"Trade Intermediation by Producers"

Aksel Erbahar and Vincent Rebeyrol

Toulouse
School of
Economics

Trade Intermediation by Producers*

Aksel Erbahar†   Vincent Rebeyrol‡

September 2022

Abstract

This paper shows that manufacturing exporters export goods that they have not produced and thus also act as trade intermediaries. The geographical dimension of the data reveals that almost half of these exports of "sourced" products are purely intermediated: to many destinations, firms export sourced products only. We find that this type of intermediation is ubiquitous across firms, products, and destinations, and is robust to a battery of alternative definitions. These findings show that trade intermediation by producers (TIP) is not solely driven by carry-along trade, where produced and sourced products are bundled when exported. Our decomposition of TIP highlights that trade intermediation should be identified at the firm-product-destination level. The prevalence of pure intermediation for all manufacturing exporters, including the largest ones, suggests that intermediation plays an important role in firms' participation and success in international markets.

Keywords: trade intermediation; intermediaries; carry-along trade; multi-product firms

JEL Classifications: F12, F14, L2

†Erasmus School of Economics, Erasmus University Rotterdam, and Tinbergen Institute, *email*: erbahar@ese.eur.nl

‡Toulouse School of Economics, University of Toulouse Capitole, Toulouse, France. *email*: vincent.rebeyrol@tse-fr.eu

1 Introduction

Selling to foreign markets is characterized by many hurdles compared to domestic trade. As a result, a substantial part of aggregate trade is done by professional intermediaries: firms such as wholesalers that are specialized in trading that do not produce goods themselves. However, Bernard et al. (2019) have shown that, in Belgium, many manufacturing exporters also export goods that they do not produce. They show suggestive evidence that demand-scope complementarities may be an important driver of this trade, which they refer to as "carry-along trade" (CAT).[1]

In this paper, we first confirm the prevalence of manufacturers exporting goods that are sourced from other producers, using firm-product level data from Turkey for 2005-2014.[2] We find that, in 2010, 87% of manufacturing exporters exported goods that they did not produce, and 98% of the products were exported by at least one firm that was not producing it. This trade represents 36%-43% of aggregate exports by manufacturers in value.

Second, our main contribution is to use the geographical dimension of the data to decompose sourced exports into two parts: one where sourced products are exported together with produced goods to a destination (they are "carried along": CAT), and the remaining part where sourced products are exported by themselves. We refer to this latter part as *purely intermediated* (PI). Hence, for each firm, we label the export destinations that it serves solely with sourced products as PI markets, and thus distinguish them from export destinations where the firm sells also its own products. While CAT exports are also considered to be intermediated, they may be done to increase the profitability of firms' own products, thanks to the possible complementarities between sourced and produced products. In contrast, the gains from PI flows are necessarily coming from intermediation only. We therefore refer to this latter part of TIP as pure intermediation.

We find that, in 2010, 76% of manufacturing exporters had at least one PI market, and 88% of products were purely intermediated by at least one manufacturing exporter. Remarkably, this trade makes up 41%-54% of TIP. We further show that both TIP and PI are ubiquitous across firms, products, and destinations. These results are robust to a battery of alternative definitions. Notably, the prevalence of TIP and PI is not driven by the presence of multinational companies, re-exports, potential misreporting of small volumes of production, selling through inventories, or partial-year effects.

Our decomposition has three important implications. First, it shows that trade intermediation by producers cannot be solely explained by incentives based on complementarities between produced and sourced products, as carry-along trade is just one part of sourced exports. The prevalence of PI flows means that manufacturers also have the incentive to act as standard trade intermediaries. This implies that trade intermediation, defined in this strict sense (i.e. not considering CAT), does

---

[1]They document that almost 90% of exporters engage in CAT, making up around 30% of Belgium's exports in 2005.

[2]We define a product to be sourced if it is not produced by the firm itself. Thus, conceptually, sourced products can be domestically sourced or imported. However, in practice, almost all of sourced products are domestically sourced as shown in Section 3.

not necessarily require a specific technology or information set as produced and sourced products are exported by the same firms. This contrasts with the traditional view in the literature that trade intermediaries constitute a separate and specific sector. Instead, the fact that PI flows are widespread among exporters rather supports the idea that trade intermediation is primarily about matching buyers and sellers.

Second, our results suggest that intermediation is a determinant of export participation. The literature (at least since Melitz, 2003) has largely viewed the decision to export as driven by the profitability of firms' own products in foreign markets. Our results, however, show that (pure) trade intermediation is an important activity of manufacturers in export markets. Developing an export network thus allows firms to reap gains beyond the possibility of exporting their own products.

Third, our results show that trade intermediation has so far been underestimated. To get a sense of the relative magnitude of intermediated trade in Turkey's total exports, we add to our dataset exports done by professional intermediaries. We find that the presence of PI – thus focusing on a strict definition of trade intermediation – increases the amount of aggregate trade that is intermediated by around 70%. To capture the full extent of trade intermediation and its determinants, this paper thus calls for identifying trade intermediation at the firm-product-destination level.

In the last part of the paper, we further discuss the implications of TIP and PI, in two different directions. We first focus on the largest 100 exporters. The literature has provided clear evidence that aggregate exports are driven by a handful of firms – the so-called "superstar" exporters (e.g. Bernard et al., 2007; Mayer and Ottaviano, 2008). This concentration is also present in our data, as the largest 100 exporters account for 43%-64% of total exports by manufacturers in Turkey. We find that trade intermediation is an important activity for these top exporters: for example, TIP represents more than 50% of total exports for a third of them, while PI represents more than 50% of TIP for a quarter of them. Our results thus also hold for top exporters and are not the consequence of incidental exports by small firms. More importantly, our findings reveal that the success of these "superstars" in international markets is also determined by their activity as trade intermediaries. Second, a natural question is whether sourced exports are motivated by intermediation only or if, as put forward by Bernard et al. (2019), some complementarities between produced and sourced products can explain the CAT portion of TIP. Here, we again make use of our decomposition to compare bundled flows (CAT), for which complementarities may be present, with purely intermediated flows (PI), for which these complementarities are absent by definition. We find that CAT flows are smaller than PI flows on average. This suggests that CAT flows are profitable even when sold in lower amounts than PI flows, in turn indicating that these complementarities exist.

Our paper is primarily related to the literature on trade intermediation, and more specifically carry-along trade. This phenomenon was first put forward by Bernard et al. (2019), who document the prevalence of sourced exports by manufacturers. They show that the number of sourced products exported increase more than proportionally with firm productivity, and provide suggestive evidence for demand-scope complementarities between produced and sourced products. Our main contribution

compared to them is our decomposition of sourced exports into its CAT and PI portions. With this decomposition we show that pure trade intermediation is an important reason for sourced exports. Other papers that document the prevalence of sourced exporting include Di Nino (2015) for Italy, van den Berg et al. (2019) for the Netherlands, Abreha et al. (2020) for Denmark, and Arnarson (2020) for Sweden. From a more theoretical perspective, Eckel and Riezman (2020) discuss the implications of CAT for firms, and study the strategic choice by a firm to export its product alone directly or indirectly, bundling its product with another one.

Second, our paper is closely related to the literature on trade intermediaries. Several papers have shown that intermediaries, which are modeled as having different characteristics than manufacturers, enable less productive firms to export indirectly (e.g. Bernard et al., 2010; Ahn et al., 2011; Crozet et al., 2013; Bernard et al., 2015; Akerman, 2018). Moreover, they provide evidence that intermediaries help firms to reach less-accessible markets, implying that trade intermediation by professional intermediaries is more prevalent in markets that are more difficult to access. The explanation for these results is that intermediaries have a comparative advantage in exporting due to, for example, economies of scope or superior knowledge of foreign markets. However, our findings indicate that manufacturers also act as intermediaries for other producers, exporting both their own and other firms' products. The reason behind this type of intermediation cannot be due to a specific exporting technology. Hence, the way we see TIP is closer to the literature on intermediaries that views them as "match-makers" (e.g. Rauch and Watson, 2004; Antràs and Costinot, 2011).

Third, the implications of our findings relate to the literature on multi-product firms. As Bernard et al. (2019), we find that the majority of the "superstar" firms' exported products are sourced from other firms. This sharply contrasts with the approach first developed in the literature, which assumed that firms produce a set of products and export a subset of them (e.g. Eckel and Neary, 2010; Bernard et al., 2011; Mayer et al., 2014; Bernard et al., 2018). Our data also reveals that pure intermediation is an important activity for top exporters. We thus contribute to this literature by illustrating that one of the reasons we observe large multi-product exporters is because of their engagement in trade intermediation, regardless of the existence of complementarities between produced and sourced products.

The rest of the paper is organized as follows. Section 2 describes the data. Section 3 documents the prevalence of sourced exporting, paying special attention to its decomposition into CAT and PI flows. In Section 4, we relate our findings to the literature by first discussing top exporters' engagement in TIP, and then comparing CAT and PI flows of sourced products. Finally, Section 5 concludes and discusses further research.

2   Data

We use three main databases from Turkey in this paper: the first is the *Industry Production Statistics* database that is available for 2005-2014 and provides the volume and value of production and sales of

each product that is produced by a firm.[3] Products are classified according to the 10-digit PRODTR classification of which the first 8-digits correspond to the EU's official production classification PROD-COM (*production communautaire*).[4] All PRODTR are concorded overtime by the Turkish Statistical Institute (TÜİK) to the 2010 classification for consistency.

The second dataset is the *Industry and Services Statistics* database that includes annual statistics such as total sales, number of employees, wages, expenses, and investment for all firms that have at least 20 employees for 2003-2014.[5] This dataset reports the firm's self-proclaimed industry based on the 4-digit NACE Revision 2 classification. In our final sample of manufacturing exporters, we find that around 6% were self-proclaimed wholesalers or retailers.[6] Excluding these manufacturing wholesalers/retailers does not change our results as shown in subsection 3.2.

The third dataset we use is the *Foreign Trade Statistics* database which reports exports and imports of each firm annually for 2002-2014. Exports and imports are classified by firm-country-GTIP (*Gümrük Tarife İstatistik Pozisyonu*), where GTIP is a 12-digit product code whose first 8-digits correspond to the EU's Combined Nomenclature (CN) and the first 6-digits correspond to the internationally standardized Harmonized Schedule (HS). Since the PRODTR-GTIP concordance table provided by TÜİK is for 2010, the descriptive cross-sectional analysis in this paper uses 2010 as the benchmark year. To concord the trade data overtime to the HS2007 nomenclature, we use Pierce and Schott's (2012) algorithm combined with HS correlation tables from the UN Statistics Division.[7]

In order to match production data with the trade data, we apply the algorithm developed by Van Beveren et al. (2012) to the PRODTR-GTIP correspondence tables provided by TÜİK at the HS6 level and create uniform HS6+ codes. These are codes that match one-to-one to HS6 codes as well as codes that include multiple HS6 codes to fix the issue of one-to-many and many-to-many PRODTR-HS6 matches (see Appendix Table A.1 for an example). The merge results in 2,494 HS6+ products as opposed to 5,052 HS6 products. This matching at the HS6+ level enables us to classify firm-products as produced versus sourced. Note that this level of aggregation results in a conservative definition of "sourced," since there might still be a subset of products within an HS6+ that are not produced by the firm.

We merge the three databases and firms that report production only. Then, we follow Erbahar's (2020) data cleaning procedures and restrict the sample to firms with at least 20 employees, and drop observations where exports are larger than total sales, or where production sales are larger than total sales. Finally, we keep firms that have produced and exported at least one manufacturing good in

---

[3]This dataset has been used, for example, by Lo Turco and Maggioni (2016), Javorcik et al. (2018), and Erbahar (2020).

[4]The first 6- and 4-digits of PRODCOM correspond to the CPA (*classification of products by activity*) and the NACE (*nomenclature statistique des activités économiques dans la Communauté européenne*) Revision 2 classifications.

[5]The database also includes a representative sample of firms that have less than 20 employees, but the identity of these firms change every year, and thus we exclude them from our analysis.

[6]We classify firms as professional intermediaries if their self-reported NACE Revision 2 sector code falls into the "Wholesale and retail trade" category (divisions 45-47).

[7]The time period we analyze covers three different nomenclatures, and thus we only need to concord products classified at the HS2002 and HS2012 nomenclatures to the HS2007 nomenclature.

2005-2014. This results in a sample of 22,255 firms, covering around half of manufacturing exports and two-thirds of manufacturing production. In the last part of our paper, we add exports done by professional intermediaries which make up about 11%-18% of manufacturing exports.

Potential misreporting and misclassification by firms

Since the *Industry Production Statistics* database is based on survey data, one might be concerned that firms do not report all of their production activities. If this is the case, we would be incorrectly labeling some produced products as sourced, since trade data is coming from the customs, which records all transactions. However, as illustrated in Figure A.1, the instructions page (*Descriptions* section) of the official *Annual Industrial Production Statistics Questionnaire Form* requires that all production activities done by the firm, including products the firm produces itself to sell to consumers, products that the firm produces as an intermediate product for its own production, and products that the firm produces as a subcontractor for other firms (including intermediate and final goods), among others, should be listed and detailed.[8] This exhaustive description covers all production activities done by the firm, regardless of the volume of production. As a further check, in subsection 3.2, we re-label the small export flows of sourced products as exports of produced products, based on the first and fifth percentiles of firms' sales of produced products. We find that TIP shares are virtually unchanged.

Another concern might be regarding the incentives for firms to correctly fill in the surveys. For this, we refer to the cover page of the official *Annual Industrial Production Statistics Questionnaire Form* in Appendix Figure A.2. First, the *Confidentiality* section of the form ensures that the information provided will only be used for statistical purposes, protecting the anonymity of the firm. Second, the same section indicates that in cases with incomplete or incorrect information, the firm will be subject to a fine of 7,097 Turkish liras (equivalent to $5,257 in 2005), a significant amount for an average Turkish firm. Moreover, the key information for our purposes is whether a firm is producing a given product or not (i.e. the extensive margin) since that determines how we classify a product as produced versus sourced. There can still be misreporting on the intensive margin of production but that would not confound our analysis.

Finally, one might be concerned that firms misclassify product codes when filling out the surveys. Recall that the *Foreign Trade Statistics* database reports codes based on the GTIP classification which covers 15,337 products, whereas the *Industry Production Statistics* database reports codes based on the PRODTR classification which covers 4,446 products. Our analysis, on the other hand, due to the concordance between the two datasets, aggregates the data to the level of 2,494 HS6+ products. Thus, at this level of aggregation misclassification should be minimal even if it might occur at the level of reporting (i.e. GTIP and PRODTR).

---

[8]The Turkish Statistical Institute provided us the form for 2021, but stated that the forms for earlier years were identical.

3 Empirical findings

In this section, we first confirm some of the main findings of Bernard et al. (2019) for Belgian firms by illustrating the prevalence of exports of sourced products by Turkish firms. We then exploit the geographical dimension of the data to provide novel facts by decomposing sourced exports into two parts: one where sourced products are exported together with produced goods (CAT), and the other purely intermediated (PI) part where sourced products are exported by themselves.

3.1 Prevalence of TIP

Table 1 sorts manufacturing exporters by the number of HS6+ products they exported in 2010 (column 1). As expected, the number of exporters (column 3) quickly declines as the number of products exported increases. Importantly, the number of exported products is lower than the average number of produced products (column 2) for single-product exporters only. For multi-product exporters (i.e. exporting more than one product), the number of exported products always exceeds the average number of produced products. This feature becomes striking for the largest multi-product exporters. For example, the average number of produced products for "superstar" firms that exported more than 50 products is only around 4. This reveals that the multi-product nature of exporters is largely driven by firms selling products that are sourced from other producers. Moreover, we show in subsection 4.1 that pure intermediation (PI) is an important activity for these top exporters.

Table 1: Summary statistics by number of exported products, HS6+

(1) # of exported products	(2) # of produced products	(3) # of firms
1	1.74	1,774
2	1.77	1,184
3	1.88	806
4	2.19	618
5	2.09	493
6	2.43	398
7	2.33	315
8	2.73	232
9	2.67	242
10	2.64	176
11-20	3.30	1,037
21-30	3.44	343
31-40	4.06	160
41-50	4.03	89
>50	3.91	152

Notes: Summary statistics are based on the 8,019 manufacturing exporters in 2010. Products are based on the HS6+ classification, with maximum number of exported products 354.

Table 2: Summary statistics for TIP

Variable	Median	Mean	Standard deviation
# of produced products	1	2.34	2.34
# of exported products	4	8.70	16.80
# of exported products that are sourced	3	7.57	16.44
# of destinations	4	7.71	10.28
# of destinations with sourced products	2	5.45	8.39
TIP/exports	61.8%	55.0%	42.4%
Re-exports/TIP	0.0%	10.3%	26.4%

Notes: Summary statistics are based on the 8,019 manufacturing exporters in 2010. Products are based on the HS6+ classification. TIP refers to trade intermediation by producers.

Table 2 provides firm-level TIP statistics for 2010. It shows that the average (median) firm produces 2.3 (1) products, and exports a total of 8.7 (4) products, of which 7.6 (3) are sourced from other producers. The table also indicates that the average (median) number of destinations a firm serves is 7.7 (4), and 5.5 (2) of these destinations are served with sourced products. These statistics reveal that most exported products are sourced, and most destinations are served with sourced products. Remarkably, the average (median) share of TIP in a firm's exports is 55% (62%), illustrating that for most firms, the majority of exports consists of sourced products.

One might be concerned that sourced exporting is driven by re-exports (i.e. firms importing goods to directly re-sell in foreign countries). To identify potential re-exports, we match firms' imports and exports at the 12-digit GTIP product level, and label exports to be re-exports if the imports of the same product is at least as high as its exports by the same firm. As shown in Table 2, we find that the median exporter does not engage in re-exporting, and re-exports make up, on average, 10% of a firm's sourced exports, implying that it cannot explain the widespread sourced exporting that is done by the large majority of exporters.

Importantly, we find that 87% of manufacturing exporters exported at least one HS6+ that they did not produce. Sourced exporting is also not product specific: 98% of HS6+ products were exported by at least one firm that did not produce that good in 2010. Table 3 shows examples of firms that engage in sourced exporting and their products ranked by sales, where products are classified according to the slightly more aggregated HS4+ level.[9] For instance, a large manufacturer of motor vehicles produced four HS4+ products in 2010: *buses*, *lorries*, *trailers*, and *passenger cars*. However, it exported 64 HS4+ products, 62 of which were not produced by this firm. These sourced products consisted mostly of inputs such as *motor vehicle bodies*, *safety glass*, and *new pneumatic tyres*. The second example is a mid-sized manufacturer of apparel that produces two different kinds of *men's shirts*, but exports only one of them, alongside other exported products such as *women's blouses and shirts*. The third example is a small manufacturer of textiles that produces *woven fabrics of carded wool* that it does not export, and instead, it exports *carpets* and *bedspreads*. These examples suggest that sourcing activity can be

---

[9]We use the HS4+ definition and do not include exhaustive information about the firms due to confidentiality reasons.

due to a wide variety of reasons including, but not limited to, demand and supply complementarities as well as pure intermediation.[10]

Table 3: Examples of sourced exporting firms

Product	Produced	Exported
Large manufacturer of motor vehicles		
1. Buses	Yes	Yes
2. Lorries	Yes	Yes
3. Trailers	Yes	No
4. Passenger cars	Yes	No
5. Motor vehicle bodies	No	Yes
6. Safety glass	No	Yes
7. New pneumatic tyres	No	Yes
...		
Mid-sized manufacturer of apparel		
1. Men's shirts (not knitted or crocheted)	Yes	Yes
2. Men's shirts (knitted or crocheted)	Yes	No
3. Women's blouses and shirts	No	Yes
Small manufacturer of textiles		
1. Woven fabrics of carded wool	Yes	No
2. Carpets and other textile floor-coverings	No	Yes
3. Bedspreads and textile wall-coverings	No	Yes
...		

Notes: The size of the firm is based on its number of employees. Products are identified at the HS4+ level, and are ranked according to sales. ... indicates that the firms export more products but we omit them in the table for brevity.

3.2 Decomposition of TIP into CAT and PI

We now decompose total exports by manufacturers into exports that are produced and those that are sourced:

$$\sum_{i \,\in\, \text{Manu.}} X_i = \sum_{ih \,\in\, \text{Prod.}} X_{ih} + \underbrace{\sum_{ih \,\in\, \text{Sourced}} X_{ih}}_{TIP} \tag{1}$$

where ih denotes a firm-product (HS6+) combination. We label the sourced portion of exports by manufacturers as trade intermediation by producers (TIP). Then, taking advantage of the geographical dimension of the data, we decompose TIP into CAT exports, when they are sold to destination c along

---

[10]Given that we do not observe the buyer-seller relationships in the data, we cannot evaluate the specific reasons for the match between a sourced product and an exporter. However, we find that (i) sourced products tend to be in the same sector of exporters' produced products, (ii) sourced products are more likely to be intermediates and within the supply chain of exporters' produced products, and (iii) sourced products tend to be less differentiated on average. These results are available upon request.

with produced exports, and PI exports, when they are sold to destination c by themselves:

$$\sum_{ih \,\in\, \text{Sourced}} X_{ih} = \sum_{ihc \,\in\, \text{CAT}} X_{ihc} + \sum_{ihc \,\in\, \text{PI}} X_{ihc} \tag{2}$$

For each firm, we label the export destinations that it serves solely with sourced products as PI markets, and the ones that it serves with both produced and sourced products as CAT markets. This decomposition reveals that PI markets are very common: in 2010, 76% of manufacturing exporters had at least one destination market where they sold only sourced products. PI is also not product-specific: 88% of HS6+ products were purely intermediated by at least one manufacturing exporter in 2010. Table 4 gives additional firm-level statistics for 2010 based on our decomposition. Among the sourced exported products, the average (median) numbers of CAT and PI products are 5.1 (1) and 3.2 (1) respectively. Also, among destinations that are served with sourced products, the average (median) numbers of CAT and PI destinations are 2.6 (1) and 2.9 (1) respectively. Strikingly, the average (median) share of PI in TIP is 51% (50%). These statistics illustrate the importance of decomposing TIP into CAT and PI, since for most sourced exporters at least half of TIP is due to PI.

Table 4: Summary statistics for CAT versus PI

Variable	Median	Mean	Standard deviation
# of sourced exported products	3	7.57	16.44
# of CAT products	1	5.06	13.66
# of PI products	1	3.23	9.88
# of sourced destinations	2	5.45	8.39
# of CAT destinations	1	2.56	5.72
# of PI destinations	1	2.88	5.66
PI/TIP	50.3%	51.1%	46.0%

Notes: Summary statistics are based on the 8,019 manufacturing exporters in 2010. Products are based on the HS6+ classification. TIP refers to trade intermediation by producers as defined in equation (1). PI refers to the purely intermediated portion of TIP as defined in equation (2).

TIP and PI shares in total exports

Table 5 shows the prevalence of sourced exports in Turkey's aggregate exports in 2005-2014. Column 1 based on equation (1) shows that TIP made up 41% of manufacturing exports in 2010, and that this share is fairly stable across years. Based on the decomposition in equation (2), column 2 of Table 5 indicates that PI made up 46% of TIP in 2010, with a minimum of 41% in 2007 and a maximum of 54% in 2014. Including exports done by professional intermediaries such as wholesalers and retailers, TIP made up to 32% (column 3) of exports in our sample in 2010. Notably, these figures are larger than the 20% (column 4) of exports made up by professional intermediaries (TII) in 2010. Taking TIP into account thus more than doubles the amount of Turkey's exports that is intermediated. Even

when we focus on a strict definition of trade intermediation (i.e. PI only), the presence of PI increases the amount of intermediated trade by around 70% in 2010.

Table 5: TIP and PI shares

Year	(1) TIP/manu. exports	(2) PI/TIP	(3) TIP/total exports	(4) TII/total exports
2005	37.6%	44.4%	26.2%	30.5%
2006	35.9%	47.7%	25.5%	29.1%
2007	38.3%	41.1%	29.1%	24.1%
2008	36.5%	44.8%	28.4%	22.1%
2009	39.4%	43.3%	32.4%	17.8%
2010	**40.6%**	**45.7%**	**32.4%**	**20.4%**
2011	37.4%	44.4%	29.0%	22.3%
2012	38.1%	44.6%	29.0%	24.1%
2013	41.7%	50.4%	30.2%	27.7%
2014	42.5%	54.4%	29.7%	30.1%

Notes: Manu. exports refer to the exports of manufacturing firms. TIP refers to trade intermediation by producers as defined in equation (1). PI refers to the purely intermediated portion of TIP as defined in equation (2). TII refers to trade intermediation by professional (non-manufacturing) intermediaries. Total exports is the sum of manufacturing and TII exports.

Alternative definitions

One might argue that multinational companies (MNCs) drive sourced exports since they might be exporting goods produced by their subsidiaries that have different tax IDs. We label a firm as an MNC if it has any foreign ownership, and find that there are 1,350 MNCs in Turkey, making up around a third of the manufacturing exports in our sample.[11] In Table 6 columns 1 and 2, we exclude these MNCs from our dataset, and find TIP shares that are similar. We find that PI shares are slightly higher (except for 2014) when we exclude MNCs, indicating that domestic firms engage relatively more in pure intermediation.

Another related concern is that firms that engage in sourced exporting might be re-exporters (firms that export imported goods). We follow our approach in subsection 3.1 and exclude re-exports in columns 3 and 4 of Table 6. Excluding these flows, which make up about 3% of total exports by manufacturers, does not change the TIP and PI shares significantly.

As indicated in Section 2, around 6% of the manufacturing exporters in our sample report that their main sector is wholesaling or retailing. To verify that our aggregate statistics are not driven by these firms, we exclude them in columns 5 and 6 of Table 6. This barely changes the TIP shares, and only slightly decreases the PI shares.

Next, we address the concern that if firms do not report production of their relatively less important products, we might be incorrectly labeling some produced products as sourced. Thus, in columns 7

---

[11]Foreign ownership data is not available for years 2006 and 2009.

Table 6: TIP and PI shares - alternative definitions

Year	Excluding MNCs		Excluding re-exports		Excluding manu. wholesalers	
	(1)	(2)	(3)	(4)	(5)	(6)
	TIP/manu. exports	PI/TIP	TIP/manu. exports	PI/TIP	TIP/manu. exports	PI/TIP
2005	35.2%	56.8%	36.7%	44.4%	36.9%	43.2%
2006	.	.	34.6%	49.4%	35.5%	47.0%
2007	41.5%	54.3%	37.5%	42.1%	37.4%	38.4%
2008	39.0%	55.0%	35.6%	45.7%	35.8%	42.5%
2009	.	.	38.5%	43.7%	39.2%	41.0%
2010	**41.5%**	**50.3%**	**40.1%**	**46.2%**	**39.8%**	**42.4%**
2011	38.0%	52.6%	36.6%	48.8%	37.0%	43.2%
2012	37.7%	52.4%	37.3%	45.7%	37.3%	42.8%
2013	42.6%	51.1%	40.5%	50.7%	41.3%	49.0%
2014	42.6%	52.7%	41.1%	55.2%	41.6%	52.3%

Year	Re-labeling small flows < 1,500 liras		Re-labeling small flows < 17,000 liras		Conservative definition	
	(7)	(8)	(9)	(10)	(11)	(12)
	TIP/manu. exports	PI/TIP	TIP/manu. exports	PI/TIP	TIP/manu. exports	PI/TIP
2005	37.6%	36.4%	37.4%	30.5%	33.2%	24.9%
2006	35.9%	39.3%	35.6%	33.0%	29.8%	26.4%
2007	38.3%	33.0%	38.1%	27.0%	32.0%	23.2%
2008	36.5%	37.0%	36.3%	30.9%	30.5%	26.0%
2009	39.4%	33.7%	39.2%	27.4%	32.9%	22.9%
2010	**40.6%**	**38.6%**	**40.4%**	**33.0%**	**34.5%**	**25.3%**
2011	37.4%	36.3%	37.2%	31.2%	32.0%	25.9%
2012	38.1%	36.5%	37.9%	31.2%	33.2%	27.2%
2013	41.7%	40.7%	41.5%	34.6%	36.2%	28.1%
2014	42.5%	45.6%	42.3%	39.0%	37.3%	32.3%

Notes: Manu. exports refer to the exports of manufacturing firms. TIP refers to trade intermediation by producers as defined in equation (1). PI refers to the purely intermediated portion of TIP as defined in equation (2). Columns 1 and 2 exclude MNCs. Foreign ownership data is not available for years 2006 and 2009. Columns 3 and 4 exclude re-exports. Columns 5 and 6 exclude manufacturing wholesalers and retailers. Columns 7 and 8 (9 and 10) re-label flows that are less than 1,500 (17,000) Turkish liras as exports of produced products. In columns 11 and 12, a sourced product is defined to be not produced by the firm in 2005-2014, and purely intermediated exports are sales to destinations that the firm has not sold a produced product in 2005-2014.

and 8 of Table 6, we take a conservative approach and re-label all export flows, aggregated to the firm-product level, that are less than 1,500 Turkish liras (equivalent to \$1,111 in 2005), which correspond to the first percentile of firms' sales of their produced products, as exports of produced products. Column 7 shows that the TIP shares are virtually unchanged. However, since we now label these "small flow" products as produced, the definition of a PI market gets stricter (i.e. markets that the firm serves with sourced products only). As a result, as shown in column 8, the PI shares drop by about 7 to 10 percentage points, but it remains high at 39% in 2010. In columns 9 and 10, we increase the threshold to 17,000 Turkish liras (equivalent to \$12,591 in 2005), corresponding to the fifth percentile of sales of produced products, and find TIP and PI shares of 40% and 33% respectively for 2010.

Finally, note that our classification of sourced exporting relies on a firm exporting a product that it does not produce in a given year. However, as shown by Bernard et al. (2017), partial-year effects can confound this definition, if, for example, we classify a product as sourced when it is exported by a firm in January 2010 even though it was produced in December 2009. Moreover, firms might be exporting goods that they produced years ago via their inventories. Similarly, PI exports are defined at a yearly level and thus can be sensitive to the same issue. To dispel these concerns, in Table 6 column 11, we restrict the definition of sourced to be a product that is not produced by the firm for the entire sample period (i.e. 2005-2014). In addition, in column 12, we further conservatively classify exports into PI exports if the firm has never sold a produced product to a destination that it serves with sourced products in 2005-2014. Even with these restrictive definitions, TIP represents 30%-37% of manufacturing exports, and PI makes up 23%-32% of TIP.

Sectors and destinations

Are sourced exports, and its purely intermediated portion, specific to certain sectors or destinations? Table 7 panel (a) shows the result of our decomposition by each manufacturing HS section for 2010. Column 1 shows the share of Turkey's $59 billion total exports represented by the sample of producers and intermediaries in our sample in 2010 made up by each HS section. Column 2 illustrates the share of these exports that are done by producers as opposed to intermediaries, and reveals that the majority of exports is done by manufacturers for all sections. Focusing on the four broad sectors that make up more than 15% of Turkish exports each (Textiles and apparel, Metals, Machinery, and Vehicles), column 3 indicates that TIP share is fairly stable ranging from 45% for Vehicles to 51% for Metals. The portion of TIP that is purely intermediated is shown in column 4, and ranges from 28% for Vehicles to 63% for Metals among the top four sections. The figures show that TIP is prevalent in all broad sectors except for Other sectors which consist of Agriculture, Minerals, and Arms sectors. Column 4 indicates that PI trade makes up the majority of TIP in eight of the 13 sections. Appendix Table A.2 panel (a) focuses on the top 10 narrower HS2 industries and finds similar results.

Table 7 panel (b) shifts the attention to destinations. Column 3 shows that TIP share of exports to Turkey's top destination Europe is 43%. This figure ranges from 25% for destinations in East Asia and Pacific to 53% in West and Central Asia. The PI shares in column 4 suggest that the majority of TIP is explained by pure intermediation for six of the eight regions. In Appendix Table A.2 panel (b), we focus on Turkey's top 10 destination countries and find similar results.

Overall, this section shows that pure intermediation by producers is widespread across firms, products, and destinations. This reveals the importance of defining trade intermediation at the firm-product-destination level, which in turn highlights the different motives for firms to engage in TIP. Given its importance for most exporters, the possibility to engage in TIP should play an important role in firms' participation and success in international markets.

Table 7: TIP and PI shares - sectors and destinations

(a) HS section	Description	(1) Share of total exports	(2) Manu./total exports	(3) TIP/manu. exports	(4) PI/TIP
IV	Prepared foodstuffs	3.8%	71.9%	42.6%	60.8%
VI	Chemicals	3.4%	71.2%	30.3%	60.2%
VII	Plastics and rubber	6.0%	89.4%	28.6%	52.9%
VIII	Leather goods	0.5%	68.8%	25.5%	32.9%
IX-X	Wood and wood products	1.3%	77.9%	51.0%	71.0%
XI-XII	Textiles and apparel	15.3%	71.9%	50.8%	39.1%
XIII-XIV	Stones, ceramics, and glass	3.4%	69.8%	35.6%	71.1%
XV	Metals	18.3%	76.3%	51.0%	63.2%
XVI	Machinery	18.3%	70.5%	45.6%	36.4%
XVII	Vehicles	16.2%	99.2%	45.3%	28.0%
XVIII	Instruments	0.3%	76.1%	60.0%	70.6%
XX	Miscellaneous manufacturing	1.6%	67.8%	39.5%	36.5%
I-III, V, XIX	Other sectors	11.7%	87.2%	10.4%	66.9%

(b) Region	(1) Share of total exports	(2) Manu./total exports	(3) TIP/manu. exports	(4) PI/TIP
East Asia and Pacific	4.5%	81.5%	24.7%	60.6%
Europe	57.3%	81.4%	42.6%	40.1%
Latin America and Caribbean	2.0%	73.2%	41.5%	62.4%
Middle East and North Africa	24.9%	77.8%	39.1%	55.5%
North America	4.3%	88.4%	37.4%	34.9%
South Asia	1.0%	82.5%	35.1%	72.9%
Sub-Saharan Africa	2.1%	76.9%	32.0%	72.2%
West and Central Asia	3.9%	56.4%	53.1%	50.5%

Notes: Statistics are based on Turkey's exports of $59 billion represented by the sample of producers and intermediaries in our sample in 2010. TIP refers to trade intermediation by producers as defined in equation (1). PI refers to the purely intermediated portion of TIP as defined in equation (2). Total exports is the sum of manufacturing and professional intermediary exports. Other sectors refer to HS sections I-III, V, and XIX, which correspond to Agriculture, Mining, and Arms respectively. Countries are allocated to regions according to the World Bank classification.

4 Top exporters and product complementarities

In this section, we discuss two issues raised by our results. First, the firm-level trade literature has emphasized the importance of multi-product "superstar" exporters in aggregate trade patterns (e.g. Bernard et al., 2007; Mayer and Ottaviano, 2008). In subsection 4.1, we therefore focus on Turkey's top 100 exporters to evaluate the extent of TIP and PI in their exports. Second, the literature has proposed that trade intermediation by producers is driven by complementarities between exports of produced goods and sourced goods (e.g. Bernard et al., 2019; Eckel and Riezman, 2020). In subsection 4.2, we propose a simple test to see whether these possible complementarities also appear in our data.

4.1 Top 100 exporters

Here, we zoom in on Turkey's top 100 manufacturing exporters, ranked based on their total export values. These firms make up only around 1% of the number of exporters, but around 43%-64% of total exports by manufacturers in Turkey, confirming that aggregate exports are driven by a few "superstar" exporters. Our objective is to assess the roles of TIP and PI in their success as exporters.

In Table 8, we first explore the top exporters' engagement in trade intermediation. The first four columns examine TIP shares. Column 1 shows that virtually all of the top 100 exporters engaged in TIP in 2005-2014. Column 2 indicates that for around a half of top exporters, TIP made up at least 25% of exports. Column 3 shows that around a third of top exporters relied on TIP as their main export activity. Remarkably, column 4 shows that there are 17 (2009) to 29 (2005) top exporters that have TIP shares larger than 75%.

We turn to PI shares in the last four columns of Table 8. Column 5 shows that the vast majority of top exporters engage in PI. Column 6 indicates that for around a third of top exporters, PI makes up at least 25% of sourced exports. Column 7 illustrates that around a quarter of top exporters had PI shares larger than 50%, and column 8 shows that there are 15 to 23 top firms for which PI made more than 75% of TIP.

These results highlight that the success of the "superstars" in international markets is also driven by their activity as trade intermediaries. Hence, participation and growth of manufacturers in export markets should in part be determined by their ability to succeed as intermediaries in international markets.

Table 8: Top 100 exporters

	TIP share				PI share			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	> 0%	> 25%	> 50%	> 75%	> 0%	> 25%	> 50%	> 75%
2005	99	54	41	29	95	41	29	22
2006	97	56	39	25	91	35	26	19
2007	98	55	37	26	90	33	22	18
2008	98	51	33	24	86	36	28	23
2009	98	49	29	17	91	34	24	18
2010	96	44	28	18	89	31	21	15
2011	94	42	29	19	87	35	29	20
2012	98	50	34	22	90	28	22	17
2013	97	48	31	21	84	28	21	16
2014	97	51	36	21	87	33	27	20

Notes: TIP share is defined as TIP/exports. PI share is defined as PI/TIP. TIP refers to trade intermediation by producers as defined in equation (1). PI refers to the purely intermediated portion of TIP as defined in equation (2). Columns 1 (5) to 4 (8) show the number of exporters out of the top 100 exporters whose TIP (PI) share is larger than 0%, 25%, 50%, and 75% respectively.

4.2 TIP: is it about intermediation only?

We finally evaluate whether the CAT portion of TIP could be due to complementarities. Note that our objective is not to assess what type of complementarities could be present, but rather provide a clear indication that there are some.[12] To do so, we again take advantage of our decomposition that allows us to isolate PI flows, for which such possible complementarities cannot be present by definition. This is a new approach to provide evidence for these complementarities, as we focus on trade of sourced products and not of produced products, in contrast to what has been done in the literature (e.g. Bernard et al., 2019; Arnarson, 2020).

Figure 1: Distribution of flows

(a) Textiles and apparel: Produced vs. sourced   (b) Textiles and apparel: CAT vs. PI

(c) Europe: Produced vs. sourced   (d) Europe: CAT vs. PI

Notes: The sample includes exports of products in the Textiles and apparel sector in panels (a) and (b), and exports to Europe in panels (c) and (d) in 2010. Panels (a) and (c) show the distribution of produced (shaded bars) versus sourced (transparent bars) export flows. Panels (b) and (d) show the distribution of CAT (shaded bars) versus PI (transparent bars) export flows. Exports are in logs (*lne*).

---

[12]Bernard et al. (2019) discuss in detail the various possible complementarities that can be at work.

The idea is simple: if there are some complementarities, they may appear for CAT flows, but not for PI flows. These complementarities should generate additional gains that would make it possible to profitably export less of the sourced product: for a given sourced product, each destination becomes easier to access when bundled with a produced product.

We thus plot firm-level export flows for each HS section and for each of the eight regions of the world. We first compare sourced exports to produced exports as decomposed in equation (1). We then split sourced exports into CAT exports and PI exports as in equation (2). Figure 1 panels (a) and (b) depict the distribution for the main HS section (Textiles and apparel), and panels (c) and (d) depict it for the top regional destination of Turkish exports (Europe).

Panels (a) and (c) of Figure 1 show that exports of sourced products (transparent bars) are on average lower than produced exports (shaded bars). More importantly, panels (b) and (d) illustrate that PI exports (transparent bars) are on average larger than CAT exports (shaded bars). Strikingly, this pattern holds for *all* HS sections and destinations (see Appendix Figures A.3 and A.4). We interpret this systematic pattern as suggestive evidence of some positive complementarities between exports of sourced and produced products. These complementarities make smaller exports of sourced products profitable when exported together with a produced product. When firms cannot take advantage of these complementarities, they need to export on average more of the sourced product.

While our main results support the view that accessing export markets generates gains for firms beyond the increased market size for their own products as they also act as intermediaries, this last result suggests that firms may additionally benefit from complementarities between sourced and produced products when possible. Hence, we see two motives behind TIP: incentives to engage in pure trade intermediation, and complementarities between products.

5   Conclusion

In this paper, we first showed that manufacturing exporters also export sourced products. As shown for several other countries in the literature, we documented that trade intermediation by producers (TIP) is prevalent for a large developing country like Turkey. Second, we have decomposed TIP into two parts: one where sourced products are "carried-along" with produced products to the same destination (CAT), and the remaining part where producers ship only sourced products, thus engaging in pure intermediation (PI). Our decomposition revealed that the vast majority of manufacturing exporters, including the largest ones, engage in PI, and this trade makes up almost half of Turkey's sourced exports.

Our decomposition contributes to the literature in several ways. The presence of PI flows indicates that sourced exporting cannot be solely explained by complementarities between exports of produced and sourced products. Moreover, it implies that capturing the full extent of trade intermediation requires identifying it at the firm-product-destination level. The ubiquity of PI implies that manufacturers also act as trade intermediaries, just like wholesalers. This means that trade intermediation

does not necessitate a specific technology or market knowledge, suggesting that trade intermediation is primarily about matching buyers and sellers. Likewise, building an export network should thus generate gains for firms beyond having access to a larger market for their own products. As a result, the possibility to engage in trade intermediation can determine a manufacturer's decision to participate in international markets. As TIP is also important for the largest exporters, trade intermediation can potentially play a key role in firms' export growth. These implications call for further research on the role of trade intermediation by producers in explaining the behavior and the dynamics of firms in international markets.

References

Abreha, K. G., Smeets, V., and Warzynski, F. (2020). Coping with the crisis and export diversification. *The World Economy*, 43(5):1452–1481.

Ahn, J., Khandelwal, A. K., and Wei, S.-J. (2011). The role of intermediaries in facilitating trade. *Journal of International Economics*, 84(1):73–85.

Akerman, A. (2018). A theory on the role of wholesalers in international trade based on economies of scope. *Canadian Journal of Economics*, 51(1):156–185.

Antràs, P. and Costinot, A. (2011). Intermediated trade. *The Quarterly Journal of Economics*, 126(3):1319–1374.

Arnarson, B. T. (2020). The superstar and the followers: Intra-firm product complementarity in international trade. *Journal of Economic Behavior & Organization*, 177(C):277–304.

Bernard, A. B., Blanchard, E. J., Van Beveren, I., and Vandenbussche, H. Y. (2019). Carry-along trade. *The Review of Economic Studies*, 86(2):526–563.

Bernard, A. B., Bøler, E. A., Massari, R., Reyes, J.-D., and Taglioni, D. (2017). Exporter dynamics and partial-year effects. *The American Economic Review*, 107(10):3211–3228.

Bernard, A. B., Grazzi, M., and Tomasi, C. (2015). Intermediaries in international trade: Products and destinations. *The Review of Economics and Statistics*, 97(4):916–920.

Bernard, A. B., Jensen, J. B., Redding, S. J., and Schott, P. K. (2007). Firms in international trade. *Journal of Economic Perspectives*, 21(3):105–130.

Bernard, A. B., Jensen, J. B., Redding, S. J., and Schott, P. K. (2010). Wholesalers and retailers in US trade. *The American Economic Review*, 100(2):408–13.

Bernard, A. B., Jensen, J. B., Redding, S. J., and Schott, P. K. (2018). Global firms. *Journal of Economic Literature*, 56(2):565–619.

Bernard, A. B., Redding, S. J., and Schott, P. K. (2011). Multiproduct firms and trade liberalization. *The Quarterly Journal of Economics*, 126(3):1271–1318.

Crozet, M., Lalanne, G., and Poncet, S. (2013). Wholesalers in international trade. *European Economic Review*, 58(C):1–17.

Di Nino, V. (2015). The phenomenal CAT: Firms clawing the goods of others. *The Occasional Papers, Bank of Italy*, 281.

Eckel, C. and Neary, J. P. (2010). Multi-product firms and flexible manufacturing in the global economy. *The Review of Economic Studies*, 77(1):188–217.

Eckel, C. and Riezman, R. G. (2020). CATs and DOGs. *Journal of International Economics*, 126(C):1–12.

Erbahar, A. (2020). Two worlds apart? Export demand shocks and domestic sales. *Review of World Economics*, 156:313–342.

Javorcik, B. S., Lo Turco, A., and Maggioni, D. (2018). New and improved: Does FDI boost production complexity in host countries? *The Economic Journal*, 128(614):2507–2537.

Lo Turco, A. and Maggioni, D. (2016). On firms' product space evolution: The role of firm and local product relatedness. *Journal of Economic Geography*, 16(5):975–1006.

Mayer, T., Melitz, M. J., and Ottaviano, G. I. P. (2014). Market size, competition, and the product mix of exporters. *The American Economic Review*, 104(2):495–536.

Mayer, T. and Ottaviano, G. (2008). The happy few: The internationalisation of European firms. *Intereconomics: Review of European Economic Policy*, 43:135–148.

Melitz, M. J. (2003). The impact of trade on intra-industry reallocations and aggregate industry productivity. *Econometrica*, 71(6):1695–1725.

Pierce, J. R. and Schott, P. K. (2012). Concording US Harmonized System categories over time. *Journal of Official Statistics*, 28(1):53–68.

Rauch, J. E. and Watson, J. (2004). Network intermediaries in international trade. *Journal of Economics & Management Strategy*, 13(1):69–93.

Van Beveren, I., Bernard, A. B., and Vandenbussche, H. (2012). Concording EU trade and production data over time. *NBER Working Papers*, 18604.

van den Berg, M., Boutorat, A., and Alberda, A.-P. (2019). Dissecting carry-along trade: what's in the bundle? *CBS Discussion Paper*.

A Appendix Tables and Figures

Table A.1: Trade versus production codes: *Tyres*

Trade codes:

HS 40	Rubber and articles thereof
HS 4011	New pneumatic tyres
HS 401110	For motor cars
HS 401120	For buses
HS 401130	For aircraft
HS 401140	For motorcycles
HS 401150	For bicycles
...	

Production codes:

NACE 22	Manufacture of rubber and plastics products
NACE 2211	Rubber tyres and tubes
CPA 221111	New pneumatic tyres for motor cars
CPA 221112	New pneumatic tyres for motorcycles and bicycles
CPA 221113	New pneumatic tyres for buses, lorries, and aircraft
PROD 22111355	For buses or lorries with a load index $<= 121$
PROD 22111357	For buses or lorries with a load index > 121
PROD 22111370	For aircraft
...	

Notes: Trade codes are based on the international Harmonized Schedule (HS) system, and production codes are based on the PRODCOM system of the EU.

Table A.2: Top 10 HS2 sectors and destinations

(a) HS2	Description	(1) Exports (in millions)	(2) Manu./total exports	(3) TIP/manu. exports	(4) PI/TIP
87	Vehicles	$ 9,262	99.2%	46.0%	27.3%
72	Iron and steel	$ 6,022	68.0%	35.2%	47.0%
84	Nuclear reactors, boilers, machinery and mechanical appliances	$ 5,559	76.3%	36.6%	37.3%
85	Electrical machinery and equipment and parts thereof	$ 5,244	64.2%	57.0%	35.7%
61	Articles of apparel and clothing accessories, knitted or crocheted	$ 3,148	63.2%	53.1%	14.4%
73	Articles of iron or steel	$ 2,433	83.4%	69.3%	78.4%
39	Plastics and articles thereof	$ 2,095	88.5%	40.8%	50.8%
62	Articles of apparel and clothing accessories, not knitted or crocheted	$ 1,840	71.9%	47.5%	30.7%
40	Rubber and articles thereof	$ 1,466	90.6%	11.6%	63.5%
76	Aluminum and articles thereof	$ 1,326	73.4%	80.8%	56.0%

(b) Country	(1) Exports (in millions)	(2) Manu./total exports	(3) TIP/manu. exports	(4) PI/TIP
Germany	$ 6,392	84.9%	41.0%	35.3%
UK	$ 4,465	74.5%	37.4%	50.0%
Italy	$ 4,105	86.3%	57.3%	17.2%
France	$ 3,232	78.1%	46.6%	27.4%
Spain	$ 2,476	75.6%	46.0%	47.2%
USA	$ 2,265	89.6%	37.2%	30.0%
Iraq	$ 2,208	67.9%	47.4%	34.4%
Russia	$ 2,002	79.4%	38.7%	58.7%
United Arab Emirates	$ 1,823	90.8%	20.3%	52.7%
Iran	$ 1,579	76.7%	46.3%	44.1%

Notes: Statistics are based on Turkey's exports of $59 billion represented by the sample of producers and intermediaries in our sample in 2010. TIP refers to trade intermediation by producers as defined in equation (1). PI refers to the purely intermediated portion of TIP as defined in equation (2). Total exports is the sum of manufacturing and professional intermediary exports. Sectors and countries are ranked according to export values as indicated in column 1.

Figure A.1: Instructions for the Questionnaire Form

Descriptions :

Part I, Part II and Part III must be filled in for each attempt.

Even if the total number of employees in the reference year of the enterprise is less than 20 people, the questionnaire will be filled.

Only one of the YES or NO options will be marked with an (X) for questions 1, 2 and 3 in Part I and for all questions 4 and 5 in Part II.

In Section III, information about the products and processes whose production forms are specified below will be written.

• The products produced by the enterprise on its own behalf using raw materials and materials,

• Products commissioned by the enterprise as a subcontractor to other enterprises (by providing raw materials and materials),

• The products made by the enterprise as a subcontractor to other enterprises (for a fee on behalf of that enterprise using the raw materials and materials of another enterprise),

• To be used in the production of the enterprise; raw materials and materials (intermediate products) produced or subcontracted,

• Products (semi-finished products) that are in the production phase of the enterprise or the enterprises that make contract manufacturing on behalf of the enterprise,

• Improvement activities carried out by the enterprise by processing (only improvement processes without changing the structure of the product: refining, cleaning from harmful substances, dyeing, finishing, tinning, etc.) and industrial services (maintenance, repair and assembly),

• Products produced by the enterprise on its own behalf by leasing the facilities and quarries.

Considerations:

• Only one product will be written on each line.

• The quantities of the products must be written according to the unit of measurement in the Industrial Product List in the European Community (PRODTR).

• For the products whose unit of measurement is Turkish Lira (TL) in the PRODTR list, the production value will be written in the production amount column, the sales value will be written in the sales value column, the year-end stock value will be written in the year-end stock amount column, and if it is used as an intermediate product, the ratio will be written in the intermediate product column.

Source: Annual Industrial Products Statistics Questionnaire Form 2021, the Turkish Statistical Institute.

İşletme Soru Formu Kapak

ɳuik
TÜRKİYE İSTATİSTİK KURUMU

ANNUAL INDUSTRIAL PRODUCTS STATISTICS QUESTIONNAIRE FORM, 2021

Survey Form Code

Statistical Unit No.

ID & Contact Information

Legal Title

Signage Name

Tax Identification Number   **Tax Office Code**

Address

City

Province

Village

District

Street

Door Number   Interior Door №

Postal Code

Address Code

Contact Information

Telephone (Immobile)   Fax

Mobile Phone (GSM)   e-mail   @

WEB address   www.   Public e-mail   @

Purpose of the Research: To determine the changes in the economic and social structure of the country, to obtain information that will shed light on the economic and social measures to be taken by the decision-making bodies, to prepare data for various researches, to determine the domestic production values and also to determine the price and quantity index weights and to monitor the growth rate of the manufacturing industry. Morever to compile information in a way that allows international comparisons European Union Annual Industrial Production (PRODCOM) regulations.

Coverage: According to NACE Rev.2, which is the international economic activity classification, its main activity or secondary activities are enterprises operating in any of the Manufacturing Industry (C), Mining and Quarrying (B) sectors and employing 20 or more people.

Method: For enterprises with more than one local unit, the questionnaire is filled online by the entrepreneur with the same tax identification number, covering the information of all local units operating in any of the Manufacturing Industry, Mining and Quarrying sectors.

Confidentiality: This information is collected only for use in statistical studies. The confidentiality of the information obtained is guaranteed in accordance with Article 13 and 14 of Law no. 5429. The information you provide cannot be given to any administrative, judicial or military organ, authority or person, cannot be used for other than statistical purposes and cannot be a means of proof.

This information is gathered in accordance with the Turkey statistical Law No. 5429 "7, 8, 9 and 10." articles with a date 10.11.2005. In case the question form is not filled in at any time, if it is incomplete or incorrect,7.097 (seven thousand and ninety seven) TL administrative fines shall be imposed according to the articles 53 and 54 of the Law. The application of administrative fines and other penalties does not eliminate the obligation of the statistical unit to provide information.

I would like to ask you to fill out the questionnaire correctly and completely according to the explanations and thank you for your information and cooperation.

Prof. Dr. Sait Erdal DİNÇER
Deputy Chairman

THIS QUESTION FORM SHOULD BE FILLED ON THE INTERNET UNTIL THE 13th OF THE MONTH WITH THE HARZEMLI WEB APPLICATION AT ADDRESS "https://harzemli.tuik.gov.tr".
If you have any questions about the questionnaire, you can apply to the TURKSTAT Regional Office.
Regional Offices and provinces that are in the area of responsibility are given on the last page.
Türkiye İstatistik Kurumu
Devlet Mah. Necatibey Cad. No: 114 06420 Çankaya/ANKARA
www.turkstat.gov.tr

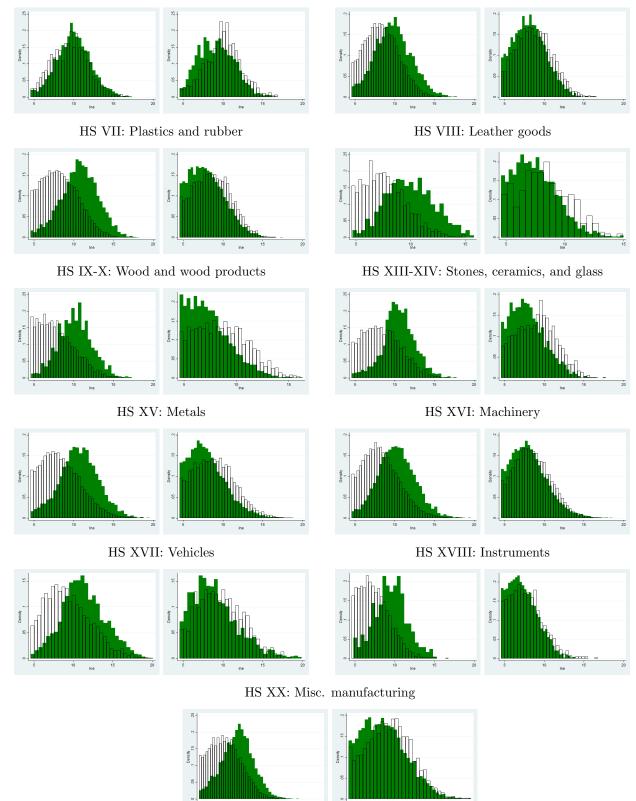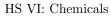*Source:* Annual Industrial Products Statistics Questionnaire Form 2021, the Turkish Statistical Institute.

Figure A.3: Distribution of flows by HS section: produced vs. sourced, CAT vs. PI

HS IV: Prepared foodstuffs

HS VI: Chemicals

HS VII: Plastics and rubber

HS VIII: Leather goods

HS IX-X: Wood and wood products

HS XIII-XIV: Stones, ceramics, and glass

HS XV: Metals

HS XVI: Machinery

HS XVII: Vehicles

HS XVIII: Instruments

HS XX: Misc. manufacturing

Notes: The left panel of each section shows the distribution of produced (shaded bars) versus sourced (transparent bars) export flows. The right panel of each section shows the distribution of CAT (shaded bars) versus PI (transparent bars) export flows. Exports are in logs (*lne*). The sample includes exports by producers in 2010.

Figure A.4: Distribution of flows by region: produced vs. sourced, CAT vs. PI

East Asia and Pacific

Latin America and Caribbean

Middle East and North Africa

North America

South Asia

Sub-Saharan Africa

West and Central Asia

Notes: The left panel of each region shows the distribution of produced (shaded bars) versus sourced (transparent bars) export flows. The right panel of each region shows the distribution of CAT (shaded bars) versus PI (transparent bars) export flows. Exports are in logs (*lne*). Th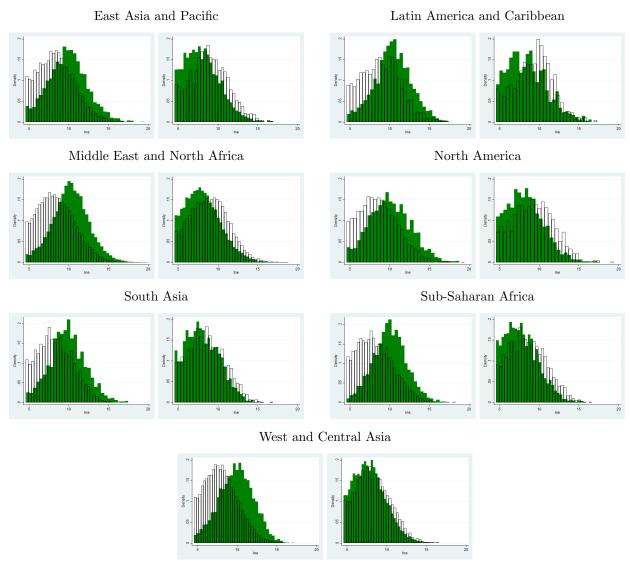e sample includes exports by producers in 2010.