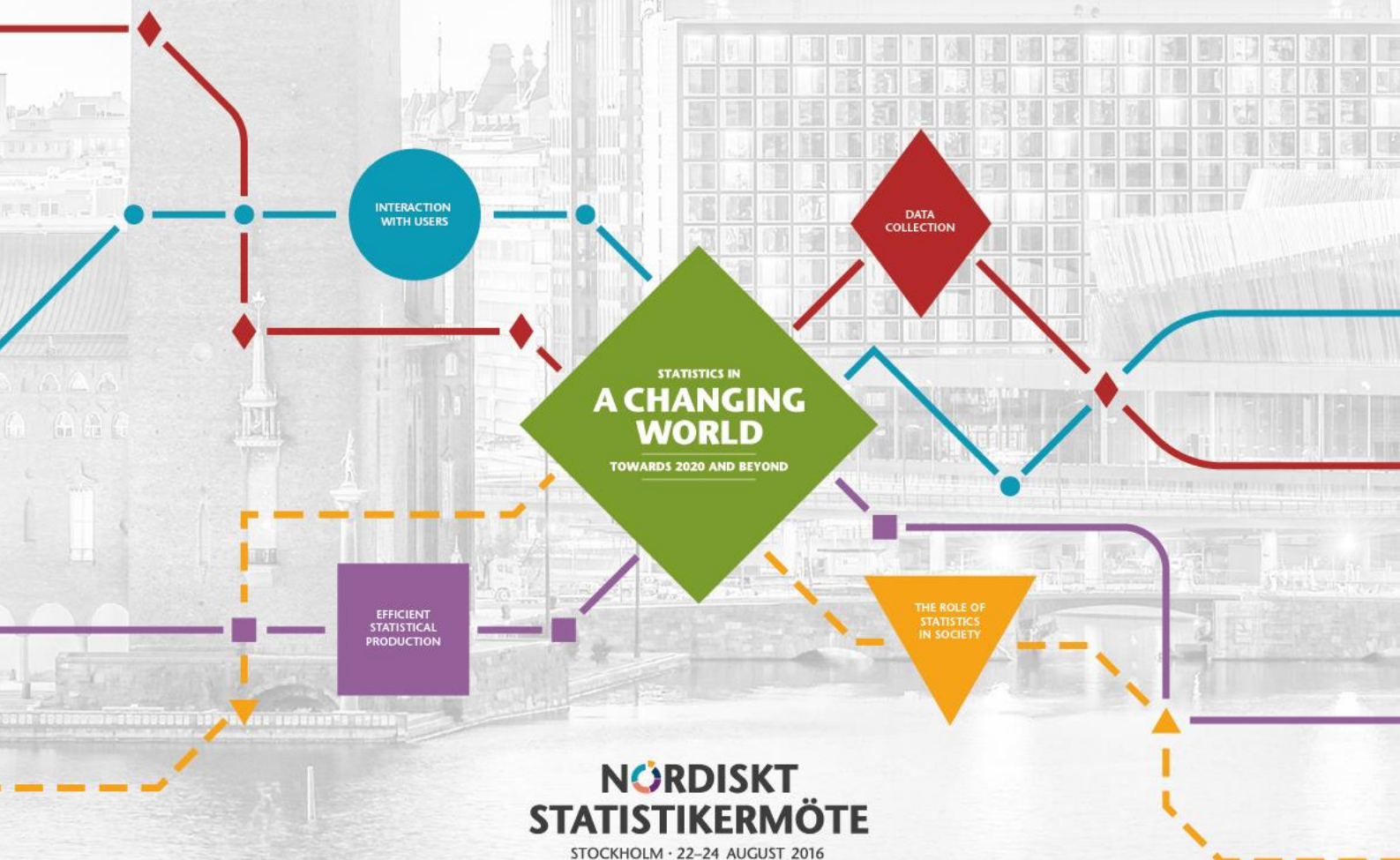


a) **EFFICIENT STATISTICAL PRODUCTION**

SESSION F: CASE STUDIES – PRICE STATISTICS AND A COMMON TOOL FOR EDITING

Impact of internet purchases from foreign online stores on PPP measurement

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Impact of internet purchases from foreign online shops on PPP measurement

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Abstract

In the recent past Icelandic consumers have been trending towards buying more and more consumer goods from foreign online outlets. These outlets often offer a larger selection of consumer items such as clothes and apparel, books, phone accessories and often at a much lower cost compared with the standard domestic outlet. There are strong indications that purchases from foreign online shops constitute significant and increasing share of household consumption expenditure in some important sectors. The issue of when and how these expenditures should be included in various interrelated statistics needs to be addressed.

One of the main objectives of PPPs is to provide deflators for individual components of the GDP, including household consumption as measured by national accounts. Practices in national accounts on how to account for online purchases might vary. For some countries national accounts include purchases from foreign online shops with domestic purchases in the same expense categories while other countries count them as purchases from abroad. If the share of foreign online purchases is significant, this can undermine the relevance of PPPs in deflating national account figures since the PPPs measure domestic price levels and measurements in foreign online shops are therefore omitted.

This paper will attempt to shed light on some of the issues that emerge from high share of foreign online purchases and discuss possible discrepancies that may arise as a result.

1. Introduction

Purchasing Power Parities (PPP) is used to deflate economic aggregates to make them comparable between countries. PPP reflects ratios between domestic price levels in different countries.

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In recent years advances in information technology and economic globalization have led to changes in purchasing behaviour. Online shops have made it possible for individuals to make purchases from sellers all over the world without ever leaving their own home.

A few years back the world was simpler. People bought consumer goods either locally in their home country at domestic prices or while travelling abroad in the prices of the country they visited. Mail orders from abroad existed but played a negligible role in consumer purchases.

Recently shopping over the internet has become easier. People have the opportunity to familiarize themselves carefully with products as well as seek out the lowest prices for the items they desire irrespective of where in the world the seller is located. This has resulted in increased international tele-purchasing i.e. when a consumer buys goods across borders while staying at home and shipping and other arrangements to have the goods delivered to the home country are taken care of simultaneously. It must be presumed that lower price levels abroad are one of the main reasons for tele-purchasing across borders. Hence the price level the consumer faces online is in many cases lower than the domestic price level.

This implies that a substantial part of household consumption goods are purchased from abroad at a lower price than available domestically. Therefore the price level of domestic consumption is not the same as the domestic price level. These changes in purchasing behaviour cause problems in deflating economic aggregates and conversion into comparable units.

It is crucial to ensure that the measurement of prices is consistent to the measurement of total consumption. Therefore it is necessary to ensure that comparable definitions are used for interrelated statistics, in this case in PPP and national accounts.

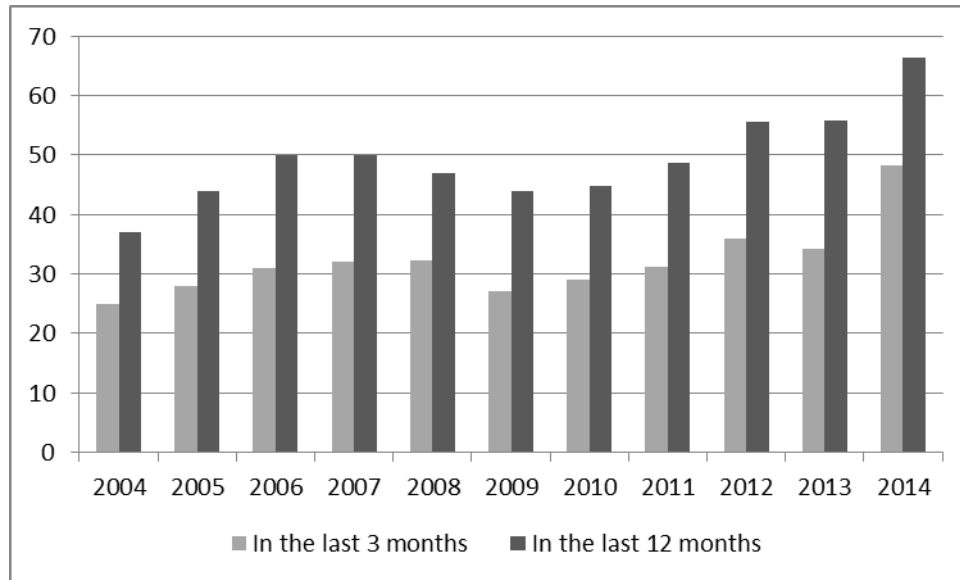
2. Internet commerce in Iceland

Use of the internet is very widespread in Iceland. According to Information Society Statistics from 2014 98.2% of the population used the internet and 97% used the internet regularly. This is the highest percentage of internet users in a European country³.

³ Statistics Iceland (23 January 2015)

Household consumption purchases over the internet have increased substantially in recent years in Iceland as shown in Figure 1.

Figure 1: Percent of population that has made purchases over the internet



A substantially larger share of the population had made at least one purchase over the internet in the last twelve months in 2014 than in 2004; 66.4% in 2014 compared to 37% in 2004. The share of those who had made purchases recently rose from 25% in 2004 to 48.2% in 2014 indicating a higher frequency of use⁴.

Historically, the price level in Iceland has been high. For the years 2003 to 2007 Iceland had the highest Price Level Index (PLI) for clothing in Europe. The situation changed in 2008 when the exchange rate of the Icelandic currency (ISK) fell heavily before and during the collapse of the Icelandic banks. Then the PLI for clothing in Iceland was the 7th highest in Europe. The situation has gradually changed back, for years 2010 to 2013 the PLI was 3rd or 2nd and 2014 again the highest in Europe, 39.1% above EU28 average and 9.2% above Norway that had the second highest PLI. The PLI in Iceland for household appliances has been the highest in Europe at since 2003 with the only exception being 2008. In 2014 the Icelandic PLI for household appliances was 51.7% above the EU28 average.⁵

This article will not try to explain why the Icelandic price level is so high. However, it needs to be kept in mind that Iceland is an island with a population less than 350 thousand and is thousand kilometres away from the European continent. The high

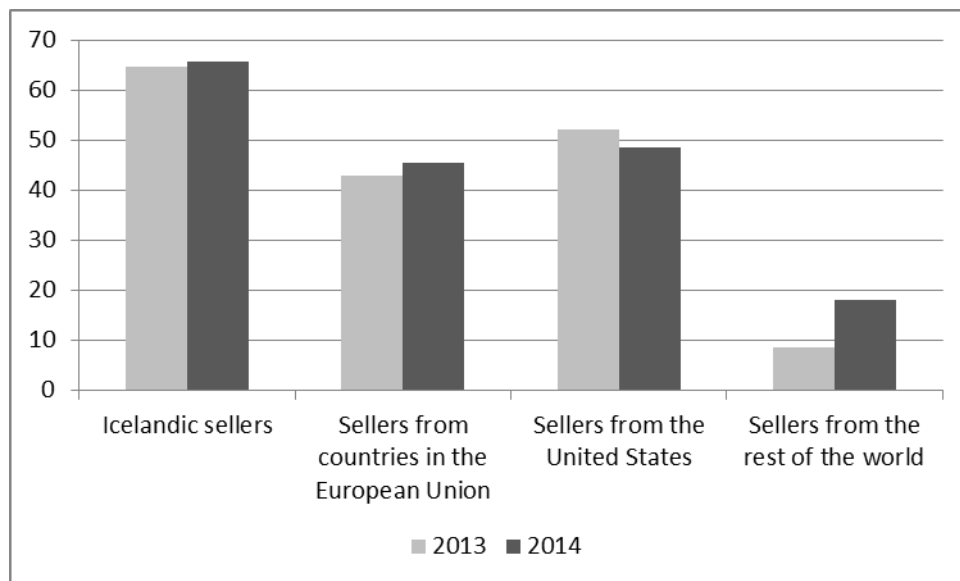
⁴ Statistics Iceland (22 May 2014)

⁵ Eurostat (26 April 2016)

price level in Iceland provides a strong motive for Icelandic consumers to search for lower prices outside of their domestic market.

Two questions remain: what kind of products consumers buy over the internet and where are the sellers they buy from located? The location of the seller will be examined first.

Figure 2: origin of sellers in e-commerce⁶



Note: Percent of those doing Internet commerce twelve months prior to the survey.

As shown in figure 2, 65.6% of the people who carry out e-commerce bought items from Icelandic sellers. That implies that 34% of internet buyers purchase exclusively from foreign online stores. Furthermore, figure 2 shows that up to half of those who purchase over the internet buy from USA and EU member states. Between 2013 and 2014 there is a remarkable increase in purchases from other parts of the world. Here it is worth noting that a free trade agreement between China and Iceland came into force in July 1st 2014. The figures on the origin of sellers include all types of internet purchases, not only merchandise to be physically sent from seller's country to the buyer's country. Still, they show that tele-purchasing is very common also from abroad.

An examination of what customers buy via the internet reveals that 53.4% purchased clothes, shoes and sports goods and 30.2% bought non-electronic household goods⁷.

⁶ Statistics Iceland (23 January 2015)

⁷ Statistics Iceland (23 January 2015)

These are certainly physical products that are delivered to in the buyer's home country. It is not possible to distinguish between foreign and domestic online stores in these numbers. The share of domestic retailer's turnover from internet purchase is only about 1% of total turnover, which is lower than in many neighbouring countries⁸. Therefore it must be considered likely that a large share of Icelandic e-commerce is from foreign online stores.

When it comes to grasping the scope of consumer expenditure in online purchasing problems arise. No comprehensive statistics are compiled on the subject and the data available have different shortcomings. The most extensive data are credit card turnover. Credit card turnover from credit card issuers is collected by foreign trade statistics. It can be divided between purchases verified by the cardholder on site and purchases where cardholder is not present. Presumably purchases where cardholder is not present are tele-purchases. So called Merchant Category Codes (MCC) are attached to the data. MCCs are four digit numbers assigned by credit card companies to a business to classify the type of goods or services provided.⁹ MCCs can be quite specific. For example MCC 5137 refers to Men's, Women's and Children's Uniforms and Commercial Clothing. Due to the wide variety of products many large merchants offer, broad classifications such as 5399 Miscellaneous General Merchandise are often used¹⁰. Linking the data through these codes uniquely with a consumption classification such as COICOP is therefore practically impossible but can in some cases inspire rough guesses on the share of tele-purchasing. For this study, estimates were made for clothing and bicycles.¹¹ Based on these estimates, the share of tele-purchasing for clothes is 8% and 10% for bicycles.

From the data that has been presented in this chapter we can conclude that the importance of tele-purchasing is significant and its share is increasing. Consequently, a considerable share of consumer expenditure seemingly is purchased at a different price level than the domestic one which, is of concern when it comes to deflating affected aggregates.

⁸ Kalmansson, Karlsson (2015)

⁹ Wikipedia (1 April 2016)

¹⁰ Citybank, N.A. Treasury and Trade solutions (2015)

¹¹ For clothing the expenditure was guessed by using turnover where MCC referred to any kind of clothing stores were used and plausible share of other stores that possibly sell cloths. For bicycles there are a special MCC for bicycle stores which turnover were used, it should though be noticed that bicycle stores sell more than bike which reduces the accuracy of the guess.

3. Consistency issues

As the deflation of the GDP expenditure is in fact equivalent to separating the price and volume factors of the relevant aggregate, consistency is a necessary requirement between input prices in PPPs and valuation prices of the GDP. Or as phrased in the Eurostat-OECD PPP manual:

“National expenditures are in national currencies at national price levels. Real expenditures are in a common currency at a uniform price level. PPPs, besides being currency converters, are also price deflators. For this reason, the prices supplied by participating countries should be consistent with the methods of valuation used to estimate their GDP and its component expenditures. Failure to observe this requirement will result in biased results. The basis of a comparison is the identity: expenditure = price x volume. Volumes are obtained by dividing expenditures by prices. To estimate the volumes correctly, the prices collected should be those used to derive the expenditures. Deflating with prices that are not consistent with those underlying the expenditure values will result in volumes being underestimated if the prices are too high or overestimated if the prices are too low.”¹²

Accordingly, both PPPs and GDPs should reflect the same price level, normally the domestic price level. A problem arises when the domestic price level is different from the price level of the domestic consumption as might happen when a large part of domestic consumption is bought from foreign online stores.

GDP is broken down into *Basic Headings* (BH) that is the lowest level of aggregation for which PPPs are calculated.¹³ The BHs should therefore cover products with uniform price levels. Categorizing the GDP aggregates into appropriate basic headings plays a crucial role in fulfilling consistency requirements. Expenses of tourists, both domestic tourists travelling abroad and foreign tourist visiting the country, are categorized as separate BHs in household consumption expenditure in national accounts: *net purchases abroad*. For net purchases abroad the exchange rate is used as a proxy PPP¹⁴. These expenditures can obviously not be assigned to the BHs with respective products or services such as transport, hotels, clothing etc. because the purchases are made at a different price level than domestic consumption.

¹² Eurostat European Commission, OECD (2012), p.42

¹³ Eurostat European Commission, OECD (2012), p. 74

¹⁴ Eurostat European Commission, OECD (2012), p. 246

This would also be an acceptable way to treat internet purchases from abroad. Those purchases are made at a different price level than the domestic one and the exchange rate could likewise serve as a proxy for PPP. Looking at definitions of net purchases abroad it is not clear if internet purchases from abroad should be included there.

In the European System of Accounts, ESA 2010, paragraph 3.176 says:

“Imports in respect of direct purchases abroad by residents cover all purchases of goods and services made by residents while travelling abroad for business or personal purposes.”¹⁵

Here it is indicated that the consumer needs to be located abroad when making the purchase in order for it to be treated as imports indicating that internet purchases from abroad should not be included in net purchases abroad.

The Eurostat-OECD Methodological Manual on Purchasing Power Parities defines net purchases abroad as:

„Purchases by resident households outside the economic territory of the country less purchases by non-residential households in the economic territory of the country.”¹⁶

The definition in the glossary¹⁷ uses the same wording making no indication that the consumer needs to be abroad when the purchase is made. Here, internet purchases from abroad might thereby be included.

In annex III of the same manual net purchases abroad are defined in much more detail:

“Purchases by residential households in the rest of the world (as tourists, travelling businessmen and government officials, crews, border and seasonal workers, diplomatic and military personal stationed abroad) less purchases by non-residential households in the economic territory of the country (as tourists, travelling businessmen and government officials, crews, border and seasonal workers, diplomatic and military personal stationed abroad.”¹⁸

Here it is clearly indicated that only purchases made by those who are physically located abroad should be considered for this heading.

¹⁵ Eurostat European Commission (2013), p. 82

¹⁶ Eurostat European Commission, OECD (2012), p.76

¹⁷ Eurostat European Commission, OECD (2012), p. 428

¹⁸ Eurostat European Commission, OECD (2012), p. 343

From the three definitions cited above it is clear that whether to include internet purchases from abroad in net purchases abroad is a matter of interpretation which could lessen the comparability and relevance of European statistics.

At the Nordic neighbouring countries meeting in Copenhagen in October 2015 the attendees discussed how tele-purchases were assigned to the BHs in the participating countries. Four out of the five Nordic countries expressed tele-purchase expenditure as an integral part of the respective BH and one country categorized it as purchases abroad.

4. Discussion

The information presented in this paper leads to the conclusion that domestic price level is different from the price level of the domestic consumption for various BHs. Domestic consumption is in practice not purchased at a uniform price level but at both domestic prices and international prices. Hence, the precondition of consistency between methods of valuation used to estimate consumption expenditures and prices supplied to the calculation of the PPPs does not hold. This implies biased volume measures.

It might seem feasible to measure the actual price level for the basic heading as a whole by weighting domestic prices and prices from international tele-purchases (cost of freight and customs duties on imports also taken into account). Under that approach the consistency precondition would be met and the PPP would not be a biased deflator. A major disadvantage with this approach is that information on domestic price levels would be lost and the PPPs thereby lose important analytic properties. That again could be tackled by separating the consumption expenditures into two different basic headings that refer to different PPPs respectively. This suggestion looks good in theory but in practice various difficult issues on how to collect prices from international internet retailers need to be solved.

Categorizing tele-purchasing as purchases from abroad and using the exchange rate as proxy is feasible if that is the current practice in most countries. The informal survey made among the Nordic countries suggests that this might not be the case. How internet purchases from abroad are treated within national accounts is likely to be influenced by the data available in each country and different practices. The share of purchases from foreign web-shops is likely to differ considerably between countries but may be an important part of total consumption like in the case of Iceland.

As has been shown, definitions of purchasing abroad are rather ambiguous and leave room for interpretation. When considering the different phrasing of the

concept of purchases abroad and how the Nordic countries seem not to have the same understanding of it, it is clearly misleading.

Our conclusion is that the treatment of internet purchases from abroad need to be looked into further on the international level. How they should be treated in interrelated statistics, such as PPP and national accounts, needs to be clarified; the importance in different countries needs to be assessed; and current practices need to be examined in order to ensure harmonisation and comparability.

Preferably a co-ordination institute such as Eurostat or OECD should lead this work.

5. Conclusion

In this paper an attempt has been made to confirm that cross border tele-shopping, mostly over the internet, can constitute a significant share of household expenditures in certain expenditure categories. An attempt was made to estimate the share of clothing and bicycles bought online of total expenditure for those items. Credit card turnover data was examined but found to be not detailed enough. Nonetheless the data suggest that international tele-purchases are not irrelevant. An evidence inspired guess was made estimating that in Iceland 8% of clothing and 10% of bicycles purchased by individuals might be bought directly from foreign sellers. Definitions of purchases abroad from the Eurostat-OECD PPP manual and the Eurostat ESA 2010 manual were examined in an attempt to find out where they should be included in the system of national accounts and thereby in PPP expenditure weights. The definitions do not mention tele-purchasing specifically. Some definitions strongly indicate that only expenses incurred while travelling or staying abroad should be treated as purchases from abroad while one definition is looser and could possibly encompass tele-purchasing. An informal tour-de-table at a neighbouring country visit within the PPP program suggests that treatment of tele-purchases might differ between countries. As the relevant manuals are not clear on the subject this needs to be looked into further in order to ensure comparability of international statistics as well as ensuring that the basic precondition of consistency between the price observations constituting the PPPs and the valuation of GDP remains. An advisement on this would be most efficient if led by a co-ordinating body such as Eurostat or OECD.

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