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Issue Paper on:

Section G of ISIC (rev 4) Wholesale and retail trade; repair of motor vehicles and motorcycles

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1.0 Introduction

The Voorburg Group started work on Section G (ISIC Rev.4) Wholesale and retail trade; repair of motor vehicles and motorcycles at its 23rd meeting in 2008. In total, seven mini papers were presented in Mexico covering turnover and output, trade margins and Services Producer Price Indices (SPPIs) for wholesale trade by representatives from Central Bureau of Statistics (Israel); INSEE (France); Statistics Canada; Statistics Sweden; and United States Bureau of Labor Statistics (BLS). In the presentations and the discussion that followed, it was evident that further discussion and input would be necessary before a sector paper on wholesale trade could be finalized.

Further discussion on margins and quality adjustments and clarification of the level of product detail required by the national accounts was tabled in the September 2009 meeting in Oslo. Following the Oslo meeting, participants were asked to respond to the questions raised in the paper. Feedback from the meeting and subsequent detailed follow-up information provided were reported at the September 2010 meeting in Vienna.

Also in September 2010, six additional mini papers were presented on distributive trades, five of which focused on turnover and prices for the retail division 47 (ISIC Rev. 4). These papers were presented by representatives of Statistics Norway, Eurostat, Statistics Canada, Australian Bureau of Statistics and the United States Bureau of Labor Statistics.

This paper attempts to cover the range of shared knowledge on the distributive trades sector while highlighting the unresolved issues. It complements the **United Nations'** ***International Recommendations for Distributive Trades, 2008*** *(IRDTS).* The paper reflects the experience of a number of developed nations where distributive trades are primarily conducted by registered businesses. Developing countries have an added challenge in measuring this sector as there can be a large amount of distributive trade taking place in the informal sector. Future work on the distributive trades sector should investigate approaches to better estimate distributive trade activity in the informal sector.

1.1 General information about distributive trades

The distributive trades sector provides an important link between producers and buyers of goods in both the domestic and the global economies. This sector accounts for a large proportion of employment in the economy as well as a growing portion of value-added. The retail sector supplies much of the goods purchased by the household sector making it an excellent input to the calculation of personal expenditure. International comparability of the data in this sector is important to be able to understand and study globalization.

In terms of supply-use and input-output tables, the principal output of the industry is the trade margin on the sale of goods with additional output from commission revenue (provision of a service). Measures of turnover and inventories are also important inputs to the **System of National Accounts** (SNA).

2.0 Classification

2.1 Industry Classification

Section G (ISIC Rev.4) Wholesale and retail trade; repair of motor vehicles and motorcycles is made up of three divisions. Division 45 covers the wholesale, retail and repair and maintenance activities related to motor vehicles and motorcycles. Divisions 46 (wholesale) and 47 (retail) cover the sale of all other goods with a distinction between the predominant type of customer.

Within wholesale trade, the various international classifications distinguish between wholesale on a fee or contract basis (also called wholesale agents and brokers) and merchant wholesalers. Such a distinction is not made in retail trade. Instead, the retail division is first delineated on the basis of whether or not retail operations are conducted in stores. The store portion is then divided into specialized and non-specialized stores.

There are some significant differences between the various industrial classifications of this sector. While the **International Standard Industrial Classification** (ISIC) uses a class of customer definition to distinguish between wholesale and retail trade, the **North American Industrial Classification System** (NAICS) is based on method of selling (process). In addition, NAICS classifies automotive repair in the repair and maintenance sub-sector of NAICS and distinguishes sales of automotive vehicle and parts between wholesale and retail trade.

ISIC Revision 4.0 Title	NACE Rev2	NAICS
4510 Sale of motor vehicles	45.11 Sale of cars and light motor vehicles 45.19 Sale of other motor vehicles	Wholesale merchants Wholesale agents and brokers 44111[a] New Car Dealers 44112[a] Used Car Dealers
4520 Maintenance and repair of motor vehicles	45.2 Maintenance and repair of motor vehicles	81111 Automotive Mechanical and Electrical Repair and Maintenance 81112 Automotive Body, Paint, Interior and Glass Repair 81119 Other Automotive Repair and Maintenance
4530 Sale of motor vehicle parts and accessories	45.31 Wholesale trade of motor vehicle parts and accessories 45.32 Retail trade of motor vehicle parts and accessories	Wholesale merchants Wholesale agents and brokers 44131[a] Automotive Parts and Accessories Stores 44132[a] Tire Dealers
4540 Sale, maintenance and repair of motorcycles and related parts and accessories	45.4 Sale, maintenance and repair of motorcycles and related parts and accessories	Wholesale merchants Wholesale agents and brokers 44122[a] Recreational vehicle dealers

[a] Retail industries in U.S. and Canadian NAICS

Issue 1 – Wholesale and Retail Sales of Motor vehicles, parts and accessories

Combining wholesaling and retailing of motor vehicles together in one industry is problematic in that it will create duplication in the estimates of turnover. Future versions of ISIC should consider separating the wholesale and retail sales of motor vehicles and parts. Retail sales of motor vehicles constitute an important indicator in the calculation of personal expenditures. For example, in the Canadian System of National Accounts, retail trade estimates are the primary source of data in the calculation of personal expenditures on durable goods. With motor vehicles

and other durables purchased infrequently it can be burdensome and costly to rely solely on household surveys for such information.

Issue 2 – Clarification of boundary between automotive maintenance and repair and sales of motor vehicles

It should also be noted that the repair and maintenance of motor vehicles can be an extremely important secondary activity of wholesalers and retailers of motor vehicles. Implementation rules should be developed to prevent flip-flopping between sales of motor vehicles and maintenance and repair of motor vehicles. For example, it may be advisable to classify all establishments engaged in the selling of motor vehicles under sales of motor vehicles regardless of how large a portion of value-added comes from the repair and maintenance of motor vehicles.

Issue 3 – Classification of Manufacturing Sales Branches and Offices (MSBs and MSOs)

The ISIC definition of a wholesaler includes "sales branches and sales offices (but not retail stores) that are maintained by manufacturing or mining units apart from their plants or mines for the purpose of marketing their products and that do not merely take orders to be filled by direct shipments from the plants or mines." The United States and Japan produce separate estimates of this area of wholesale trade.

Manufacturers' sales branches (MSBs) market and distribute the merchandise transferred to them from their enterprise's manufacturing operations. They are responsible for activities such as pricing, storage, inventory control, financing and advertising. Manufacturers' sales branches may also market goods purchased for resale, usually goods that complement the products manufactured by the enterprise. While **manufacturers' sales offices** (MSOs) take customer orders and may provide customer service in the field, unlike MSBs, they do not hold inventory or take title to goods. The sales office team may place orders with the sales branch or, in the absence of a sales branch, directly with the manufacturing operation.

MSBs and MSOs sometimes show up as ancillary units supporting manufacturing or may be blended with the overhead function of the head office. The book keeping practices of individual enterprises can make it challenging to collect establishment level data from these entities.

Issue 4 – Classification of Factoryless Goods Producers (FGPs)

Outsourcing is another challenging boundary issue in the classification of wholesale trade. According to ISIC (rev. 4 - paragraph 144 and 145):

- 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.

- A principal who completely outsources the transformation process but does not own the input materials is in fact buying the completed good from the contractor with the

intention to re-sell it. Such an activity is classified in section G (Wholesale and retail trade), specifically according to the type of sale and the specific type of good sold.

The ISIC classification based on ownership of materials alone is consistent with the proposed procedures for classification of goods sent abroad for processing in the SNA 2008. This revision for 2008 specifies that goods sent abroad for processing should be measured as the import of a service.

How to apply this definition to establishment surveys is not fully tested. One may anticipate that the decision to purchase the inputs or not may vary from contract to contract depending on who can source the cheapest inputs. The United States expanded their definition of a **Factoryless Goods Producer** FGP to include in manufacturing, establishments that undertake all of the entrepreneurial steps and arrange for all capital, labor, and material inputs required to make a good regardless of ownership of the material inputs (ECPC 2010). They see the output of such an FGP as being more than a trade margin, but also the return on intellectual property and the entrepreneurial assumption of risk for the production of goods. They also suspect that there will be more stability in the industrial coding of firms using the expanded definition.

For some products, the material inputs are negligible compared to the value of the intellectual property. For example, the difference between the cost of manufacturing a smart phone and the value of the finished good is much greater than a traditional wholesale margin. The return reflects the value of the research and development that went into the device, not the logistics of bringing together goods and customers. This reasoning is already recognized for the relationship between "publishers" (ISIC section J) and "printers" and "reproducers" (ISIC section C, division 18), where implicitly the intellectual property is considered as the main point. This logic could be extended to other **Information Communications Technology** (ICT) products.

On the contrary, Japan excludes all factoryless principals from manufacturing activities in JSIC rev.12 (but has isolated a specific activity "manufacturing-wholesale trade" inside distributive trade). A lack of international agreement on the classification of the outsourcing of manufacturing could lead to duplication in goods production in international statistics. This is an issue that should be reviewed in the next revision of ISIC. By then, **National Statistics Offices** (NSOs) will have experience in the application of this concept and will know whether a narrow focus on ownership of the material inputs can be implemented.

Issue 5 – Bundling of Goods and Services

Within the SNA, there is a distinction between goods and services. But what do you do when goods and services are bundled as they are in the world of telecommunications? In the case of a cell phone, the sale of the phone below cost is used as an incentive to attract a customer to commit to a long-term service contract for the phone or data plan. In these cases, the cost of the phone to the vendor exceeds the selling price creating a negative margin. Part of the operating profits from the service contract is used to recover this loss. In an establishment-based survey, the negative margins will likely appear in the retail trade establishment while the inflated operating

profits would appear in the telecommunications industry. If left untreated, that negative margin could send a false signal about the economic activity that is really taking place.

2.2 Product Classification

The product structure under the **Central Product Classification** (CPC) is organized differently than the industrial classification. Motor vehicles, parts and accessories are not combined into a particular division, and the distinction between trade margins (received from goods that the trader owns) and commissions (fee on transactions concerning goods that the trader does not own) is introduced in retail trade and combined with kind of stores.

The CPC distinction between sales of goods on own account and commissions from goods sold on account of others is important in satisfying the SNA's concept of transfer of ownership, particularly with SNA 2008. Where the two can be split into separate industries, such a division should be considered in ISIC as it appears for wholesale trade. But in many cases, retailers engage in both methods of sales so it is important that the breakdown of turnover by kind of activity includes such a division in the list of activities.

CPC version 2 division title	**CPC version 2 group title**	**CPC version 2 class organization**
61 Wholesale trade services	611 Wholesale trade services, except on a fee or contract basis	To be followed by codes according to the products sold: - 1: Agricultural raw materials and live animals; - 2: Food, beverages and tobacco - 3: Textiles, clothing and footwear - 4: Household appliances, articles and equipment - 5: Miscellaneous consumer goods - 6: Construction materials and hardware - 7: Chemical and pharmaceutical products - 8: Machinery, equipment and supplies (of which 81: motor vehicles, parts, accessories and the like) - 9: Other products
	612 Wholesale trade services on a fee or contract basis	
62 Retail trade services	621 Non-specialized store retail trade services	
	622 Specialized store retail trade services	
	623 Mail order or internet retail trade services	
	624 Other non-store retail trade services	
	625 Retail trade services on a fee or contract basis	

Note that CPC has omitted the description of "commercial cooperation" services in its explanatory notes, i.e. rear margins or hidden margins invoiced to producers against some promotional services. One can assume they are included in group 625 of the CPC. This would include "backward" commissions including the case where the trader has ownership of the commodity exchanged. Commissions can also occur on the sale of a service (bus ticket, lottery ticket, etc.) and are naturally part of group 625.

Issue 6 – Method of sale

The products of distributive trades should take into account the various methods of sales. Such methods relate to ownership of the good (as noted above in distinguishing margins and commissions) or in how the buyers and sellers interact (mail-order, Internet, direct sales, in-store purchases, etc.). Is the distinction between specialized and non-specialized stores appropriate in a product classification? Is the range of products available for sale a product in and of itself?

The distinction by method of sale in the data collected can be useful to SNA because the margins and pricing can vary. In fact, the kind of outlets can be part of the definition of commodities price changes measured by **Consumer Price Indices** (CPI).

National accountants should also be interested in a breakdown of the trade margins between groups of commodities exchanged. On the other hand, details on the kind of commodities sold on account of others (commissions) should be of minimal importance for SNA (unless SNA wants to describe trade margins everywhere, i.e. transform commissions into trade margins by goods for a certain conventional analysis of the supply and use table, but it seems unlikely).

The extent to which NSOs collect detailed information on fees and commissions is a local decision. Some NSOs may choose to focus on trade margins. In some cases, the relative size of distributive trades on account of others may not warrant the additional effort or response burden of separate estimates for this activity. In addition, the SNA of some countries may not require a distinction between wholesale and retail trade margins, opting instead for a single trade margin.

Commodities (Products distributed)

The product dimension of distributive trades needs to satisfy the requirements of different data users. From an Input-Output perspective, trade margins are added to the producer value of commodities for both intermediate and final demand. In this space, the commodity classification should align with aggregates based on the **Central Product Classification** (CPC). For instance, European Input-Output tables must respect a detail A*64 of rows and columns relying on CPA (linked with CPC at the finest detail). Within this structure, there are 21 “commodities” (goods) for which trade margins must be estimated. In some countries, the number of commodities can be far greater.

Turnover is also an important input to expenditure-based accounts, and thus retail turnover may need to align with **Classification of Individual Consumption by Purpose** (COICOP). Groups of commodities are also guided by the classification of trade industries at the class level, which refer to a partition of commodities.

But in all cases, what can be reported by respondents on the goods they sell will largely influence what goes into the product classification and tradeoffs between the CPC and COICOP. Unlike industrial classifications which an NSO can assign to a business entity, the product classification is used directly by the respondent. Only testing of a product classification with respondents will determine its utility.

Retailers are more likely to organize along the lines of usage and in some cases a COICOP-based classification may be easier to collect. On the other hand, wholesalers may organize by materials, use or client needs. For example, one wholesaler may deal with raw materials and may align closely to a CPC structure. Another may supply retailers with a product line of complementary goods and will have product information that aligns better to COICOP. Finally, some wholesalers may sell a range of goods suited to a particular client such as a restaurant, and the products will span across a range of goods from perishables through to durable goods.

Countries have generally adopted product classifications that fall somewhere between these options. The European Economic Communities follows the Statistical Classification of Products by Activity. The United States, Mexico and Canada have recently drafted a **North American Product Classification System** (NAPCS) for the sector. One distinction within the NAPCS approach is that it includes secondary activities such as repair and maintenance and installation services.

3.0 Industry Output

From a national accounting perspective, the wholesale and retail trade sector produces several main outputs, of which there are two main outputs.

Primary activities (main output):

- Net margins from resale of goods
- Commissions

Secondary activities (secondary output):

- Goods production
- Services (rentals, repair, etc.)

The largest component of the output of this sector is the margins on goods purchased for resale (sales minus the cost of goods sold). In input–output tables, commodities are shown to flow from producers directly to consumers, leaving out such distributive channels as wholesale and retail trade, while users who purchase commodities are shown to buy trade margins separately. According to the **European System of Accounts** (ESA) 1995, “a trade margin is the difference between the actual or imputed price realized on a good purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed of.”

In some cases, the trader resells goods or services on behalf of a third party; without becoming the owner of the merchandise, he simply earns a commission. This service is not included in the trade margin but is treated as a provision of services. There is a distinction in the industrial classification for wholesale merchants versus wholesale on a fee or contract basis. Such a split does not appear in international classifications for Retail Trade. In fact, it is not unusual for retailers to report both margins and commissions. For example, many gasoline stations in North America and Europe sell gasoline on a commission basis but sell snack food, automotive fluids and other items purchased by the establishment for resale. Not only can commissions be earned

through the sale of goods, but also in the sale of services on behalf of others. For example, retailers may sell gift cards (for goods or services), phone cards and bus tickets on behalf of others for which they earn a commission. They may also receive a fee or commission for some "commercial cooperation" such as for including a product in the advertisements of the supermarket or chain, for placing a product in a prominent location or for listing a new product.

Some wholesalers and retailers provide other secondary activities, such as installation services, repair work and rental services. A retailer may allow other retailers to operate concessions inside the store. Wholesalers and retailers may also engage in assembly and goods production (e.g. in-store bakeries). These secondary activities are divided between goods production and services.

3.1 Indicators of trade activity

Margins

It is commonly agreed that trade margins provide an appropriate measure of trade service's output. The *Eurostat Handbook on price and volume measures in national accounts* (page 77) explains that: "In general, one can expect that there is a reasonable correlation between the volume of sales and the volume of trade services, but it does leave aside all changes in the (quality of) trade services provided, and therefore does not give a complete picture of the activity of this branch." The handbook proposes measuring the difference between deflated sales and deflated purchases as output. One important advantage of trade margins instead of sales value is avoiding double counting. This might be less relevant in retail but significant in wholesale trade, where goods might be sold among different traders.

Within national accounts, this trade margin is applied at a product level. Getting accurate and deflated trade margins for every good in the SNA is costly, burdensome and can be difficult, particularly if national accounts covers a large number of products.

Statistics Sweden conducted surveys collecting detailed trade margins by industry and product following a model used in Norway (Åhman, 2008). Challenges in collecting these data included respondent concerns over the sensitivity of the information, the ability of respondents to report the detail required, and response burden. Direct measurement of margins by commodity for wholesale and for retail trade is ideal.

In Canada, data required to calculate a gross margin are collected without any product detail. Estimates of margins can thus only be calculated at an industry level. The corresponding SPPIs in Canada provide an industry-based change in margin prices compiled from product-level detail. Turnover statistics by product are then used to identify the specific industries in which products are distributed. Measurement of margins at an industry level, though not as precise as margin by commodity, is also a reliable indicator of output.

Finally, the Eurostat handbook offers as an alternative, the assumption that the volume of margins follows the volume of sales and thus deflated turnover itself can be seen as an estimator. But this

cannot be true in every case. The quality of the service linked to a product might vary among the different suppliers (e.g. traditional-service, self-service, mail-order etc.) in one market. Similarly, customers may change their buying habits, switching from merchants to agents or from specialized retailers to non-specialized retailers. In such a case, the relationship between the trade margin and sales will change. This would also cause problems when defining weights for aggregation of different indices (e.g. by region or industry detail). If the relation between different business models changes, this might have an impact on the reliability of the weighting scheme as it does not represent reality for all periods.

The precision of the data used for estimating the margin varies from country to country. In some countries, the SNA applies a blended margin covering both wholesale and retail trade to each product. In other countries, separate margins are calculated for wholesale trade and retail trade.

Turnover

Another key indicator of distributive trades is turnover. Turnover in this paper refers to "turnover, sales, shipments, receipts for services and other revenues" as defined in 4.108-113 of the United Nations' IRDTS. Turnover corresponds to market sales of goods or services supplied in a given period.

The European monthly turnover index of retail trade is considered by the European Commission as one of the most important key short-term business indicators for Europe and the euro area **Principal European Economic Indicators** (PEEI). In the accompanying regulations, the objective of a turnover index is "to show the development of the market for goods and services." (European Commission - 2006). In addition, retail gross sales can be a key source of data to use in the calculation of personal expenditures. However, it should be noted that when analyzing turnover data in distributive trades globally, analysts must recognize that sales of the same good may be counted multiple times as it moves from wholesaler to wholesaler to retailer.

Issue 7 – Turnover vs. gross sales vs. operating revenue

The *Compilation Manual for an Index of Service Production* (OECD, 2007) and the UN's IRDTS (Table IV.1 page 65) include a table suggesting that turnover statistics should include "gross sales from departments, concessions, and amusement and vending machines operated by others" rather than the unit's share of those sales (fee or commissions).

Conversely, measures of operating revenue only include the trader's share of sales from departments, concessions and amusement and vending machines owned by others.

It isn't clear from the manuals that this distinction is in fact the intended concept. The detailed write-up within these manuals suggest that Commissions and fees from selling goods and services on account of others is indeed a component of Sale/turnover/value of shipments. Perhaps the table (partially reproduced below) is in error. None-the-less, the possible contradiction offers an opportunity to consider what should be included in turnover.

Component Item	Turnover/Sales	Operating Revenue
Gross sales of goods	Yes	Yes
Provision of services	Yes	Yes
Shipping and handling	Yes	Yes
Installation	Yes	Yes
Maintenance and repair	Yes	Yes
Alterations	Yes	Yes
Storage	Yes	Yes
Receipts from the rental of vehicles, equipment, instruments, tools and other merchandise	Yes	Yes
Commissions from the arrangement of financing	Yes	Yes
Payments for work in progress	Yes	Yes
Market value of compensation received in lieu of cash	Yes	Yes
Gross sales from departments, concessions, and amusement and vending machines operated by others	Yes	No
Units share of sales from departments, concessions, and amusement and vending machines operated by others	No	Yes
Amounts received from work subcontracted to others	Yes	No
Consumption, sales and value-added taxes	No	No
Proceeds from the sale of real estate, investments or other assets held for resale	No	No
Income from interest and dividends	No	No
Rental of real estate	No	No
Contribution, gifts, loans and grants	No	No
Reduction in prices, rebates, discounts and returned packaging	No	No
All duties and taxes on the goods or services invoiced by entity	No	No
Operating subsidies received from public authorities	No	No

Source: Compilation Manual for an Index of Service Production (Paris, Organization for Economic Cooperation and Development, 2007)

Including as turnover, the gross sales from departments, concessions and amusement and vending machines operated by others is neither in line with the general statistical definition of turnover used in the EU for short-term statistics nor with traditional European bookkeeping concepts of turnover comprising the revenue from businesses' ordinary activity or with the **Value-Added Tax** (VAT) concept. Following those definitions fees or commissions are the relevant turnover in case one unit is providing services to other units. In case a unit is organizing the distribution for another entity as a sales agent the revenue for this service is seen as its turnover. This might lead to problems in communication and data collection.

The distinction between gross sales and operating revenue can be quite significant depending on the type of business organization. In wholesale trade, there is a separate industrial classification for agents and brokers. Not so for retail trade where selling agents and suppliers are classified within the same industry. In retail trade, it is not unusual to see a blend of activities in a single operating unit (i.e. a retailer operating as both an agent for some products and a merchant of others).

In "Problems of measuring retail trade due to the impact of different ways of organizing distribution" (Kaumanns, 2010), there are examples where what is collected differs or should differ from international measures of turnover. For example, there is uncertainty in what is being reported as turnover for the retail trade of automotive fuels in the EU. It was noted that some agency petrol stations do not know the gross value of automotive fuel sold since their cash decks

are linked directly to the supplier's data centre. In other words, the station can report operating revenue, but cannot report gross sales.

Depending on the contract between principal and agent the commission could be either value or volume based (per item, per liter sold etc.). Degressive scales are quite common (i.e. the more the agent sells the lower the per item commission gets). Another aspect is that some contracts allow, to a certain extent, for in kind benefits instead of money; e.g. the principal pays for the agent's shop fittings, etc.

The paper also highlights problems of double counting when turnover is counted for both the agent and the supplier. To avoid this duplication, the operating revenue concept would be more appropriate than gross sales. For example, in Canada, agent gas stations report a commission for the gasoline sold rather than gross sales. The gross sales of gasoline are then reported by the retail establishments of the supplier of the gasoline. Both the agent and the supplier are classified within the same retail industry.

Given that turnover is meant to be internationally comparable, the turnover concept for distributive trades should be considered to include the commissions or fees received by agents rather than the gross sales of the goods and services sold on behalf of third parties.

Rather than collecting total operating revenue, it would be appropriate to collect separately re-sale of goods (of own account) and commissions in retail trade (see issue 6), with a common breakdown by goods. The turnover of the first category would reflect the retail gross sales (in line with the purpose of estimating personal expenditures), the turnover of the second category would contain only the commissions on the commodities exchanged. A simple hypothesis on the rate of commission could be made to extrapolate a corresponding amount of retail gross sales for the same purpose.

Inventory

In addition to turnover, there are compelling reasons to measure changes in inventory. Inventories are an important component of the SNA as a measure of investment by the business sector. In particular, the inventories held by wholesalers and retailers are an important source of data on finished goods held in inventory.

Inventory measures show the gap between aggregate production and final demand in a given period. While they are a small component of GDP, they can play a major role in the changes in economic activity. Large changes in inventories may be observed at economic turning points and can provide early measures of the economic impact of certain events such as border disruptions or strikes in railway or port services.

Withdrawals from inventories should be valued at the purchasers' prices at which the inventories can be replaced at the time they are withdrawn rather than at the purchasers' prices that may have been paid for them when they were acquired. Measurement of inventories provides challenges since valuation practices differ from one enterprise to the next. The common methods used by units in their business accounting practices for reporting withdrawals from stocks are:

1. **First-in-first-out** (FIFO): the cost of items sold or consumed during the reference period is calculated as though they were sold or consumed in the order of their acquisition;

2. **Last-in-first-out** (LIFO): the cost of items sold or consumed during the reference period is deemed to be that of the most recent acquisitions or production. This implies that withdrawals are valued approximately at current prices;

3. **Average cost**: the cost of an item is determined by applying a weighted average of the cost of all similar items available for sale over a period of time;

4. **Specific item cost**: a method of tracking inventory when the actual cost of each item can be identified separately. This method is usually used for large, easily traceable items, such as vehicles or furniture.

The measure of inventories should include all inventories owned by the enterprise and held by or under the control of the establishment regardless of where the inventories are in the world (held overseas, in transit abroad, at the establishment's own premises or elsewhere). Inventories held at ancillary units, in bonded stores or warehouses, on consignment, in transit and materials being manufactured, processed or assembled on commission by others should be included.

3.2 Unit of observation

Establishment

The United Nations' IRDTS identifies the establishment as the appropriate unit of observation for this division. This makes measures of operating revenue more complete since it includes the trade establishments of enterprises classified to other industries. In other words, going back to the automotive fuel example, gas stations and the suppliers of the gas (oil companies) would be covered in the retail establishment population. The gas stations would report their commissions while the retail establishments of oil companies would report their gross sales. If the unit of observation is an enterprise, that same oil company with retail establishments would likely be classified to manufacturing and the retail statistics would appear to be incomplete.

In using estimates of retail turnover as an indicator of expenditures, measuring turnover at an establishment level reduces the amount of non-trade activities included in the estimates. A wholesale or retail enterprise may include some establishments outside the sector. Even establishment-based estimates will include secondary activities, but to a lesser degree than what one would expect from an enterprise-level estimate.

Manufacturing Sales Branches (MSB) and Sales Offices (MSO)

For establishment-based programs, drawing a line between the manufacturer and this wholesale activity can be difficult and is wholly dependent on the way a firm keeps its books. Some firms keep their books by product line rather than production function, blending manufacturing and

wholesaling activities into one entity. This makes it difficult to collect all the essential pieces of information from an industry-specific establishment-based survey in a consistent and coherent manner.

One would expect that enterprise-based estimates of distributive trades would have very few, if any of these entities as the enterprise would likely be classified to manufacturing. On the other hand, MSBs of foreign manufacturers may appear as enterprises classified to wholesale and should be relatively straight-forward to measure.

Wholesale agents and brokers

The overall contribution of wholesale agents and brokers to wholesale trade turnover can be very small. Some countries, such as Canada and the United States, invest in collecting timely data covering merchant wholesalers with less frequent coverage of turnover for wholesalers on a fee or contract basis. The Canadian Wholesale SPPI does not cover wholesale agents and brokers. Size of firm and response burden are factors to consider in allocating resources to measure the agent and broker population.

3.3 Data Sources

Data on distributive trades are best gathered through surveys where data can be collected with sufficient information to calculate a margin or to identify inventory valuation methods. The effort to reduce the burden on reporting units and costs for NSOs is an important issue in many countries.

Administrative data can be used to collect revenue and expense details for single industry enterprises but care needs to be taken to ensure the concepts are similar for key items such as cost of goods sold and sales of goods purchased for resale. Inventory and product data are best collected via a survey vehicle.

Countries estimating distributive trade turnover at an enterprise level can make use of administrative data as a lower cost alternative to survey data. There are more challenges in using administrative data as a substitute for establishment surveys. Establishments of multi-industry enterprises are generally not good candidates for administrative data since it is unlikely that there is a one-to-one correspondence between the target establishment and the reporting legal entity.

Mixed methods can bring both efficiency and quality. The administrative data can provide a census of data for many of the standard financial variables while surveys can be used to gather the detail not available from administrative records. For example, both INSEE and Statistics Sweden have been using administrative data from their tax authority since the mid-1990s. They receive administrative information on all enterprises in their country regarding the main economic variables such as turnover, cost of trade goods and raw material, cost of personnel, financial income and costs, assets and debts etc. In order to get more detailed data, such as turnover by product, INSEE and Statistics Sweden each conduct an annual survey.

Value-Added Tax (VAT) data can be a reliable source of turnover (sales) information from wholesalers and retailers but are not a good substitute for survey data from establishments of multi-industry enterprises. Many advances have been made in efforts to estimate turnover by using data from tax administration of VATs. However, using it is not free of problems as tax data are produced for other purposes and may present challenges such as wrong periodical allocations, timeliness or periodicity limits. In addition it means losing control over the data as changes in data or concept might be made without involving the statistical office.

VAT's definition of "deliverables and services" is a close concept to the turnover definition mentioned before. However, it also covers the revenues resulting from selling fixed assets. Eurostat together with EU Member States are currently running a huge multimillion Euro program on modernizing business statistics evaluating the meaningfulness of administrative data in the context of short-term statistics. The results of this study will include suggested methods to use VAT data as an input for the calculation of monthly turnover[1].

Canada has made use of VAT data in its monthly wholesale and retail trade surveys. Part of the monthly estimate comes from a statistical model using data from Canada's **Goods and Service Tax** (GST) files. The model accounts for differences between sales and revenue (reported for GST purposes) as well as for the time lag between the survey reference period and the reference period of the GST file.

4.0 Services Producer Price Indices (SPPIs)

Services Producer Price Indices for retail and wholesale trade should focus primarily on the "merchant" distributive trade services provided by establishments that purchase and re-sell goods, as measured by changes in margin prices (SPPI on commissions can be neglected at first view - or they can be considered as "classical" SPPI composed by a rate of commission applied to a commodity price asset). There is an agreement (consistent with the EU handbook on price and volume measures) that the best method of measuring this output should take changes in the quality of the trade services provided into account. There are a few differences in price measurement among countries; these differences stem from a number of factors including, but not limited to, the efficiencies that can be gained from using adjusted CPIs and the concern about respondent burden which has an effect on the number of sampled units and the number of items sampled at each unit. There are also differences among countries concerning whether the volume of the goods that are resold in the trade sector should be explicitly adjusted for quality change. And last, for those countries that directly collect margin prices from establishments, the level of aggregation (specific product, product line, or some higher aggregation) of products collected varies.

[1] More information on this subject is available at http://essnet.admindata.eu/ and www.essnet-portal.eu.

4.1 Deflation by the SNA

Turnover

Changes in the nominal value of turnover (sales) in the distributive trades may be attributable to changes in the quantities sold, their prices or both. For turnover in the distributive trades to be a useful indicator of economic activity, it is preferable to remove the variations due to price changes in order to obtain a measure of the volume of turnover. This is accomplished by obtaining suitable prices indices for deflating the nominal values of turnover in the wholesale and retail trade sectors.

For both sectors, it is preferable to derive the price indices and to perform the deflation of turnover at the lowest level of classification for which the nominal values are obtained. In the context of ISIC, this means developing price indices at the class level. This allows the development of price indices that are representative of the goods and services that are traded by type of wholesalers and retailers.

Wholesale trade

For the turnover of wholesalers, the preferred method is to make use of a Wholesale Selling Price Index (WSPI) that is measured directly, such as in the derivation of a margin price index as described on pages 19-21.

If a WSPI is not available, as was the case in Canada until recently, an approximate selling price index can be obtained by using a combination of Industry Product Price Indices (IPPI) and import price indices. To produce this selling price index, it is however necessary to have information on the proportion of the various goods traded by each type of wholesalers. These proportions can be obtained from annual surveys of the goods traded by wholesalers.

Wholesalers buy domestic and foreign (import) products. They subsequently sell in the domestic and foreign (export) markets. Hence, wholesalers trade a portion of the total supply of a commodity in an economy. The total supply is the sum of domestic production and imports. Although some of the domestic production is exported through wholesalers, it can be assumed that they set their prices according to the changes in the prices of domestic production whether the good is exported or not.

For each good traded by wholesalers, it can also be assumed that the share of imports in turnover is the same as that in the total supply of that good in the domestic economy. The weights for combining an IPPI and an import price for a specific good traded can then be obtained from the supply-use (input-output) tables for the national economy. Hence, a price index for a specific good traded can be derived as a composite index of relevant IPPI and import prices for that good.

However, the price of goods traded with the foreign sector is subject to the fluctuations of the exchange rates of the national currency vis-à-vis the currencies of its main trading partners. In using import prices, care must be taken to appropriately take into account the pass-through effect of exchange rate variations, especially in times of rapid large currency fluctuations. The pass-

through effect is essentially the proportion of the currency fluctuation that is immediately passed on to buyers. A currency fluctuation is not always passed on immediately to buyers.

Another assumption that can be made is that the price of a good sold does not change across types of wholesalers, i.e. a good sold by various classes of wholesalers will have the same price index, only its weight across wholesale industry classes will vary.

Thus a selling price index for a class of wholesalers can be obtained by weighting the goods-specific price indices described above by the proportions of the turnover of these goods for that class of wholesalers.

Retail trade

Unlike wholesale trade, to deflate the nominal values of turnover by retailers, it is preferable not to use a selling price index derived from a margin price index as described later, as the product mix of each class of retailers may not be well represented.

Instead, there is generally a set of price indices available that are well representative of the prices at which retailers sell their products: the Consumer Price Indices (CPIs). It is only necessary to weight these by the proportion of the various goods traded by each type of retailer. In the case of Canada, the information on these proportions is obtained via a quarterly retail commodity survey.

The only adjustment required to the components of the CPI used is to remove the effect of changes in the taxes on products, as the CPI measures the final purchase price, whereas measures of retail turnover generally exclude these changes.

Margins

The SNA (2008, p. 285) states: "The standard treatment in a supply and use table, therefore, follows the rules for partitioning transactions adopted for measuring the output of the wholesale and retail activity. Each acquisition of a product from a wholesaler or retailer is regarded as being the acquisition of two distinct products. One is the physical good, valued at producers' prices; the other is the trade margin. The purchase of the good is shown as a use of that good; the margin is shown as a use of services provided by wholesalers and retailers." Goods Producer Price indices are needed to deflate the output from the sale of the good while SPPIs are needed to deflate the margin output.

Currently, the U.S. is the only country that uses retail margin indices for deflation, mainly because the development of margin indices in other countries has just begun. Australia agrees that their quarterly retail trade indices would provide superior means for national accounts to calculate quarterly chain volume estimates of gross value added. Their current methodology (taken from the 2010 mini-presentation by Caley Forrest) uses output indicators based on revaluing retail turnover using the CPIs which assumes that percent margins are constant quarter-on-quarter within a financial year. They agree that deflating retail industry value added directly with retail margin price indices is a better alternative. Canada also does not yet use a direct margin index to deflate retail margins. They use an implicit index and a margin rate methodology

that they agree may not be as accurate. The U.S. experience is included here as they have begun to use the BLS PPI margin indices as deflators.

The national accounts are handled in the U.S. by the Bureau of Economic Analysis (BEA). The BEA publishes measures of industry output, input, and value added at roughly the 3-digit NAICS level of detail for all private industries and government. The BEA uses lower level data to calculate information that is aggregated to the three digit published level. Most of the services PPIs published by the BLS are used to deflate these industries' outputs and inputs.

The BEA uses the NAICS industry level 6- digit "primary services" retail trade PPIs to deflate 6-digit commodity margin activities in the Make and Use tables. These two tables make up the core of the U.S. Input-Output Accounts. For example, the BEA would use the primary service PPI for new car dealers, NAICS 441110, to deflate the 6-digit commodity for retail margin of new cars.

BEA currently does not use the BLS PPIs for deflating wholesale margin activity because the BLS SPPIs were not available at a detailed level consistent with the BEA 6-digit commodity detail in the Make and Use tables. Instead, the BEA creates price indices that reflect the growth in composite sales prices for individual wholesale kinds of business and growth in that wholesaler's average margin rate. This method assumes that the real margin rate does not change from the previous year, which may not be the case in reality. The described methodology for wholesale margins was previously how the BEA measured price deflators for retail margin commodities. However, since the BLS expanded its PPIs for the retail trade sector, BEA was able to improve the methodology for deflating retail margins using these margin price indices.

In the near future, BEA is expected to begin using the wholesale trade PPIs to deflate wholesale trade margin activity. Additional detail published by the BLS for wholesale trade in 2009 (in most cases, indices are now published at the NAICS 4-digit level) could significantly improve the accuracy of BEA's quantity and price measures for this sector. BEA typically analyzes both the PPI index methodology and any historical price movements for roughly two years before deciding to use a particular index for deflation.

The U.S. PPI has recently introduced a number of wherever-provided (commodity) indices for both retail and wholesale trade. Margin prices collected for the industry structures are organized by aggregations of products, regardless of the type of outlet that resold the good. These indices are relatively new and have not been examined by BEA for use as deflators. Whether there will be consistency with CPI indices of goods re-sold is not guaranteed. However, they could be more in line with the Boskin commission's recommendations on the outlet substitution bias (1996). It is suggested that price statisticians compile both "wherever provided" and "considering the kinds of outlets" price indices, as the truth should be in the interval.

4.2 Margin Prices

A wholesale or retail SPPI measures the output of the services using margin prices for goods purchased for resale. The SNA 2008 manual (p.113) defines a trade margin "as the difference between the actual or imputed price realized on a good purchased for resale and the price that

would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed of" (hence, it recommends the LIFO technique). The SNA is also clear that the "goods sold are valued at the prices at which they are actually sold, even if the trader has to mark their prices down to get rid of surpluses or avoid wastage. Allowance should also be made for the effect of reductions in price due to loyalty programmes or other schemes to offer reduced prices to certain customers in certain circumstances".

There seems to be widespread agreement among countries that average margins (or average margin rates) are the most operationally feasible and representative prices to collect. The current U.S. PPI pricing strategy for trade industries is to collect average margin prices (specifically collecting separate average retail selling prices and average vendor prices) per unit for an entire comparable product line whenever possible rather than a single product or transaction margin price. Comparable product lines contain homogeneous groupings of products that, in the view of the respondent, are marketed under the same set of conditions to the same (target) demographic market. The SPPI in Canada also collects average retail selling prices and average vendor prices per unit (for single products) and they employ a similar concept whereby comparable substitute products are those that serve the same niche markets. Australia collects margin percentages at the Supply and Use Product Classification (SUPC) level of detail which is somewhat more aggregated than the product line level, but by construction enough for SNA use.

The use of comparable average margins within U.S. PPIs has reduced the occurrence of negative margin prices (see measurement issues section) and the frequency of required product substitutions due to discontinued products. Average margins also tend to be somewhat less volatile and are inclusive of discounts offered by retail establishments in particular. This average price approach has been well received by respondents as they often have information in this format and also believe that this information is more likely indicative of the pricing of their firms. It is a particularly attractive approach in industries where product change is rapid or where there is seasonal change. On the other hand, Canada has found that this only works if items in the product line remain constant. Getting the necessary consistency has been particularly difficult in the Canadian wholesale trade industry.

Issue 8: The availability of data on replacement cost

Theoretically, replacement cost for goods sold would yield the most accurate margin indices but in practice, replacement cost is difficult to obtain. Recordkeeping practices seem to dictate what a respondent can provide. Countries' experiences are summarized below.

U.S. – Field economists that collect initial margin prices ask specifically for replacement cost. When that is not available, they ask for a price based on the LIFO method of accounting but, ultimately, some respondents provide purchase prices due to their recordkeeping practices. The U.S does not have statistics on what percentages of prices collected fall into these categories.

Australia – Cost of goods sold prices collected are typically based on the product's purchase prices.

Canada – Average vendor price per unit is collected and is defined as the cost to the retailer to purchase a product from a supplier.

Wholesale trade

Wholesale trade is defined as the resale (without transformation) of goods from a manufacturer to a third party: retailers; industrial, commercial, institutional or professional users; or other wholesalers, or involves acting as an agent or broker in buying goods for, or selling goods to, such persons or companies. The manufacturer or the third party buyer that is purchasing the goods can be either domestic or international. Distributive trade services provided by wholesalers include assortment building, quality control (investing in laboratory tests and ensuring local and international standards relating to distribution, warehousing and transporting), bulk breaking and packaging, marketing, warehousing and transportation**.** Margin prices are the most prevalent type of price for merchant wholesalers that typically take title to the goods they sell. Dollar value of commission based on a percent of sales is the most prevalent type of price for manufacturers' sales and branch offices that do not take title to a good and for wholesale agents and brokers. In this case, the SPPI is the product of the PPI of the commodity sold and of the rate of commission (note that most commissioners think that their prices are flat when their rates are flat, but in a macroeconomic view, their prices change also when their rates are stable but the prices of the commodities change). In the U.S., as in ISIC rev.4, wholesale trade agents and brokers are published in a separate industry.

Margin prices (Merchant wholesalers)

Both in the U.S. and Israel, the type of price collected in merchant wholesale is typically average gross margin per unit for a particular customer class for a comparable product line. Exceptions are made if data are not available by customer class (prices for all customer classes are acceptable) or by product line (prices for a specific product are also accepted). Canada typically collects margin prices at the product level. The margin price is the difference between the acquisition price from the supplier (replacement cost) and the selling price to the next level buyer. In the U.S. and Canada both the acquisition and the selling prices are collected on a per unit basis and stored as separate values and the resulting margin is calculated (via formula) in the system that is used for repricing. The acquisition price represents the direct cost of the wholesaled goods and should exclude freight. The price should include point-of-sale incentives (taken as discounts) that may be applied to the merchandise as well.

Commission prices (for wholesaling on a fee or contract basis)

Wholesale agents and brokers and some manufacturers' sales and branch offices receive a commission fee for their service. The commission is the amount of money that the sales office (not an individual agent) receives for performing the service. In the United States, five percent of the per unit sales price is a typical sales office commission percentage, although this can vary. Since revenue figures are typically recorded in terms of sales for this industry, the total value of commissions is a result of multiplying total sales by the average commission percentage.

In the U.S., the average value of commission per unit for a comparable customer class for all sales within a comparable product line is preferred. The same customer class and product line exceptions as noted above are also acceptable.

Merchant wholesalers do not typically price their services based on a flat fee commission price. However, in the event that they do, a flat fee for a single specific transaction should be collected.

Retail Trade

Margin prices for retailers reflect the value added by establishments for services such as marketing, storing, displaying goods in convenient locations, and making the goods easily available for customers to purchase. Among countries that calculate retail margin indices, the type of price collected in retail trade is typically a non-lagged average margin price per unit including discounts from vendors to the retailers and any discounts offered from retailers to consumers. The gross margin is the difference between the vendor price (replacement cost is preferred) and the retail selling price. In the U.S. and Canada both average acquisition prices and selling prices are stored as separate values (same as above in wholesale trade).

4.3 Measurement Issues

Issue 9: At what level of product aggregation should margin prices be collected?

Canada collects average purchase and selling prices for products and calculates the margin price. Where pricing for a specific product is unavailable, average prices are collected for the product line. The U.S. collects average margins for comparable product lines. Australia collects percent retail margin estimates at a "department" level (for example: all fruits and vegetables). What is the appropriate level of collection? If retail locations maximize profits at the location level rather than the product level, should we consider collecting average margins for locations (outlets)? Since quality adjustments for the distribution service are appropriately collected at the location level, margins collected at this level should be appropriate as well. Also, statisticians might argue that the location level margins would better represent the distributive trade services for the wide range of products offered at both wholesale and retail locations. Thus, instead of a sample of products or product lines at each location, samples of different locations within an enterprise could be collected. Respondent burden and price volatility may be minimized using this method as well. However, smaller businesses may need to average prices on all products on all invoices which could be very time consuming. Individual experiences will dictate which approach is best in a particular enterprise, industry or country.

It could be argued (in support of collecting prices at the product or product line level) that the SNA needs deflators for commodity groupings so product level margins are appropriate. Also, no control for variations in price due to product mix and volume changes is possible with a margin at the location level. In the Canadian SPPI, collecting purchase and selling prices for products enables Canada to also calculate selling price and purchase price indices. The selling price index

will soon be used in the calculation of volume indicators for the monthly wholesale and retail trade surveys and in the calculation of monthly GDP.

The U.S. PPI has had over 10 years experience in calculating and publishing retail trade indices, and it has moved from collecting a single product price to measuring the average margin for a product line. One reason the U.S. made this improvement was because BLS learned that it did not have a sufficient sample size of single products to accurately represent the vast array of products sold (in grocery stores for example). Also, the product line pricing virtually eliminated the problems with negative margins for single products.

Issue 10: Negative or zero margin prices

Any item that has a negative or zero margin price is not given a chance of selection for repricing. Both negative and zero prices have no economic meaning in an output price index. When a negative or zero margin price is encountered, it is evidence that an event other than a transaction involving output of a service has transpired and it is out-of-scope for the PPI. Anecdotal evidence suggests that by only selecting products with a positive margin price, there are fewer required product substitutions and a portion of volatility is curtailed due to the removal of loss-leader products (products that generally have a negative or zero margin price) from wholesale and retail price indices.

Triple-repricing methodology

The U.S experimented with a "triple-repricing" methodology in several of the initial indices for retail trade industries. Under triple-repricing, each "item" consisted of three similar products for which respondents were asked to supply the vendor and retail prices. The difference between the sum of the three retail prices and the sum of the three vendor prices was considered the margin price for the priced "item". This procedure was designed to incorporate products with negative prices into the index (the products were excluded from the margin sum when they were negative but were included in the sum when the price became positive) and decrease volatility by increasing the number of products covered. However, the additional product information made survey forms difficult to understand and updating price data for three products on a single form made completing the forms very time consuming for respondents. Triple-repricing more than doubled the frequency of required substitutes because each "item" consisted of three different products, any of which could be discontinued in a given month. These problems caused triple-repricing to be discontinued as a pricing methodology. Based on the US experience, it is recommended that other countries avoid the triple-repricing method as well.

Issue 11: Handling of seasonal items

Products that are sold only for a specific season (garden center and clothing items come to mind) cause a problem for monthly or quarterly SPPIs. These items are typically introduced at high prices at the start of the season and then prices are reduced periodically throughout their season. The subsequent year, seasonal items are again introduced at high prices. It is important to reflect

these seasonal trends in the index. Substituting to a non-comparable product at the end of an item season should be avoided. In Canada, it is stressed to respondents to select products that reflect an annual period. The U.S. and Canada only price seasonal items in the months they are in season. Prices are imputed in the off season months. Comparable products or product lines are then substituted (and prices directly compared) when the item is back in season. It is recommended that these practices be adopted as international best practices.

Issue 12: Establishing a non-sale margin price as the base price

In both wholesale and retail trade, there can be tremendous volatility encountered in pricing trade margins that will be aggravated when calculating an index. The behavior of the long-term price relative can be a source of major concern when pricing trade data, and this can occur for many reasons. One cause can be setting the base price – it is essential to avoid using a sale price as the base price when establishing a new series, rebasing an item that had been delinquent, or taking a non-comparable substitution. A "representative margin price" reflecting the typical output price for the trading of products that happen to be on sale in the initiation month is collected (in addition to the average margin sale price) and used as the base price in the U.S. In Canada, the product is excluded from index estimation until the product returns to a non-sale price.

4.4 Quality Adjustment

Issue 13: Should changes in quality of the goods be considered in quality adjustments for the SPPI?

Some argue that quality adjustments are appropriately made based on changes in the distributive trade service provided, not the products that are being measured. The services provided affect the selling price and the gross margin of the selected product. The distributive trade service provider's production function involves only the distribution service and he may not have input in or information on changes to the quality of the products he chooses to sell. For the most part, quality changes for products are part of the production function of goods producers and are included in PPIs for goods. However, by choosing what product(s) to sell, the retailer or wholesaler implicitly has input and information on the quality of his product mix. The choice of product selection and diversification also has a quality value for the consumer. In rare cases, a drastic change in the product will be treated as an implicit change in the service that is provided and an adjustment for this change will be made (usually the value of the change is removed from the index). Retailers may use the introduction of a new product as an opportunity to raise their margin. If we simply flag as non-comparable and exclude the relative, we miss this effect and introduce negative bias. Such a bias may appear when pricing a single product or when a product line is very narrowly defined. It is less problematic when pricing product lines. Where it is a concern, considerations of response burden and questionnaire length may limit an NSO's ability to refine the product substitution process to such a detailed degree.

The U.S. and Canadian SPPIs focus on quality changes to the service being provided. On the other hand, the method that Australia uses to measure margin indices takes into account change in quality of the good sold as their product prices are indexed to the CPI,

This issue can also be looked at from an SNA perspective. As previously mentioned, the SNA (2008, p. 285) states: "Each acquisition of a product from a wholesaler or retailer is regarded as being the acquisition of two distinct products. One is the physical good, valued at producers' prices, the other is the trade margin. The purchase of the good is shown as a use of that good; the margin is shown as a use of services provided by wholesalers and retailers." Moreover, the Eurostat Handbook on price and volume measures in national accounts (2001, pp. 76-77) writes: "The trade margin can be seen as the price the buyer pays for the trade service although there is no direct transaction" and "They supply services rather than goods (although consumers may have a different perception of this)".

Both manuals stress on the additivity between production (or imports) and trade margins within the final consumption (for instance) at purchasers'prices in the national accounts system of economic description. But does that mean that the quality of the good traded must be counted in the content of production (or imports) only, and that quality change of the trade margin is only linked to the service process, independently from the good traded? Based on the current guidance in the 2008 SNA, the answer seems to be "yes". However, there is another viewpoint explained below.

The SNA clearly states that changes in the value of a product should be decomposed into volume and prices changes. Furthermore, changes in the quality of the product (product characteristics) should be recorded as changes in volumes, both at purchasers' prices and at producers' prices. For a typical good or service, this principle is relatively straightforward. In the case of trade margins, however, it is not so obvious.

A case can be made that both the good and trade service should be adjusted for quality (Australian method). The main arguments behind this view are that consistency between producer and purchaser price valuations for a given product are required and the idea that the utility of the distributive trade provided to the purchaser matters more than its process and costs. For any product, supply must equal demand according to the following identity:

output + imports + trade margins + taxes-subsidies on products
= intermediate consumption + final consumption expenditure + gross capital formation + exports

Trade margins play a critical role resolving this identity as they are the bridge between the output valued in producer prices and the final expenditure valued in purchaser prices. In the absence of direct deflators for margin prices, SNA compilers typically derive the constant price margins as a residual between the constant price final expenditures (deflated using CPI) and constant price

outputs (deflated by PPI). It follows that when computed residually the volume of trade margins is implicitly adjusted for quality (for both the service portion and the good portion) because both the PPI and CPI already account for quality change in the product.

The alternate view, supported by Canada (Draper and Loranger, 2010) and the U.S. (Gorko and Murphy, 2010), rests on the definition of the trade service itself. Traders play an essential role in the distribution of goods in the economy and the trade margin is seen as the price that the buyer pays for the service. As mentioned above, from the SNA is clear that wholesalers and retailers provide services and not goods and that the treatment of margins should be "net" (excluding the value of the good). It then seems logical that if the margin by definition excludes the good, then adjusting for the change in quality of the good being traded is unnecessary. The margin value by product (equivalent to the value of the service provided by traders) is seen as the mark-up on the producer price value of the good on the above product identity.

This controversy should be particularly relevant for ICT products (with rapid quality change).

There are of course practical limitations to the application of a pure SNA concept and limitations to both views outlined above. Wholesalers and retailers provide a distribution service for all goods produced and consumed in the economy and obviously, it would be impossible to collect sufficient detail to quality adjust every single product as is suggested in the first view. The second view, impose a different problematic. With the availability of direct deflators for trade margins, further constraints and coherence issues are imposed on the SNA as constant price margins can no longer be derived residually (margins are no longer the balancing item). The onus is then on national accountants and price statisticians to resolve the coherence issues created by classification, sampling and estimation differences between the various price indices. To address these issues, NSOs need to determine within the context of their own SNA (industry and commodity detail required) the appropriate trade-offs.

Issue14: Quality of service provided is difficult to measure

There is a value associated with the output from wholesale and retail services that is a result of the distribution/marketing services provided to the consumer. However, it is inherently difficult to observe and directly measure. Therefore, it is difficult to define what would constitute a unit of output for this bundle of services other than in terms linked to the units of the physical commodities sold.

Although the services that are provided by a wholesale trade firm (marketing, efficient transfer of goods) differ somewhat from the ones provided by a retail trade firm (represented by store characteristics such as number of checkouts and store operating hours for example), the same quality adjustment challenges exist for both sectors. Theoretically, quality adjustments should be performed when marketing characteristics change for wholesale establishments and when store characteristics change for retail establishments. A change in marketing/store characteristics, such

as the area of the selling space, or the distance from the nearest competitor, may affect the margin prices of the products sold. However, unless a hedonic model is developed, it is difficult or impossible for a respondent to quantify the amount of price change due to the changes in service. Alternatively, unless an analyst received information from the respondent that a price change was a direct result of the change in marketing or store characteristics, no quality adjustment for changes in service can be made. These assumptions may break down in the face of national or regional pricing which are common among major retailers.

As mentioned previously, the advantage of using average margin prices per unit for comparable product lines is that discounting is readily captured in these prices and the need for respondent contact as the result of product substitution is diminished. Minor changes in product generally result in a direct comparison of margin prices for the product as long as the service provided for the product has not significantly changed.

Hedonic models

Margin prices represent revenue for retail services that can generally be described as distribution and marketing. These types of services are often broken down into store characteristics categories such as product display and information, product availability, ambience and convenience (unit rather than bulk sales), and product selection. Services are often difficult to describe and developing hedonic models for the service sector is more problematic and less precise (in terms of model specification) relative to the more transparent durable goods sector.

Building a hedonic model for retail trade begins with identifying the independent variables that will be used to investigate the feasibility of a hedonic model and the variables are generally based on various store characteristics. The chosen variables (the U.S. has found the number of employees, number of checkout counters, number of self-checkout counters, distance of the nearest competitor, and operation hours are the variables most likely to change) then need to be collected from the current reporting establishments or developed from secondary sources. The U.S. has not found sufficient secondary sources for this use. Once all of the data has been gathered, models can be tested for stable and significant dependencies between price and service levels.

Attempts to use hedonic models to quality adjust trade industries, for changes in the level of service provided have yielded fairly unsuccessful results in the U.S. PPI. Two potential issues in developing hedonic models are a lack of homogenous products within surveyed establishments and respondents that are unwilling to provide the necessary store characteristic data. The presence of diverse product lines within a single establishment is problematic since store characteristic variables for each selected heterogeneous product are the same, while the price movements for each item vary greatly. The resulting inconsistencies can adversely affect the significance of a given model. For example, a hedonic model was unsuccessfully attempted for retail grocery stores. The U.S. was collecting margin prices for single items when this model was attempted and the existence of a wide range of heterogeneous or non-comparable products resulted in an insignificant relation between price and the level of service.

In the U.S., the only current trade industry with an active hedonic model is retail Beer, wine, and liquor stores (NAICS 445310) due to the homogenous products priced in the industry. There are 10 store characteristics captured for each establishment sampled in this industry and phone calls are made to each respondent on an annual basis to update these characteristics.

Although this industry has a stable and significant relationship between price and the level of service, the quality adjustments made to the index each year generally result in a fraction of a percentage at the industry level. This, along with the fact that gathering the necessary variable data from respondents can be very resource intensive both from an agency and respondent perspective, suggests that the value of this hedonic model may not justify the resource costs.

4.5 Response Issues

There are a few issues with response for Wholesale and Retail Trade industries. Respondent burden reduction is important for NSOs and different strategies are used. For example, to minimize burden, Canada asks reporters to price quarterly. However, respondents are still expected to give prices for each of the prior months in the quarter.

Australia only collects margins quarterly from outlets and then indices the retail price of the goods with the CPI. This strategy alleviates respondent burden as well.

In the U.S. response rates for trade industries are in line with other service industries, but are lower than typical response rates for manufacturing industries.

The use of average margin pricing has caused some U.S. respondents to submit their price data late, in an effort to include all transactions during a given month. This delay in reporting has resulted in significant revisions for some trade industries between the initial index and the final revised index (the U.S. PPI has a four month correction policy). In most trade industries, respondents are asked to provide pricing data for the first two weeks of a given month. It allows a quicker compilation of the index for short term analysis. However, some respondents, due to record keeping conventions, are only able to submit data for the entire month on a one month-delay basis. Note that the index is then more consistent with the other monthly indicators (such as turnover, etc.).

In the past, trade industry respondents have been confused as to which price they should submit as the reported price (retail price, vendor price, or margin price). In recent years, the U.S. PPI has changed the layout of trade industry survey forms to include the input prices to the margin calculation within the item description at the top of the form as shown in the example below. This simple adjustment has helped reduce errors related to incorrect types of prices being submitted as the reported price. The standard repricing form design for most trade industries is a short item description followed by price input fields for the respondent to update with the current values.

Example:

Electronics store. LCD 42" 1080 120hz. Product category: TVs, video recorders, and cameras. Variety/model: ABC Z42UXXX. Price level: company-wide. Time period: two week average. Gross Margin Calculation:

Retail price	$775.00	$_____
(minus)		
Vendor price (replacement cost)	$550.00	$_____
(equals)		
Margin price	$225.00	$_____

5.0 Further suggestions

Some of the issues raised in this paper relate to current international standards such as ISIC and CPC. As such, they need to be raised in the appropriate international forums for consideration in future revisions to those standards.

Consideration should be given to the classification issues during the next revision of ISIC. In particular, a division of the distribution of motor vehicles between wholesale and retail industries should be reviewed. In addition, there may be parts of retail trade where a distinction can be made between merchant retailers and retail trade on a fee or contract basis. It would also be prudent to review the Factoryless Goods Producer concept in light of implementation experiences and to take into consideration the significance of intellectual property and entrepreneurial risk in the production of certain goods or services.

The internationally accepted concept of turnover in distributive trades should be clarified. In particular, the gross sales from departments, concessions and amusement and vending machines operated by others should not be included in turnover. It can be difficult to collect and lead to double counting of final sales. It is also inconsistent with current practices of statistical offices and business accounting.

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