and toll finishers, 2017-19, January to June 2019, and January to June 2020

(Quantity=units; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per unit; Productivity (units per 1,000 hours); Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to June		Comparison years			Jan-Jun
	2017	2018	2019	2019	2020	2017-19	2017-18	2018-19	2019-20
U.S. producers':									
Forgers/finishers: Average capacity quantity	23,301	22,897	22,537	11,449	10,729	▼(3.3)	▼(1.7)	▼(1.6)	▼(6.3)
Forgers/finishers: Production quantity	12,737	9,942	4,434	2,502	***	▼(65.2)	▼(21.9)	▼(55.4)	▼***
Forgers/finishers: Capacity utilization (fn1)	54.7	43.4	19.7	21.9	***	▼(35.0)	▼(11.2)	▼(23.7)	▼***
Toll finishers: Average capacity quantity	8,810	8,938	9,232	4,616	4,616	▲4.8	▲1.5	▲3.3	---
Toll finishers: Production quantity	7,120	7,707	3,365	2,188	502	▼(52.7)	▲8.2	▼(56.3)	▼(77.1)
Toll finishers: Capacity utilization (fn1)	80.8	86.2	36.4	47.4	10.9	▼(44.4)	▲5.4	▼(49.8)	▼(36.5)
U.S. shipments:									
Quantity (fn2)	12,383	10,747	***	***	***	▼***	▼(13.2)	▼***	▼***
Value (fn2):									
Fully domestic value	211,862	198,448	88,177	55,420	***	▼(58.4)	▼(6.3)	▼(55.6)	▼***
Additional value added by toll finishers	***	***	***	***	***	▼***	▲***	▼***	▼***
Total	***	***	***	***	***	▼***	▲***	▼***	▼***
Unit value (fn2)	$17,109	$18,465	***	***	***	▲***	▲7.9	▼***	▲***
Export shipments:									
Quantity	***	***	***	***	***	▲***	▼***	▲***	▼***
Value	***	***	***	***	***	▲***	▼***	▲***	▼***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Ending inventory quantity	***	***	***	***	***	▼***	▼***	▼***	▲***
Inventories/total shipments (fn1)	***	***	***	***	***	▼***	▼***	▼***	▲***
Production workers	449	451	277	288	91	▼(38.3)	▲0.4	▼(38.6)	▼(68.4)
Hours worked (1,000s)	951	950	612	339	117	▼(35.7)	▼(0.1)	▼(35.6)	▼(65.5)
Wages paid ($1,000)	24,772	25,520	16,801	9,644	3,677	▼(32.2)	▲3.0	▼(34.2)	▼(61.9)
Hourly wages (dollars per hour)	$26.04	$26.86	$27.46	$28.47	$31.46	▲5.5	▲3.2	▲2.2	▲10.5
Forgers/finishers: Productivity	24.9	24.1	13.9	13.9	***	▼(44.4)	▼(3.2)	▼(42.6)	▼***
Forgers/finishers: Unit labor costs	$1,139	$1,282	$2,120	$2,050	***	▲86.0	▲12.5	▲65.4	▲***
Toll finishers: Productivity	16.2	14.3	11.5	13.8	***	▼(28.7)	▼(11.4)	▼(19.5)	▲***
Toll finishers: Unit labor costs	$1,441	$1,658	$2,200	$2,064	***	▲52.7	▲15.0	▲32.7	▼***
U.S. forgers'/finishers':									
Net sales:									
Quantity	***	***	***	***	***	▼***	▼***	▼***	▼***
Value	***	***	***	***	***	▼***	▼***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▲***	▼***	▲***
Cost of goods sold (COGS)	***	***	***	***	***	▼***	▼***	▼***	▼***
Gross profit or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▼***
SG&A expenses	***	***	***	***	***	▼***	▲***	▼***	▼***
Operating income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▼***
Net income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▼***
Capital expenditures	***	***	***	***	***	▼***	▼***	▼***	▼***
Research and development expenses	***	***	***	***	***	▲***	▲***	▲***	▼***
Net assets	***	***	***	***	***	▼***	▼***	▼***	***
Unit COGS	***	***	***	***	***	▲***	▲***	▲***	▲***
Unit SG&A expenses	***	***	***	***	***	▲***	▲***	▲***	▲***
Unit operating income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▼***
Unit net income or (loss) (fn3)	***	***	***	***	***	▼***	▼***	▼***	▼***
COGS/sales (fn1)	***	***	***	***	***	▲***	▲***	▲***	▲***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***
Net income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***

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Table C-1--Continued
Fluid end blocks: Summary data concerning the U.S. market including forger/finishers and toll finishers, 2017-19, January to June 2019, and January to June 2020

(Quantity=units; Value=1,000 dollars; Unit values, unit labor costs, and unit expenses=dollars per unit; Productivity (units per 1,000 hours); Period changes=percent--exceptions noted)

	Reported data					Period changes			
	Calendar year			January to June		Comparison years			Jan-Jun
	2017	2018	2019	2019	2020	2017-19	2017-18	2018-19	2019-20
U.S. toll finishers':									
Net tolling:									
Quantity	***	***	***	***	***	▼***	▲***	▼***	▼***
Value	***	***	***	***	***	▼***	▲***	▼***	▼***
Unit value	***	***	***	***	***	▲***	▲***	▲***	▼***
Total cost of tolling services (COTS)	***	***	***	***	***	▼***	▲***	▼***	▼***
Gross profit or (loss) (fn3)	***	***	***	***	***	▼***	▲***	▼***	▼---
SG&A expenses	***	***	***	***	***	▼***	▲***	▼***	▼***
Operating income or (loss) (fn3)	***	***	***	***	***	▼***	▲***	▼***	▼---
Net income or (loss) (fn3)	***	***	***	***	***	▼***	▲***	▼***	▼***
Capital expenditures	***	***	***	***	***	▼***	▼***	▲***	▼***
Research and development expenses	***	***	***	***	***	▲***	▲***	▼***	▼***
Net assets	***	***	***	NA	NA	▼***	▲***	▼***	NA
COTS/sales (fn1)	***	***	***	***	***	▲***	▲***	▲***	▲***
Operating income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***
Net income or (loss)/sales (fn1)	***	***	***	***	***	▼***	▼***	▼***	▼***

Note.--Shares and ratios shown as "0.0" percent represent non-zero values less than "0.05" percent (if positive) and greater than "(0.05)" percent (if negative). Zeroes, null values, and undefined calculations are suppressed and shown as "---". Period changes preceded by a "▲" represent an increase, while period changes preceded by a "▼" represent a decrease.

fn1.--Reported data are in percent and period changes are in percentage points.
fn2.--The quantity for U.S. producers' U.S. shipments reflects the quantity of fluid end blocks sold in the United States by forgers/finishers, which includes the volume toll finished on behalf of the forgers/finishers. The fully domestic value for U.S. producers' U.S. shipments reflects the value of fluid end blocks sold in the United States by forgers/finishers, which includes the additional value added by toll finishers for merchandise produced on behalf of the forgers/finishers. Separately reported is the additional value added by toll finishers which represents the value added by toll finishers on behalf of U.S. importers and of other U.S. purchasers of fluid end blocks (e.g., OEM fluid end module and pump producers). In measuring consumption and market share this methodology avoids reclassifying and/or double counting merchandise already reported once by U.S. forgers/finishers or by U.S. importers.
fn3.--Percent changes only calculated when both comparison values represent profits; The directional change in profitability provided when one or both comparison values represent a loss.

Source: Compiled from data submitted in response to Commission questionnaires.

APPENDIX D

U.S. FORGERS/FINISHERS U.S. SHIPMENTS AND U.S. IMPORTERS' IMPORTS BY PRODUCT TYPE

Table D-1

Fluid end blocks: U.S. forgers/finishers' U.S. shipments and U.S. importers' imports, by product type, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. forgers/finishers' U.S. shipments.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	12,383	10,747	***	***	***
	Value (1,000 dollars)				
U.S. forgers/finishers' U.S. shipments.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	211,862	198,448	***	***	***
	Unit value (dollars per unit)				
U.S. forgers/finishers' U.S. shipments.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	17,109	18,465	***	***	***
	Share of quantity (percent)				
U.S. forgers/finishers' U.S. shipments.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Share of value (percent)				
U.S. forgers/finishers' U.S. shipments.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***

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Table D-1 – Continued

Fluid end blocks: U.S. forgers/finishers' U.S. shipments and U.S. importers' imports, by product type, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. importers' imports from China.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	1,383	1,237	274	***	***
	Value (1,000 dollars)				
U.S. importers' imports from China.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	28,687	22,277	3,870	***	***
	Unit value (dollars per unit)				
U.S. importers' imports from China.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	20,743	18,009	14,124	***	***
	Share of quantity (percent)				
U.S. importers' imports from China.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' imports from China.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***

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Table D-1 – Continued

Fluid end blocks: U.S. forgers/finishers' U.S. shipments and U.S. importers' imports, by product type, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. importers' imports from Germany.--Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' imports from Germany.--Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' imports from Germany.--Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' imports from Germany.--Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' imports from Germany.--Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***

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Table D-1 – Continued

Fluid end blocks: U.S. forgers/finishers' U.S. shipments and U.S. importers' imports, by product type, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. importers' imports from India.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' imports from India.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' imports from India.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' imports from India.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' imports from India.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***

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Table D-1 – Continued

Fluid end blocks: U.S. forgers/finishers' U.S. shipments and U.S. importers' imports, by product type, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. importers' imports from Italy.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	4,664	5,119	2,808	***	***
	Value (1,000 dollars)				
U.S. importers' imports from Italy.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	98,183	137,462	71,103	***	***
	Unit value (dollars per unit)				
U.S. importers' imports from Italy.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	21,051	26,853	25,322	***	***
	Share of quantity (percent)				
U.S. importers' imports from Italy.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' imports from Italy.-- Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***

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Table D-1 – Continued

Fluid end blocks: U.S. forgers/finishers' U.S. shipments and U.S. importers' imports, by product type, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. importers' imports from subject sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	13,403	11,714	6,803	4,597	1,281
	Value (1,000 dollars)				
U.S. importers' imports from subject sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	311,051	299,449	188,998	130,741	29,058
	Unit value (dollars per unit)				
U.S. importers' imports from subject sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	23,208	25,563	27,782	28,441	22,684
	Share of quantity (percent)				
U.S. importers' imports from subject sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' imports from subject sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***

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Table D-1 – Continued

Fluid end blocks: U.S. forgers/finishers' U.S. shipments and U.S. importers' imports, by product type, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. importers' imports from nonsubject sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' imports from nonsubject sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' imports from nonsubject sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' imports from nonsubject sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' imports from nonsubject sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***

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Table D-1 – Continued

Fluid end blocks: U.S. forgers/finishers' U.S. shipments and U.S. importers' imports, by product type, 2017-19, January to June 2019, and January to June 2020

Item	Calendar year			January to June	
	2017	2018	2019	2019	2020
	Quantity (units)				
U.S. importers' imports from all import sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Value (1,000 dollars)				
U.S. importers' imports from all import sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Unit value (dollars per unit)				
U.S. importers' imports from all import sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Share of quantity (percent)				
U.S. importers' imports from all import sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***
	Share of value (percent)				
U.S. importers' imports from all import sources.--					
Unfinished stainless steel	***	***	***	***	***
Unfinished other alloy	***	***	***	***	***
Finished stainless steel	***	***	***	***	***
Finished other alloy	***	***	***	***	***
All product types	***	***	***	***	***

Note: *** U.S. forgers/finishers U.S. shipments were reported as "unfinished" because some, but not all, finishing operations were performed on the fluid end blocks (either by FEM producers/OEM finishers or by toll finishers on behalf of U.S. forgers/finishers) that are required prior to incorporation into a fluid end module.

Source: Compiled from data submitted in response to Commission questionnaires.