Services trade and the Indonesian third unbundling

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Introduction

Trade in services is growing in importance all over the world, Indonesia included. Figure **??** shows Indonesia's export and import in services taken from Indonesian Statistic Bureau compiled by the Central Bank (Bank Indonesia, n.d.). Indonesia's services trade is growing steadily from 2000, only to be interrupted by the COVID-19 pandemic. Export service is dominated by tourism, while import services is dominated by logistics. While the trend is increasing, it is evident that Indonesia's import of services has always been dominating exports.

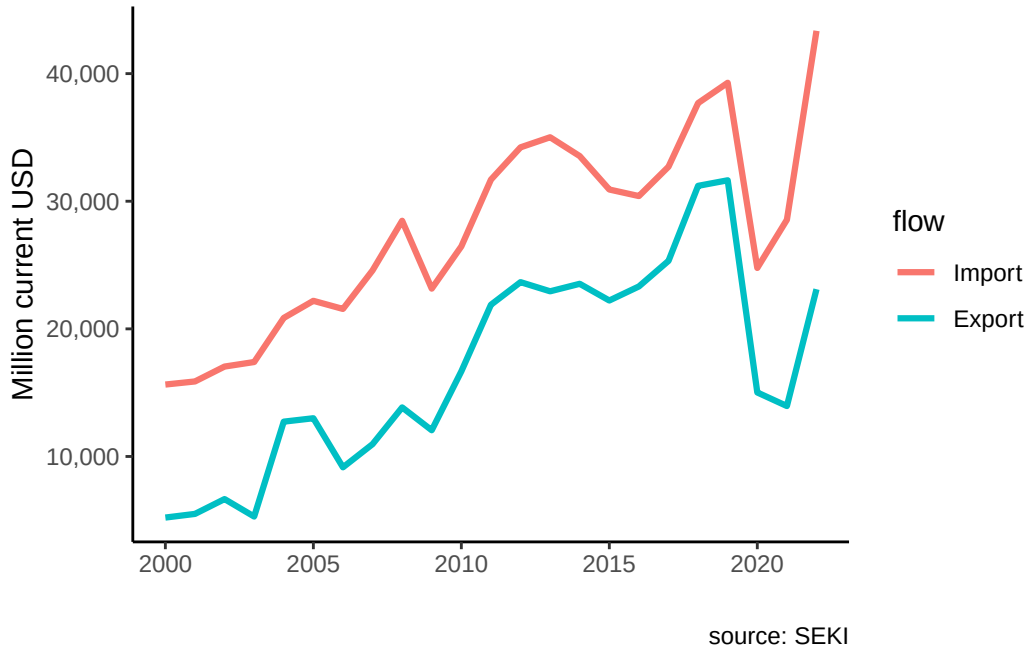

Figure 1: Indonesian trade in services

Indonesian government often concerned with deficit trade, but trade in services has often neglected in the discussion. Indeed, trade balance in goods are often far outweight the deficit in its services counterpart, as made apparent by Figure **??**. However, while Indonesia's trade balance fluctuates along with commodity prices and global demand in general, services trade deficit is consistent. Additionally, Indonesia's reliance on services import went up right after COVID-19 and seems to stabilize in a higher than pre-pandemic level. With the increasing role of services in the global trade, the deficit looks to be even more important in Indonesia's current account in the future.

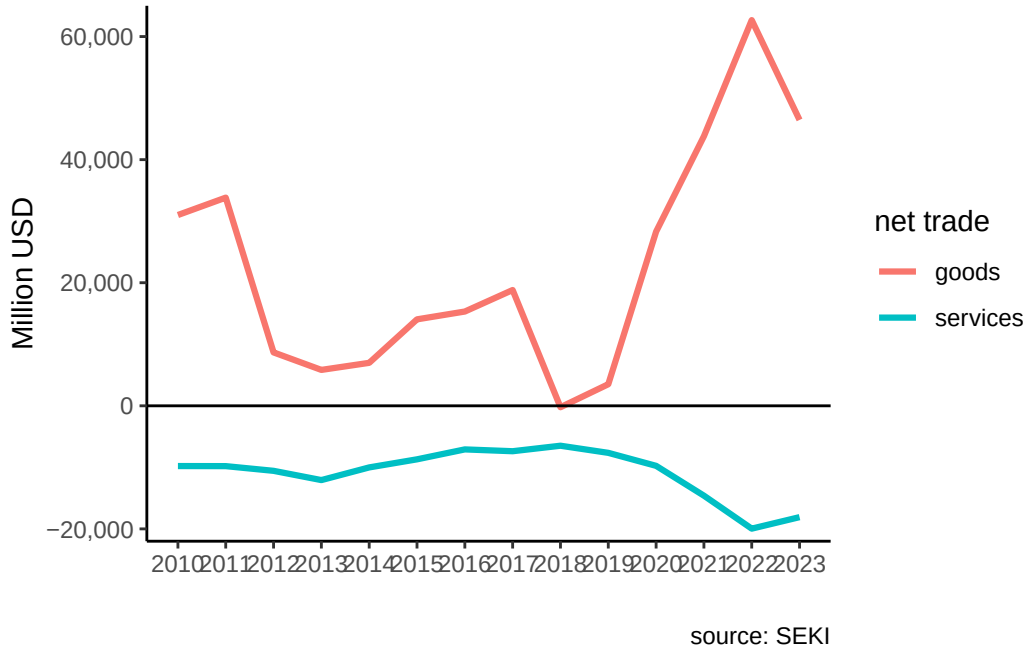

Figure 2: Net trade in goods and services of Indonesia, 200

The importance of trade in services goes beyond current account. With the ever decreasing cost of trade, separating a value up to tasks level (i.e., the third unbundling) is on the horizon (Baldwin 2011; Kimura 2018). Feedback mechanism from the third unbundling may benefits domestic manufacturing (Kimura 2018). Therefore, services trade may be important in the next stage of globalization.

This chapter have at least two objectives. First, we explores the general trade in services in Indonesia. We use BaTIS data (WTO/OECD 2022; Liberatore and Wettstein 2021) to show Indonesia's most important services trade and country partners for both export and import. Trade in services has been increasing in importance, especially in the rise of deep trade agreements involving integration in trade in services as well as goods (Patunru 2023). Thus, trade in services' profile of Indonesia will be most useful to Indonesian academics and policy makers.

Secondly, we investigate the potency of the feedback mechanism from the third unbundling a la Kimura (2018). That is, we look at how much imported services are embedded in Indonesia's manufacturing sectors aggregated into ICIO classifications. We do this in two ways. First, we use ARDL (Pesaran and Smith 1995) to see whether services imports cointegrate with manufacturing exports and GDP. Secondly, we utilize Inter-Country Input-Output (ICIO) data from OECD (OECD 2023) to look at the importance of services for Indonesian manufacturing.

We arrange this chapter in the following. Section 2 discusses the development in research concerning services trade and its development in Indonesia, section 3 discusses about data

and methods, section 4 explores Indonesian services trade as well as some third unbundling results, and section 5 concludes.

Review on services trade

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Data and Method

There are two main dataset used in this chapter. Namely, Balanced Trade in Services (BaTIS) and the OECD Inter-Country Input-Output (ICIO) dataset.

The BaTIS database was first launched in 2017 by World Trade organization (WTO) and Organization of Economic Cooperation and Development (OECD) in tandem (Liberatore and Wettstein 2021). Unlike trade in goods, trade in services are harder to track than trade in goods amid gap in data collection by various countries. BaTIS collect both ways from pairs of trading partners, reconcile difference between reporting countries' trade. BaTIS is also used to build Trade in Value Added (TiVA) database and the ICIO database. BaTIS follows EBOPS 2010 sector classification (Liberatore et al. 2021) which can be observed in Table **??**.

Table 1: Services classification in BaTIS

Code	Category description
SA	Manufacturing services on physical inputs owned by others
SB	Maintenance and repair services n.i.e.
SC	Transport
SD	Travel
SE	Construction
SF	Insurance and pension services
SG	Financial services
SH	Charges for the use of intellectual property n.i.e.
SI	Telecommunications, computer, and information services
SJ	Other business services
SK	Personal, cultural and recreational services
SL	Government goods and services n.i.e.

Trade services statistics are challenging in nature (Liberatore and Wettstein 2021). Only around 65% of total number of trade in services are recorded bilaterally. Unlike trade in goods, exports are recoreded better than imports, mainly due to advance countries being the majority of service exporters. Only 59% of trade value in BaTIS are fully reported, which

are the reported 65% pair. The remaining 41% are estimated using share interpolations and gravity estimations. Since BaTIS is used for other databases including TiVA and ICIO, we should expect similar problems in these two databases.

Additionally, we also use the Indonesian trade in services statistics compiled by the Indonesian central bank called *Statistik Ekonomi dan Keuangan Indonesia* (SEKI) (Bank Indonesia, n.d.). It records Indonesia's trade in services in the same manner as BaTIS, but with less detail on the trading partners. Moreover, SEKI is also used to observe Indonesia's manufacturing GDP and goods exports and imports to estimate the third unbundling effect.

The OECD Inter-Country Input-Output (ICIO) decribes the sale and purchase relationships between sectors, consumers and the government within and across borders. ICIO estimates trades amonng 76 countries and 45 unique industries based on ISIC Revision 4(OECD, 2023). The database shows how much sectoral value added, both foreign and domestic, that is used by a certain industry.

In this study, we focus the manufacturing sector, specifically ISIC 10-27 in the ISIC rev. 4 classification. The ICIO aggregates these sectors into 16 sectors. We then aggregates all services that sell to these sectors into two categories, namely domestic services and foreign services.

On the third unbundling discussion, a good quality of firm-level data with information of its services sourced. Unfortunately, this information is not widely distributed in the Indonesian context. The second-best approach is to use international input-output table, which in this case ICIO is used.

Assume a manufacturing output and value added as a function of its factor or production. The nest of factor of production produces fully complementarily with its goods and services inputs. Let services inputs be complementarily used with goods inputs, but within the value produced by services, there is a degree of substitutability between foreign and domestic input as such:

$$Y_{it} = f(AS_{it}^{D}, AS_{it}^{F}) \tag{0.1}$$

for all i = manufacturing sectors and $t = year$. A is the nest multiplier, S_i^D and S_i^F are total services purchased by industry i, domestically and imported respectively.

Assuming a cobb-douglass relationship, then we can log-linearize Equation **??** to a simple linear system as such:

$$y_{it} = a + \beta_d s_{it}^{D} + \beta_f s_{it}^{F} + \varepsilon_{it} \tag{0.2}$$

with a lower case represents the natural log of its uppercase counterpart.

To construct the dataset for the regression, we aggregate non-factor inputs from each manufacuring sectors, separated by whether it is from Indonesia or from other countries. All inputs from foreign countries are aggregated into foreign.