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"Factoryless" Manufacturers: Classification and Implementation Challenges

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"Factoryless" Manufacturers: Classification and Implementation Challenges

By Jennifer Ribarsky*

Global competition has forced manufacturers to seek more efficient ways to make their products. It has become increasingly common for manufacturers seeking more efficient means of production to divide their production process into stages or tasks (fragments), which allows them to outsource parts of the transformation process. One dimension of this fragmentation occurs when a firm outsources part or all of its transformation process overseas, an approach known as offshoring. [1] The resulting production network of interlinked economic activities across different countries where one entity, usually the principal firm, exerts a certain level of control over the production process is commonly referred to as a global supply chain or a global value chain.

Many news reports and papers have discussed this phenomenon. A prominent example of a good produced via a global supply chain is the Apple iPhone. Apple is headquartered in the United States and most of its R&D, marketing, top management, and corporate functions are located in the United States. Many of the materials that go into an iPhone, such as the processor or flash memory, are produced in other countries including Japan and Korea. The final assembly of the iPhone takes place in China.

Many economic forces are driving the fragmentation of production to specialized establishments both foreign and domestic. Technological improvements in information technology have allowed firms to relocate production to new and often distant locations. In addition, international cost differences such as lower relative wage costs, lower trade and transport costs, improved logistics, and improved intellectual property rights protection and contract enforcement have allowed more producers to fragment their production processes through the use of global supply chains.[2]

This paper focuses on a type of global production arrangement known as "factoryless" manufacturing and the challenges with identifying and collecting data on such units. It is organized as follows. Section 1 provides a simple typology of global production arrangements for making and selling goods. Section 2 discusses the U.S. and international recommendations on the industry classification of factoryless manufacturers. Section 3 provides guidelines for identifying factoryless manufacturers.

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*The views expressed herein are those of the author and should not be attributed to the Bureau of Economic Analysis.

[1] Outsourcing refers to manufacturing activities that are contracted out to unrelated firms located in the home country or abroad. The term "Offshoring," as used here, refers to manufacturing activities done abroad through both foreign affiliates and independent contractors.

[2] U.S. International Trade Commission "Economic Effects of U.S. Import Restraints, Special Topic: Global Supply Chains," August 2011.

Section 4 discusses related data collection efforts. Lastly, section 5 discusses issues with data collection.

Section 1: Global Production Arrangements

Before discussing issues related to the industry classification of units that outsource part or the entire production process, simple examples of global production arrangements for making and selling goods will be discussed. The following cases describe global production arrangements where the principal is located in one country and the supplier in another country. A firm could also outsource domestically, but that scenario will not be discussed in this paper.

Case A: Goods sent abroad for Processing

Under this global production arrangement the principal owns the materials and purchases manufacturing services to transform the physical inputs into another product. For example, the principal is engaged in making athletic shoes. The production of this shoe can be divided into three main parts: (1) the top of the shoe, called the upper; (2) the midsole, the most important part of this athletic shoe because it is the part that cushions and protects the foot; and (3) the outsole. Suppose the principal created a new innovative design that cushions the foot and provides for better athletic performance. The principal produces the newly designed midsole at its domestic manufacturing plant. However, the principal decides that it is more cost effective to send the midsole and the other materials (the upper and the outsole) it has manufactured to another country for final assembly. There is no change in ownership of the various parts of the shoe sent abroad for further processing; the principal simply pays a processing fee to the supplier to assemble the shoe. The shoe is marketed and sold by the principal, so it owns the output and receives the revenue. The principal may or may not take physical possession of the final output. The output could be shipped directly from the processor to the final buyer in the principal's country; the output could remain in the processor's country; or the output could be shipped directly to another country.

The key points are:

- The supplier only receives a processing fee in this scenario. The fee is not the full value of the final good; it is simply the fee to assemble the shoe.
- The principal is the economic owner of the materials, the intellectual property (the innovative design of the midsole), and the output.

Under this scenario both the principal and supplier are classified in the manufacturing sector. The principal reports the revenue it received from selling the shoes at full value. The processor reports the revenue it received from contract work (not an imputed value for the shoe). This is the standard "goods sent abroad for processing" case as discussed in the Systems of National Accounts (SNA 2008) and the Balance of Payments Manual version 6 (BPM 6).[3]

[3] See System of National Accounts SNA2008 at unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf and Balance of Payments Manual version 6 at http://www.imf.org/external/pubs/ft/bop/2007/bopman6.htm.

Case B: Merchant Case
Under this global production arrangement the principal buys the shoe from the supplier and resells it without further transformation. The principal did not provide any of the material inputs or any information to the supplier to help design the shoe. If the principal purchases a good from a supplier abroad and resells that good to a customer located abroad, then the activity falls under the "merchanting" case as discussed in the SNA 2008 and BPM6. The principal is simply a wholesaler that buys the shoes from the supplier in country B and sells them to a customer located in country C.

The key points are:

- The goods never entered the principal's territory.
- The physical form of the goods, while owned by the principal, did not change (no transformation occurred).

In this simple case the principal purchased and resold the goods abroad. The principal did not own the material inputs or the intellectual property, but did take ownership of the shoes before selling them to the customer located in country C. Following the merchanting recording of the trade flows, the principal's country records a negative export when the good is acquired and a positive export when the good is sold. It is important to note that if the good is imported into the United States, the value of the finished good is included in U.S. merchandise imports.

Under this scenario the principal is classified in the trade sector (either in the wholesale trade sector if the principal is primarily engaged in the intermediate step in the distribution of merchandise, or in the retail trade sector if the principal is primarily engaged in the final step in the distribution of merchandise). Its output would be the margin on the sale. The foreign supplier is classified in the manufacturing sector and reports the full value of the shoe in its product shipments.

Case C: factoryless producer
Under this global production arrangement a factoryless producer provides the R&D and other intellectual property products to the supplier as inputs into the production process; in other words the principal supplied the "blue prints" for production. For example, suppose the principal creates a new and innovative midsole that improves the athletic performance of Olympic runners. The principal contracts with a supplier to make the shoe. The principal provides the supplier with the design and the specifications for making the shoe. The principal did not provide any of the required material inputs (the supplier purchased those materials). However, the principal is responsible for marketing and selling the shoe and receives the revenue.

Questions to consider about this global production arrangement:

- What is the transaction between the principal and the supplier? Is it a purchase of a good or a payment of a processing fee?
- Does the answer to the question change if the value of the finished product is mostly the intellectual property embedded in the product?
- Who is the economic owner of the inputs?

    - The principal owns the intellectual property.
    - The supplier purchased the materials.
- What is the economic activity of the principal?

Determining the industry classification of this type of producer is not straightforward. A factoryless producer may provide substantial inputs in the form of R&D and other intellectual property embedded in the good. Under traditional manufacturing arrangements, the ownership of the material inputs and the ownership of the output coincided. Now there are cases, especially in the production of many high tech products, where this traditional relationship does not hold. In these cases, it is the ownership of the intellectual property and the ownership of the output and that coincide.

In the 2012 North American Industry Classification System (NAICS), the U.S. Economic Classification Policy Committee (ECPC) of the Office of Management and Budget (OMB) issued guidance to classify in the manufacturing sector those units that control the production process but subcontract out all manufacturing transformation activities required to make a good. In the OMB guidance, these units are called factoryless goods producers (FGPs)[4], but are referred to in this paper as factoryless manufacturers. These factoryless manufacturers do not fit well in the traditional classification paradigm of manufacturers or traders. Factoryless manufacturers are not performing the activity of the physical, chemical, or mechanical transformation of inputs into new outputs themselves; but they are arranging all the factors of production required to make a good. Factoryless manufacturers also do not exhibit the typical characteristics of a trader in that they are doing more than simply buying and reselling a good.

Section 2: Industry Classification

U.S. NAICS

NAICS is an industry classification system for establishments based on a production-oriented conceptual framework in which establishments are grouped together by a similarity in production processes. A production process describes any activity in which inputs, such as types of labor and their skills, capital equipment, raw and intermediate materials, and, in many cases, intangible inputs such as intellectual property are used to fabricate a material good or to render a service.[5] Establishments are the smallest operating entity for which records provide information on the cost of resources – materials, labor, and capital – employed to produce the units of output.[6] The

[4] In this paper I use the term factoryless manufacturers and factoryless goods producers interchangeably. In the OMB guidance, the term factoryless goods producers is used to be generic and avoid association with any particular industry, but these producers are more commonly referred to as factoryless manufacturers.
[5] For more information see The Economic Classification Policy Committee "Issue Paper No. 1" http://www.census.gov/eos/www/naics/history/docs/issue_paper_1.pdf.
[6] NAICS United States, 2007, Executive Office of the President, Office of Management and Budget, 2007 page 19.

establishment, generally units at a single physical location, is the statistical reporting unit for many of the U.S. statistical programs such as the Economic Census.

With the rise of global competition, economies are becoming more integrated and the use of global supply chains is rapidly increasing. This has complicated the application of the production function classification principle to units that control intellectual property and perform underlying entrepreneurial components of arranging the factors of production but outsource all of the actual transformation activities to other specialized units. The OMB calls these units factoryless goods producers (FGPs).

Units in the manufacturing sector arrange for and bring together all of the factors of production necessary to produce a good. They accept the entrepreneurial risk of producing and bringing goods to market. As the ECPC states in the NAICS 2012 supporting documents:

> *"When individual steps in the complete process are outsourced, an establishment should remain classified in the manufacturing sector. For example: 1) a decision to produce or purchase raw materials does not change the classification; 2) a decision to use contractors or a professional employer organization (PEO) rather than a traditional employment contract does not change classification; and 3) a decision to outsource marketing and distribution to a wholesaler does not change classification. In each case, the decision to perform or outsource a function changes the establishment production function but does not change the classification."*[7]

The ECPC defines the characteristics of FGPs to include:

- Owns rights to the intellectual property or design (whether independently developed or otherwise acquired) of the final manufactured product.
- May or may not own the input materials.
- Does not own production facilities.
- Does not perform transformation activities.
- Owns the final product produced by manufacturing service provider partners.
- Sells the final product.

International Recommendations

The U.S. OMB NAICS classification does not use ownership of material inputs as a basis for industry classification. However, the International Standard Industrial Classification (ISIC) Revision 4 bases classification of units that outsource transformation solely on ownership of material inputs. "A principal who completely outsources the transformation process should be classified into manufacturing if and only if it owns the input materials to the production process – and therefore owns the final output."[8] For ISIC, a unit that

[7] http://www.census.gov/eos/www/naics/fr2010/supporting.html.

[8] United Nations Statistics Division, International Standard Industrial Classification of All Economic Activities, Revision 4, http://unstats.un.org/unsd/demographic/sources/census/2010_phc/docs/ISIC_rev4.pdf.

outsources transformation but owns the material inputs is a manufacturer; a unit that outsources transformation and does not own material inputs is treated as being engaged in trade.

The U.S. ECPC considered a strict adherence to the ownership of materials as impractical because a slight change in how the materials were acquired would change the industry classification. For example, the principal could purchase the inputs and (1) take physical possession of the inputs and ship them to the contract manufacturer, or (2) arrange to have the inputs shipped directly to the contract manufacturer from another domestic or foreign location. Under ISIC rules, the contractual arrangement of the principal purchasing the materials directly would result in the principal being classified in the manufacturing sector even if the principal did not take physical possession of the materials. However, rather than purchasing the inputs, the principal might simply approve the input providers from which the contract manufacturer must buy and monitor the quality of the inputs acquired by the contract manufacturer. Under ISIC rules, this contractual arrangement would most likely result in the principal being classified in a trade sector because the principal did not directly purchase the material inputs. Instead of making ownership of the material inputs the key criterion, the U.S. ECPC considers controlling the production process a more important criterion.

The ISIC classification based on ownership of the material inputs is consistent with the treatment recommended in the SNA 2008 and BPM6 for goods sent abroad for processing and then returned after processing. The new international guidelines state that the recording of imports and exports of goods should be based on the transfer of economic ownership. Therefore, a good sent abroad for processing will result in an import of a service. Using the athletic shoe example discussed above, rather than exporting soles to the supplier and importing athletic shoes from the supplier, the principal is importing manufacturing services from the supplier.

Section 3: Guidelines for Identifying Factoryless Manufacturers (FGPs)

The decentralized nature of the U.S. statistical system poses challenges for implementing the OMB recommendation consistently across statistical agencies. To oversee the tasks for implementing the classification of factoryless producers within the manufacturing sector, the ECPC chartered a working group, the Factoryless Goods Producers (FGP) Working Group.

In 2011, the working group examined a number of manufacturing scenarios in various industries and documented "ideal" guidelines for the identification of factoryless manufacturers, known as FGPs, and contract manufacturers, known as manufacturing service providers (MSPs), [9] including the treatment of their revenues and/or employment. Based on these discussions, the working group reached conceptual

[9] Many international guidelines refer to these units as industrial service providers or industrial processors.

agreement on the following issues and created an outsourcing decision tree (appendix A) that reflects the implementation of those concepts.

- An establishment that engages in any manufacturing activity including factoryless manufacturing (FGP), integrated (in-house) manufacturing (IM), and/or contract manufacturing (MSPs) should be classified in the manufacturing sector in the specific industry that accounts for the plurality of its manufacturing revenues.
- An FGP establishment purchases contract manufacturing services from:
    - Unaffiliated domestic establishments to perform transformation, or
    - Unaffiliated or affiliated foreign establishments to perform transformation.
- Revenues for FGP activities should reflect the full economic value of all products produced at all contracting establishments even for products that are shipped directly from a foreign contractor to a non-US location.
- FGP revenues should be reported by product line and differentiated from revenues from any integrated manufacturing activities. For FGP revenues, it would be desirable to determine the amount of product revenues attributable to foreign versus domestic outsourcing.
- Revenues for MSP activities should include the full amount the establishment was paid for contract manufacturing services.
- Data need to be collected for MSP activity and differentiated from other contract work performed at the same physical location.
- When a foreign MSP performs contract services for a US establishment, the value of those manufacturing services is classified as an import. When a domestic MSP performs contract services for a foreign entity, the value of those manufacturing services is classified as an export.
- Purchases of contract manufacturing services should be separately identified expenses; these expenses should be further broken out into purchases of foreign versus domestic manufacturing services.

Section 4: Data Collection on Contract Manufacturing

Identifying contract manufacturing services is a key element in the principal-supplier relationship. Through preliminary outreach conducted by the Census Bureau, respondents appear to understand the concept of contract manufacturing services and the need for U.S. statistical agencies to collect the data. Collecting data, however, could be challenging. Some respondents indicated that they were generally unable to provide contract manufacturing services data because either accounting or production management systems did not include a searchable characteristic that would distinguish these services.

To determine whether data collection can be robust, the U.S. Census Bureau and the Bureau of Economic Analysis (BEA) have added questions to their respective surveys to

determine whether U.S. businesses can accurately report purchases and sales of contract manufacturing services. The following section describes four surveys that include questions about contract manufacturing services.

Census Bureau Surveys

Report of Organization Survey

The Census Bureau collects information on the Report of Organization Survey (also known as the Company Organization Survey (COS)) to obtain current organization and operating information of multi-establishment companies. Census uses the data to record company affiliation, location, and operating information for establishments in the Business Register (BR), a database of establishments of all domestic businesses (except private households and governments) and organizational units of multi-establishment businesses. The BR covers more than 160,000 multi-establishment companies, representing 1.8 million affiliated establishments, 5 million single establishment companies, and nearly 21 million non-employer businesses. Information in the Business Register includes business location, organization type (e.g., subsidiary or parent), industry classification, and operating data (e.g., receipts and employment). The BR is integral to conducting, processing, and completing most Census Bureau surveys and censuses of U.S. business organizations.

Information derived from the COS is also used in BEA's international program to improve sample frames for surveys of U.S. direct investment abroad, foreign direct investment in the United States, and international services transactions.

Questions have been added to the COS to identify whether the company is engaged in outsourcing manufacturing activity (Appendix B). Respondents are asked a series of questions such as whether they operate manufacturing facilities, provide contract manufacturing services incorporating patents, trade secrets, or proprietary technology owned by the principal, or purchase contract manufacturing services incorporating patents, trade secrets, or proprietary technology owned by the respondent's company. Questions on R&D performance and revenues from royalties and license fees for the rights to use intellectual property are also included.

In 2010, an initial test by the Census Bureau to collect more detailed information on contract manufacturing services from several large firms found that the terminology was well understood. However, most of the characteristics of the data sought, such as the value of the materials and components provided to overseas contract manufacturers, would have to be collected below the enterprise level. Based on this pretesting, the level of detail sought was reduced. A pilot test of 180 reporting units was conducted in the 2010 COS. Results from the pilot test indicate that reporters largely understood contract manufacturing as "outsourced transformation of own product" and were able to distinguish it from simple purchases of goods for resale. The 2011 COS included contract manufacturing inquiries on approximately 40,000 surveys.

Responses will be analyzed by the Census Bureau to determine if respondents purchased or sold contract manufacturing services and are engaged in factoryless manufacturing. For example, if a company has R&D conducted in the U.S., does not have foreign ownership, does not operate manufacturing facilities, but does purchase contract manufacturing services incorporating the company's own patents, trade secrets, or proprietary technology; it is likely to be classified as a factoryless manufacturer.

Economic Census

In addition to the contract manufacturing questions at the company level, special inquiries have been added to the 2012 Economic Census to collect information at the establishment level.[10] The Economic Census is the Census Bureau's most comprehensive measurement of the U.S. economy. The Economic Census is conducted in reference years ending in "2" or "7" and contains highly detailed industry, geographic, and product statistics. The Census Bureau directly collects data from establishments of multi-establishment businesses and larger single-establishment businesses.

For establishments currently classified in the manufacturing, wholesale trade, and management of companies sectors, questions on purchases of contract manufacturing services have been added to the 2012 survey including:

(1) Did this establishment **purchase** contract manufacturing services from other companies or foreign plants of your company in 2012?
Include:
• Products for which the manufacturing (i.e., transforming or otherwise processing materials or components based on specifications provided by your company) was outsourced to other companies.
• Products for which the manufacturing was performed by your company's foreign plants.
Exclude:
• Services for packaging and assembling.
• Purchases of merchandise for resale (sale of products bought and sold without further processing or transformation).
Yes - Go to line 2

(2) Report the costs incurred by this establishment for contract manufacturing purchased in 2012.

(3) Report the value of sales, shipments, receipts, or revenue generated in 2012 from products whose purchases were reported as contract manufacturing costs in line 2.

For establishments currently classified in the manufacturing sector, questions on receipts from contract manufacturing services have been added to the 2012 survey including:

(1) Did this establishment provide contract manufacturing services to others? (Regardless of material ownership)
Include:

[10] See question 26 on the 2012 Economic Census manufacturing sample forms at http://bhs.econ.census.gov/bhs/ecad/census-form.php.

• Products manufactured at this location (i.e., transforming or otherwise processing materials or components based on specifications provided by the contracting company).
• Products manufactured and transferred to other plants of your company.
• Products manufactured and exported.

Exclude:

• Services for packaging and assembling.
• Sales of products purchased and sold without further processing or transformation.

(2) Report the value of sales, shipments, receipts, or revenue generated from contract manufacturing performed at this location for others. (Regardless of material ownership and based on specifications provided by the contracting company.)

Bureau of Economic Analysis Surveys

Benchmark Survey of U.S. Direct Investment Abroad

BEA conducts the Benchmark Survey of U.S. Direct Investment Abroad (BE-10) to track the economic activity of U.S. multinational companies and their foreign affiliates.[11] The BE-10 benchmark survey covers virtually the entire universe of U.S. direct investment abroad in terms of value, and is BEA's most comprehensive survey of such investment in terms of subject matter. It collects universe data on financial and operating characteristics of, and positions and transactions between, U.S. parent companies and their foreign affiliates.

Any U.S. person[12] that had a foreign affiliate is required to report. If the respondent is a U.S. corporation, the respondent reports transactions for the fully consolidated U.S. domestic enterprise. The fully consolidated U.S. domestic enterprise excludes foreign branches and other foreign affiliates.

BEA defines an entity as a foreign affiliate if it meets the following characteristics:

- If it is incorporated abroad, it is always considered a foreign affiliate. Most affiliates meet this criterion.
- If the entity is not incorporated, it is a foreign affiliate if it:
    - Is subject to a foreign income tax.
    - Has a substantial physical presence abroad as evidenced by employees permanently located abroad, etc.
    - Has separate financial records that would allow the preparation of financial statements.

[11] The term "affiliated" refers to a direct investment relationship, which exists when a U.S. person has ownership or control, directly or indirectly, of 10 percent or more of a foreign business enterprise's voting securities or equivalent, or when a foreign person has a similar interest in a U.S. business enterprise.
[12] A U.S. "person" includes companies.

- It takes title to the goods it sells and receives revenues from the sale, or it received funds from customers for its own account for services it performs.

To understand the activity of U.S. multinationals with respect to manufacturing services, BEA added questions on purchases and performance of contract manufacturing on the 2009 Benchmark Survey of U.S. Direct Investment Abroad for U.S. parents that are not banks (BE-10A).[13] Questions on purchases of contract manufacturing services included:

(1) Did this U.S. reporter **purchase** contract manufacturing services from others (including foreign affiliates)? (Yes/No)
(2) The U.S. Reporter **owned** some or all of the materials used by the contract manufacturers and the companies providing the manufacturing services were:
    a. Located **inside** the U.S. (Yes/No)
    b. Located **outside** the U.S. (Yes/No)
(3) The U.S. Reporter **did not own** the materials used by the contract manufacturers and the companies providing the manufacturing services were:
    a. Located **inside** the U.S. (Yes/No)
    b. Located **outside** the U.S. (Yes/No)

This survey also included a question on performance of contract manufacturing services for others:

(1) Did this U.S. reporter **perform** contract manufacturing services for others (including foreign affiliates) outside the U.S.? (Yes/No)

As shown in table 1, approximately a quarter of U.S. parents reported purchases of contract manufacturing services.

Table 1. U.S. Parent Purchases of Contract Manufacturing Services, 2009

	No. of Respondents	Percent of Respondents
Yes	888	23%
No	2,860	75%
No response	82	2%

Each U.S. parent is classified in a NAICS sector that accounted for the largest percentage of its sales. The sector classification is chosen first because BEA classifies enterprises rather than establishments. Because many direct investment enterprises are active in several industries, it is not meaningful to classify all their data in a single industry if that industry is defined too narrowly.[14]

Of the 888 U.S. parents that reported purchases of contract manufacturing services, the majority are classified in the manufacturing sector (table 2).

[13] See questions 28 – 30 on the 2009 Benchmark Survey of U.S. Direct Investment Abroad for U.S. parents that are not banks (BE-10A) at http://www.bea.gov/surveys/pdf/be10a_web.pdf.
[14] For more information on the BE-10, U.S. Direct Investment Abroad methodology see – http://www.bea.gov/international/pdf/usdia_2004f/Text%20sections/methodology.pdf.

Table 2. U.S. Parent Purchases of Contract Manufacturing Services, by Industry 2009

Manufacturing	Wholesale	Information	Professional, Scientific, Technical Services	Other
72%	13%	5%	1%	9%

U.S. parents did not report a large amount of contract manufacturing services for nonresidents.

Table 3. U.S. Parent Performed Contract Manufacturing Services for Foreigners, 2009

	No. of Respondents	Percent of Respondents
Yes	324	8%
No	3,423	89%
No response	83	2%

Benchmark Survey of Transactions in Selected Services and Intellectual Property Products with Foreign Persons

BEA conducts the Benchmark Survey of Transactions in Selected Services and Intellectual Property Products with Foreign Persons (BE-120) to track U.S. imports and exports of services and intellectual property products. The BE-120 survey collects information on U.S. international trade in all types of services and intellectual property for which information is not collected on other BEA surveys and is not available to BEA from other sources. The major types of services transactions not covered by the BE-120 survey are travel, transportation, insurance (except for payments for primary insurance), financial services (except for payments by non-financial firms), and expenditures by students and medical patients that are studying or seeking treatment in a country different from their country of residence.

The survey covers U.S. persons that have engaged in services or intellectual property transactions with foreign persons. Similar to the U.S. direct investment abroad reporting unit, the respondent is to report transactions for the fully consolidated U.S. domestic enterprise.

Until the 2011 survey, receipts and payments for contract manufacturing services were embedded in the "other" services category of the survey. Questions separately identifying receipts and payments for contract manufacturing services were added to the 2011 BE-120.[15] BEA is in the process of collecting these data to determine whether respondents can separately identify the costs of the contract work as well as the destination of the goods after processing.

[15] See Schedule D on the 2011 Benchmark Survey of Transactions in Selected Services and Intellectual Property with Foreign Persons (BE-120) at http://www.bea.gov/surveys/pdf/be120.pdf.

Questions on the 2011 BE-120 survey on purchases of contract manufacturing services include:

(1) Did you purchase contract manufacturing services from foreign persons in fiscal year 2011?

(2) Are you able to report the fee you paid for contract manufacturing services?

- If yes – Enter the amount you paid foreign persons for contract manufacturing services

(3) The payments for manufacturing services in question 2 were (check the appropriate box):

- Based on accounting records.
- Estimated by persons knowledgeable regarding these transactions.

(4) Destination of goods produced after you purchased contract manufacturing (check appropriate box):

- Goods do not enter United States
- Goods are imported into the United States
- A portion of the goods remain abroad and a portion are imported into the United States
- Destination is unknown

Questions on receipts for contract manufacturing services include:

(1) Did you perform contract manufacturing services for foreign persons in fiscal year 2011?

(2) Are you able to report the fee you received for performing contract manufacturing services?

NOTE: This may include the cost of the materials you purchased to perform this service.

- If yes- Enter the amount received from foreign persons for contract manufacturing services you performed on goods owned by foreign persons and go to questions 3 and 4.

(3) The receipts for manufacturing in question 2 were (check the appropriate box):

- Based on accounting records.
- Estimated by persons knowledgeable regarding these transactions.

(4) Destination of goods produced after you performed contract manufacturing (check appropriate box):

- Goods remain in the United States
- Goods are exported from the United States
- A portion of the goods remain in the United States and a portion are exported from the United States
- Destination is unknown

Section 5: Data Collection Issues

In order to implement fully the OMB recommendation to classify factoryless manufacturers in the manufacturing sector, statistical agencies need additional data that are not currently collected in any of our surveys. The data needs specific to international transactions are described in the two subsections below.

Inconsistency between Merchandise Trade Statistics and Survey Data

Coordination between the implementation of BPM6 in the U.S. balance of payments accounts and the data collection in the domestic manufacturing surveys is needed to accurately identify international trade flows in the national accounts. Implementation of BPM6 guidelines on "goods sent abroad for processing" or more broadly the "manufacturing services on physical inputs owned by others"[16] fundamentally changes the definition of what is considered export and import activity for firms that are offshoring transformation activity. Specifically, recording of merchandise import and export transactions will no longer be determined by the physical movement of a good across the U.S. customs border. For example, inputs owned and shipped from a domestic factoryless manufacturer to a foreign contact manufacturer will not be considered a U.S. merchandise export if no change in ownership of the inputs occurred. Similarly, the value of the completed products returned from the foreign contract manufacturer to the domestic principal will no longer be recorded as a merchandise import, but instead the value of the manufacturing service provided will be treated as an import of a service.

The merchandise trade statistics are compiled by the U.S. Census Bureau based on customs documents that reflect the physical movement of goods across borders. This is in accordance with the recommendations put forth in the International Merchandise Trade Statistics: Concepts and Methods 2010 (IMTS2010) manual. The IMTS2010 recommends that "in all cases, goods for processing and goods resulting from such processing (compensating products in customs terminology), are to be included in the merchandise exports and imports of the countries at their full (gross) value" (IMTS 2010 paragraph 1.20). [17] The IMTS2010 recommendation to record the physical movement of goods regardless of transfer of ownership differs from recommendations put forth in BPM6 and SNA2008. Furthermore, the differences between the updated OMB NAICS manufacturing definitions and the BPM6/SNA2008 definitions discussed in the section below further exacerbate this problem.

Given that the customs data reflect physical movement of goods, the data must be adjusted to accord with balance of payments and national accounting concepts. To facilitate this process, IMTS2010 specifies that

[16] BPM6 paragraphs 10.62 – 10.71.
[17] See the International Merchandise Trade Statistics: Concepts and Methods 2010 for more details at unstats.un.org/unsd/trade/eg-**imts**/**IMTS2010**-final-22March2011.pdf.

> *"Taking into account the needs of international trade in services and balance of payments statistics where manufacturing services on inputs owned by others should be recorded, countries are encouraged to explicitly identify in their trade statistics (preferably by special coding) goods for processing and goods resulting from such processing where no change of ownership takes place. However, it is recognized that such identification may not be all-inclusive and the obtained information may not be internationally comparable since (a) merchandise trade statistics compilers may not have adequate sources of data (especially in cases when the appropriate customs procedures are not used) and (b) national definitions of such procedures may differ significantly"* (IMTS 2010 paragraph 1.21).

Currently, there are no plans to change customs documents or processes. Despite these challenges, BEA continues to investigate options for implementing this new treatment of manufacturing services by adding questions on contract manufacturing to its international surveys as discussed in the previous section.

The data required to adjust the customs-based international trade flows to meet BPM6 guidelines on "manufacturing services on physical inputs owned by others" are:

Export Data
Add

1. Value of manufacturing services provided by a U.S. contract manufacturer to a foreign principal.
2. Value of U.S. principal-owned products that have remained in a foreign contract manufacturer's country or shipped directly to another country.

Subtract

1. Value of inputs shipped from U.S. principal to foreign contract manufacturer.
2. Value of foreign principal-owned products shipped from a U.S. contract manufacturer to a foreign country.

Import Data
Add

1. Value of manufacturing services provided by a foreign contract manufacturer to a U.S. principal.
2. Value of foreign principal-owned products that have remained in the U.S after processing by a U.S. contract manufacturer.

Subtract

1. Value of U.S. principal-owned products shipped from a foreign contract manufacturer back to the U.S.
2. Value of inputs shipped from foreign principal to U.S. contract manufacturer.

It is important to note that the adjustments for any one scenario should be looked at as a set of adjustments that often offset one another. This is illustrated by the following three scenarios where a U.S. enterprise is the principal and contracts with a foreign contract manufacturer.

Case 1

The domestic principal produces semi-finished goods and contracts with a foreign contract manufacturer to provide manufacturing services. The principal sends the semi-finished goods valued at $10 to the foreign contractor without a change in ownership. The principal pays the foreign contractor $20 for manufacturing services. The finished good is shipped back to the U.S. and sold by the principal to a domestic final consumer for $100. The domestic value added of the principal is $80 and domestic income (wages and profits) is $80.

Exports and imports of goods based on customs documents will record an export of a good for $10 and a subsequent import of a good for $30 ($10 for the materials sent for processing plus the $20 processing fee). The difference between the two gross flows is the amount of the processing fee of $20.

Table 4 shows a simple illustration of the adjustments needed to record the international trade flows on a BPM6 basis. As indicated in the table, these adjustments do not change the outcome of what is included in gross domestic product (GDP) using the sum of final expenditures approach.

Table 4. Illustration of International Trade Flow Adjustments: Case 1

		Data needs
Personal Consumption Expenditures	$100	Data from domestic surveys
Investment	$0	
Government Consumption and Investment	$0	
Exports	$0	
Goods	$0	
Exports Customs-based	$10	Customs-based data reflecting physical movement of goods
Export adjustment	-$10	Reduction to avoid double counting domestically produced materials that were sent abroad without a change of ownership. Ideally flagged in customs documents, but probably not feasible for U.S.
Services	$0	
Imports	$20	
Goods	$0	
Imports Customs-based	$30	Customs-based data reflecting physical movement of goods
Import adjustment	-$30	Good returned after processing without a change in ownership. Reduction to avoid double counting supply of goods for domestic consumption or investment. Ideally flagged in customs documents, but probably not feasible for U.S.
Services	$20	Survey based-data. Value of processing service.
= GDP	$80	

Case 2

The domestic principal produces semi-finished goods and contracts with a foreign contract manufacturer to provide manufacturing services. The principal sends the semi-finished goods valued at $10 to the foreign contractor without a change in ownership. The principal pays the foreign contractor $20 for manufacturing services. The finished good is sold by the principal to a customer located in the processor's country for $100. The domestic value added of the principal is $80 and domestic income (wages and profits) is $80.

Exports of goods based on customs documents will only record the initial semi-finished good sent for processing valued at $10. The customs documents will not record an export of the finished good valued at $100 because the good was not physically shipped from the U.S. The new BPM6 guidelines state that the principal should record an export of general merchandise when there is a change in ownership. Therefore, sales of goods after processing that are sold to residents of the same country as the processor or a third

country should be recorded as an export of general merchandise from the country of the principal.

Table 5 shows a simple illustration of the adjustments needed to record the international trade flows on a BPM6 basis. As indicated in the table, these adjustments do not change the outcome of what is included in gross domestic product (GDP) using the sum of final expenditures approach.

Table 5. Illustration of International Trade Flow Adjustments: Case 2

		Data needs
Personal Consumption Expenditures	$0	
Investment	$0	
Government Consumption and Investment	$0	
Exports	$100	
Goods	$100	
Exports Customs-based	$10	Customs-based data reflecting physical movement of goods
Export adjustment	-$10	Reduction to avoid double counting domestically produced materials that were sent abroad without a change of ownership. Ideally flagged in customs documents, but probably not feasible for U.S.
Export adjustment	$100	The value of the good owned by the principal and sold to a customer located in the processor's country (without reentering the U.S.)
Services	$0	
Imports	$20	
Goods	$0	
Imports Customs-based	$0	
Import adjustment	$0	
Services	$20	Survey based-data. Value of processing service.
= GDP	$80	

Case 3

The domestic principal contracts with a foreign contract manufacturer to provide manufacturing services. The principal purchases the input materials (valued at $10) from a nonresident located in the processor's country and sends them directly to the foreign contractor without a change in ownership. The principal pays the foreign contractor $20 for manufacturing services. The finished good is sold by the principal to a customer located in the processor's country for $100. The domestic value added of the principal is $70 and domestic income (wages and profits) is $70.

No materials are physically shipped from the U.S.; therefore, no transactions are recorded in exports of goods based on customs documents. As stated in case 2, the export of the finished good valued at $100 will not be recorded in the customs documents because the good is not shipped from the U.S. In addition, an adjustment is needed for imports of general merchandise to record the change in ownership of the materials that the principal purchased from a nonresident.

Table 6 shows a simple illustration of the adjustments needed to record the international trade flows on a BPM6 basis. As indicated in the table, these adjustments do not change the outcome of what is included in gross domestic product (GDP) using the sum of final expenditures approach.

Table 6. Illustration of International Trade Flow Adjustments: Case 3

		Data needs
Personal Consumption Expenditures	$0	
Investment	$0	
Government Consumption and Investment	$0	
Exports	$100	
Goods	$100	
Exports Customs-based	$0	
Export adjustment	$100	The value of the good owned by the principal and sold to a customer located in the processor's country (without reentering the U.S.)
Services	$0	
Imports	$30	
Goods	$10	
Imports Customs-based	$0	
Import adjustment	$10	The value of the materials purchased by the principal from nonresidents and sent to the processor (without entering the U.S.)
Services	$20	Survey based-data. Value of processing service.
= GDP	$70	

Inconsistency between Balance of Payments Manual (BPM6)/ System of National Accounts (SNA2008) and U.S. Office of Management and Budget (OMB) Classification of Factoryless Manufacturing

The OMB recommendation to classify factoryless manufacturers in the manufacturing sector is broader than the definitions adopted in the BPM6 and the SNA 2008. Based on the international recommendations, international transactions occur when the economic

ownership changes. Therefore, different types of international transactions may be recorded depending on the type of global production arrangement. The OMB recommendation does not require ownership of input materials for a unit to be classified in the manufacturing sector. Thus there is potential for inconsistency between the manufacturing data collected on a NAICS-based industry business survey and the data collected on the international surveys following BPM6 guidelines.

The impact of the differences can be illustrated by examining the following two types of overseas contract manufacturing arrangements:

Type 1

The U.S. principal sends materials for the production of athletic shoes overseas for processing. The domestic principal produces soles for its shoe and sends these semi-finished goods valued at $10 to the foreign contract manufacturer, without a change in ownership, for further processing. The principal pays the foreign contractor $20 for manufacturing services. The finished good is shipped back to the United States and sold by the principal to a domestic final consumer for $100.

Table 7 illustrates the industry output of the contractor and the principal. Table 8 provides a simple illustration of domestic supply of shoes using the commodity-flow method. The adjustments needed to put the customs statistics on a BPM6 basis were described previously in case 1. After the appropriate customs adjustments are made, Table 8 shows the value of shoes available for domestic use.

Table 7. Industry Account Under the 2008 SNA

	Contractor (Country B)	Principal (Country A)
Gross output		
Goods		100
Services	20	
Intermediate inputs		
Materials	7	5
Processing fees (services)		20
All other services	3	5
Value added	10	70

Table 8. Domestic Supply of Shoes, Commodity Flow Approach

Manufacturing product shipments	100	Principal's shipment value of shoes
Plus: Imports	0	There are no imports of shoes, only imports of manufacturing services, using BPM6 rules.
Less: Exports	0	
Inventory change	0	
Equals domestic supply	100	Domestic supply of shoes

Type 2

The U.S. principal contracts entirely overseas to manufacture its product and provides nothing beyond specifications and/or technology to the supplier. This is the global production arrangement of a factoryless producer that does not provide any material inputs into the production process.

The principal contracts with a supplier to make the athletic shoe and provides the supplier with the design and the specifications. The principal does not provide any of the material inputs (the supplier purchased those materials). However, the principal is responsible for marketing and selling the shoe and receives the revenue.

The principal pays the foreign contractor $30 for manufacturing services and for procuring the inputs specified by the principal. The finished good is shipped back to the United States and sold by the principal to a domestic final consumer for $100.

The FGP working group recommends that the full value of the product produced by a factoryless manufacturer using contract manufacturing services be reflected in the factoryless manufacturer's product shipment value. However, the international transactions are recorded based on the change in ownership. Because the supplier purchased the input materials, it is deemed the owner of those materials. Therefore, using SNA 2008 guidelines, the supplier's output in country B is a good and not a service.

Because the U.S. principal did not own the material inputs the transaction would not fall under the scenario of "manufacturing services on physical inputs owned by others". According to BPM6 guidelines for international trade flows of factoryless manufacturers:

- If the U.S. principal takes ownership of the good and the good is sold abroad without first entering the United States, then the transaction would be recorded following the merchanting rules, i.e., negative export when the good is purchased and positive export when the good is sold. The impact on U.S. GDP is the margin on the sale of the good. If the purchase and the subsequent sale of the good do

not occur within the same time period, then the value of the good is recorded in the inventory of the U.S. principal when it takes ownership. There is no impact on GDP because the value recorded as a negative export offsets the value recorded as inventory.

- If the good is returned to the United States, the value of the finished good is included in U.S. merchandise imports (output of the foreign contract manufacturer).

If the good is brought back to the United States it could be counted twice in domestic supply because the value of the good will be included in both merchandise imports and the factoryless manufacturer's domestic product shipments. Table 9 illustrates the industry output of the contractor and the principal. Table 10 provides a simple illustration of domestic supply of shoes using the commodity-flow method and shows double counting in the domestic supply of shoes.

Table 9. Industry Account: Factoryless Manufacturing

	Contractor (Country B)	Principal (Country A)
Gross output		
Goods	30	100
Services		
Intermediate inputs		
Materials	17	
Processing fees (services)		30
All other services	3	5
Value added	10	65

Table 10. Domestic Supply of Shoes, Commodity Flow Approach

Manufacturing product shipments	100	Principal's shipment value of shoes
Plus: Imports	30	Import value of shoes
Less: Exports	0	
Inventory change	0	
Equals domestic supply	130	Domestic supply of shoes

Concluding Remarks

The U.S. OMB considers a strict adherence to the ownership of materials as impractical in that a slight change in how the materials are acquired changes the industry classification of a factoryless manufacturer that undertakes the entrepreneurial steps in the global supply chain but does not transform any of the material inputs. Implementation of OMB's recommendation is challenging, and the United States has not determined if current data collection practices can support the FGP working group's ideal implementation rules. In addition, the inconsistent guidance between the international recommendations and the OMB recommendation on how to treat the international trade flows of factoryless manufacturers need to be resolved before full implementation can occur.

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