

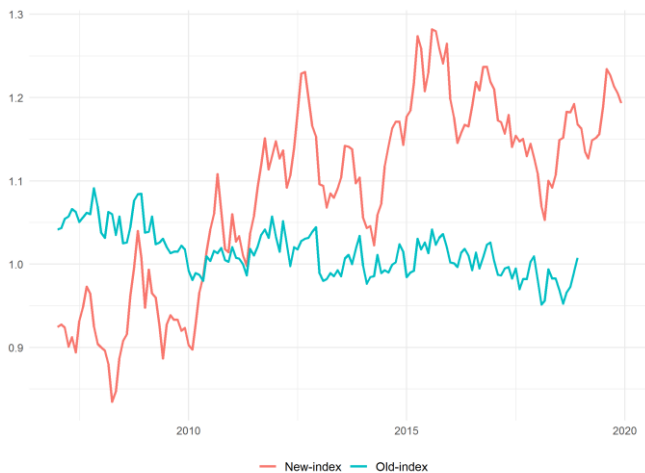
Confronting the new indices with the underlying trends in the micro-data

Summary: The new unit value indices are constructed bottom-up from a firm-level microdata. That is, firm-level unit value indices are constructed out of partner countries, which in turn are aggregated to form indices for 5-digit SITC. Finally, the 5-digit SITC are aggregated to form a price for 1-digit SITC. Outliers are detected and deleted at each step, and fisher index is used throughout. In the process, it is possible that we construct final indices that are different from the underlying trends in the micro-data. In order to verify the observed trends and variations in the final prices, we look at the bottom-up process in a reverse order. The final indices can be explained by the unit values for the largest products, firms and partners. The underlying trend at the firm-partner level is the one we should expect to see in the final prices, because this is the microdata before any filtering is done. As it is tedious, the exercise is carried out for selected commodities.

1. Imports of SITC-8 (miscellaneous manufactured articles)

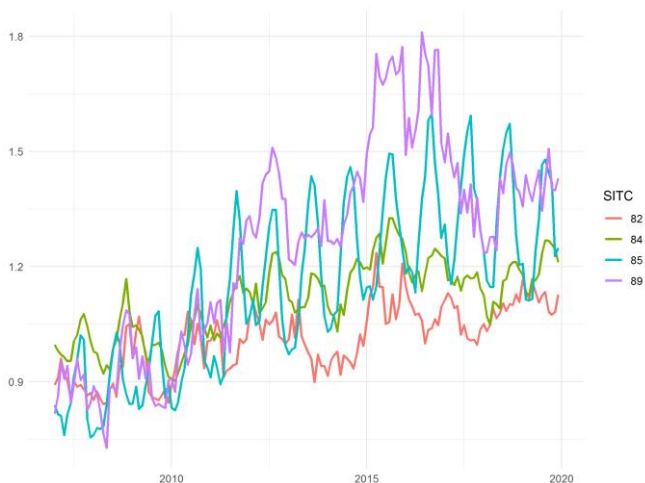
In contrast to the old UVI, the new UVI for sitc-8 has a positive trend. This is perhaps one of the most significant differences between the two indices, thus worth examining, cf. figure 1.

Figure 1. SITC-8 imports, the new and the old unit value indices, 2010=1.



SITC-8 imports make up the largest share of total goods imports, which is in turn dominated by the sub-components: SITC-84 (55%), SITC-89 (14%), SITC-82 (10%), and SITC-85 (6%). There is a clear positive trend in all four components, albeit with seasonal swings, cf. figure 2.

Figure 2. UVI for Imports of SITC-8 sub-components, 2010=1 (cover apprx. 80% of SITC-8)



NOTE: SITC-82 furniture and parts thereof; SITC-84 articles of apparel and clothing accessories, SITC-85 footwear; SITC-89 miscellaneous items.

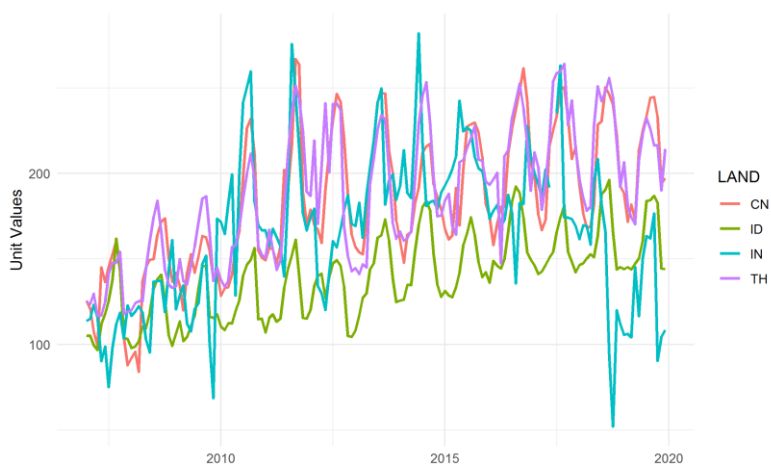
The unit value indices for these sub-components can be biased in some way, thus we cannot conclude the verification process here. One has to navigate step-by-step further down to the micro-data, which is

disaggregated by 5-digit SITC-level, firms and trading partners. Obviously, we cannot exhaustively pursue this road, as there are too many product-firm-partner combinations. We can however pick out the largest components in each group and examine them, the following sections demonstrate.

1.2 Imports of SITC-85

SITC-85, though not the largest component, will have a significant influence on the final index for SITC-8 as it has quite large relative price changes, owing to seasonal factors. The subcomponent **sitc-84148** covers over 50% of sitc-85 imports, figure 3 shows unit values for this item for the largest firm covering over 90% of imports. Unit values for firm-partner combinations constitute the lowest level of aggregation, and are actual per kilo or per unit prices. There is a positive trend with seasonal swings and this trend is also present in the final index for SITC-85.

Figure 3. Unit values for imports of 85148, a firm covering over 90% of imports



1.3 Imports of SITC-84

SITC-84 is the largest component, under 84 we have many sub-components, unlike in section-85, we cannot pin-point to one or two items to help us explain the developments in 84. The figure below shows the items making up approx. 65% of sitc-84 imports, and they seem to share a common positive trend with seasonal swings.

Figure 4. UVI for major imports of sitc-84, cover apprx. 65%, 2010=1

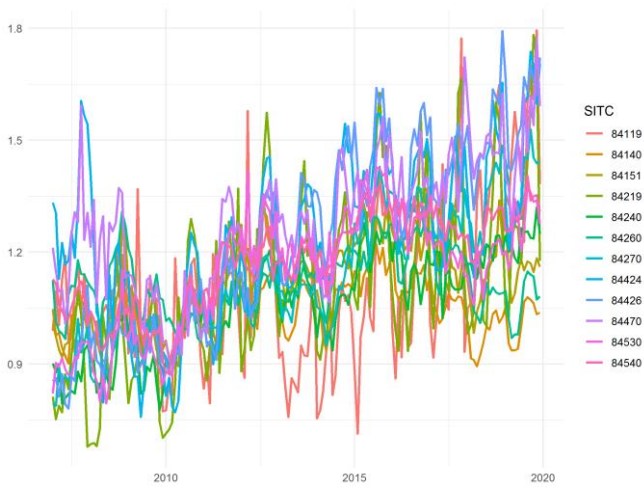


Figure 5 and 6 below show unit values for two items under sitc-84 that roughly constitute 20%, for each we pick out the largest firms.

Figure 5. Unit values for imports of 84530, a firm with share 50%

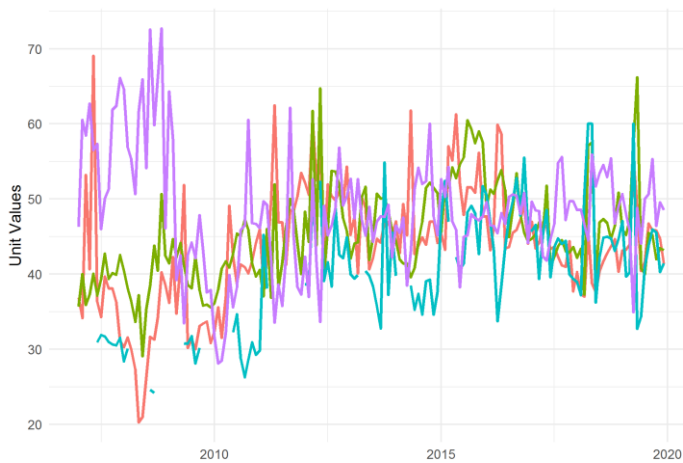
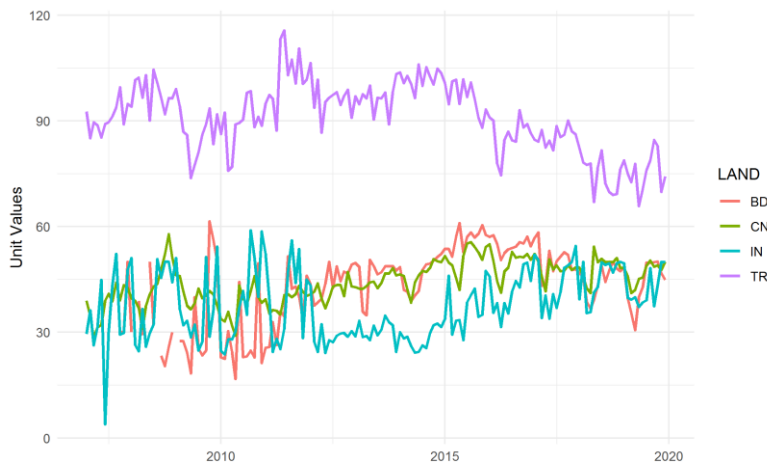


Figure 6. Unit values for imports of 84260, a firm with share 55%



2. SITC-6 imports

The unit value index for imports of sitc-6 is perhaps one of the most reliable indices, it can be explained by a very few products and firms. Figure 1 shows the price index for sitc-6 imports and figure 2 shows the unit value indices for the top four sub-components at 2-digit SITC-level.

Figure 7. UVI for SITC-6 imports, 2010=1

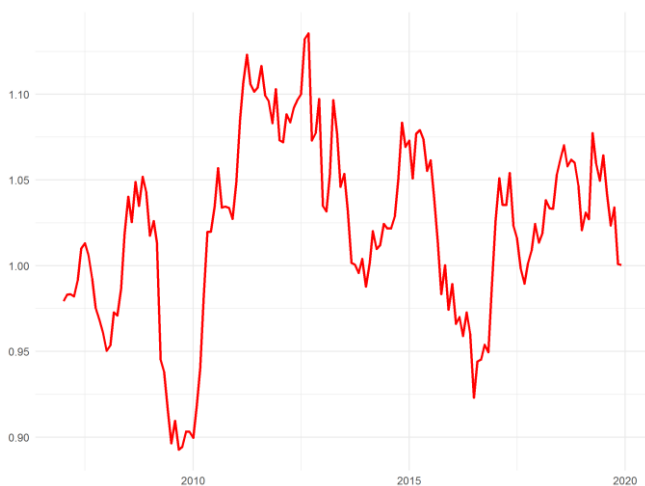
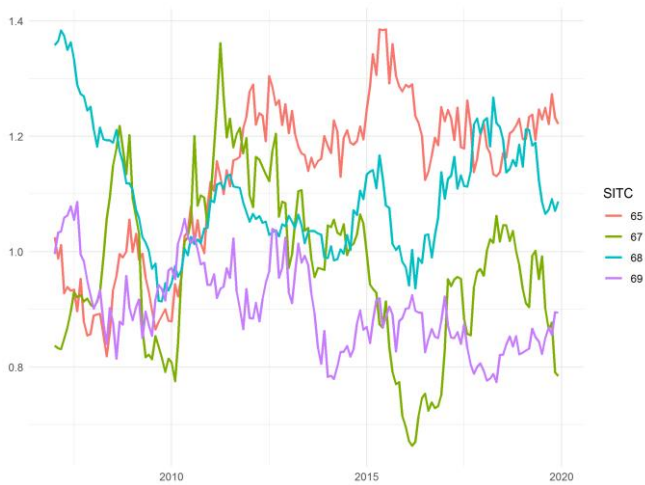
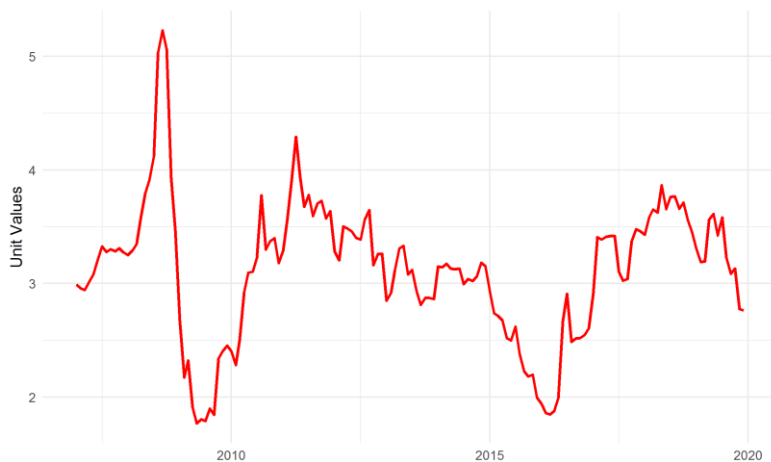


Figure 8. UVI for Imports of SITC-6 sub-components, 2010=1 (cover apprx. 80% of SITC-8)



SITC-67 imports cover roughly 30% of sitc-6 imports and imports of sitc-67262 (steels) from Russia cover 87% of sitc-67, hence it is not surprising that there is a significant similarity between the final index for sitc-6 imports and sitc-67262 imports from Russia, cf. figure 3.

Figure 9. Unit values for imports of 67262 from Russia, a firm covering over 90% of imports



3. SITC-54 Exports (Pharmaceuticals)

Pharmaceutical products dominate exports and imports of sitc-5, they are considered separately. The figure below shows the main exports under sitc-54.

Figure 10. UVI for sitc-54 exports, 2010=1

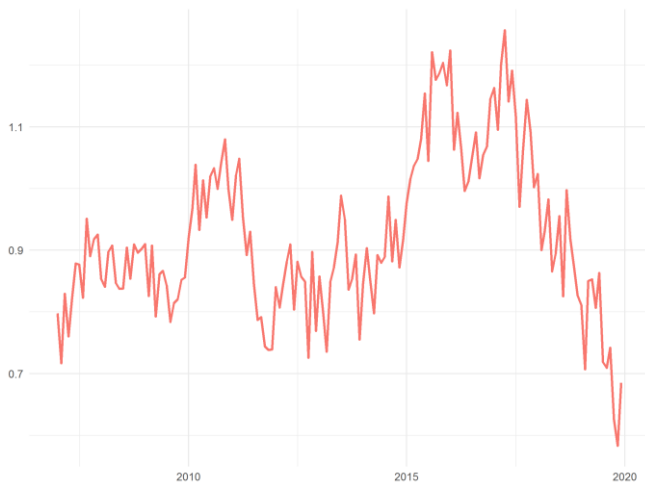
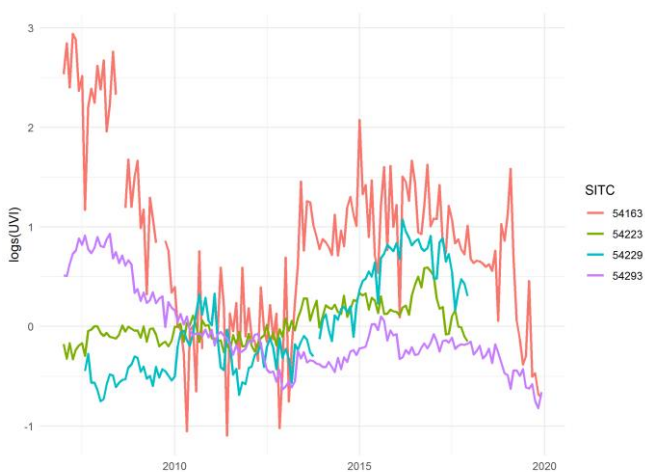
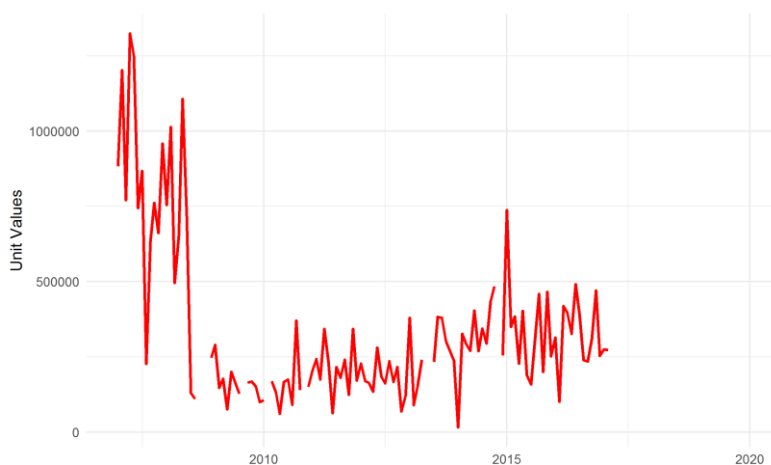


Figure 11. UVI for major exports of sitc-54, cover over 80%, 2010=1



The input data for sitc-54163 suffers from poor quality; there is too much volatility in the unit values, therefore, it is dropped from the final index for pharmaceutical exports. We can still maintain over 60% data coverage.

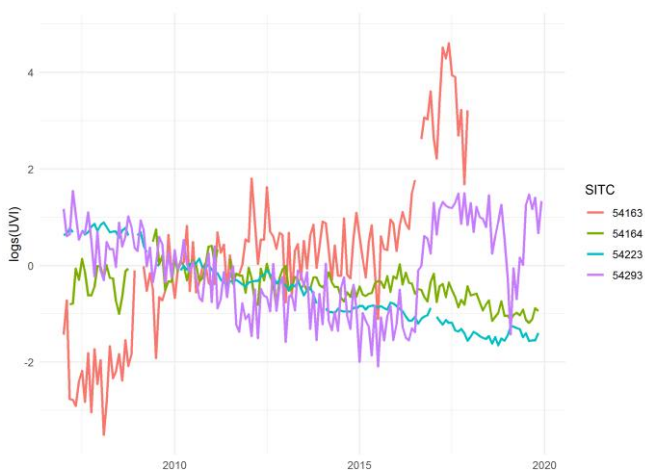
Figure 12. Unit values for exports of SITC-54163, a firm covering over 90%



4. SITC-54 Imports (Pharmaceuticals)

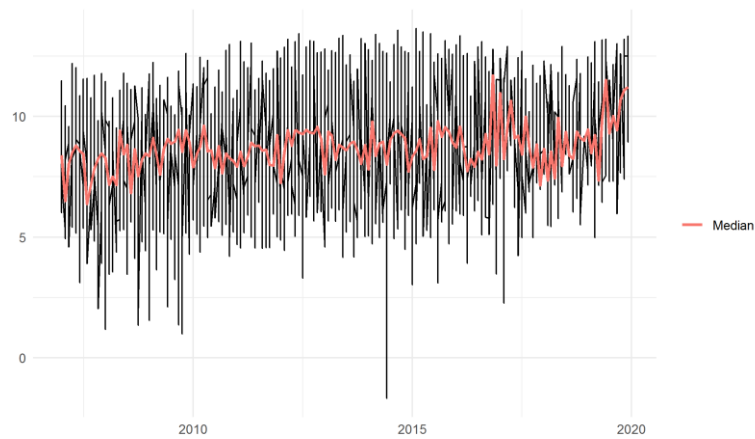
We have a similar problem in the import side, the unit values swing a lot for some sub-components. The products - 54163 & 54293 are dropped from the final index for 54-imports. Even though **54293** covers roughly one-third of the pharmaceutical imports, we still have data in excess of 50%. Including these items introduces too much volatility and a trend that is conflicting with the micro-data.

Figure 13. UVI for major imports of sitc-54, cover over 80%, 2010=1



The figure below shows the unit value for imports of 54293 by a specific firm covering more than 50%, from a single partner, Switzerland.

Figure 14. Unit values (in logs) for 54293 imports from Switzerland, a firm with over 50% share



Note: for each month there are multiple observations with very different unit values, and the median itself is volatile.

The final price for 54-imports is dominated by imports of 54223 (hormones and the likes) from Brazil.

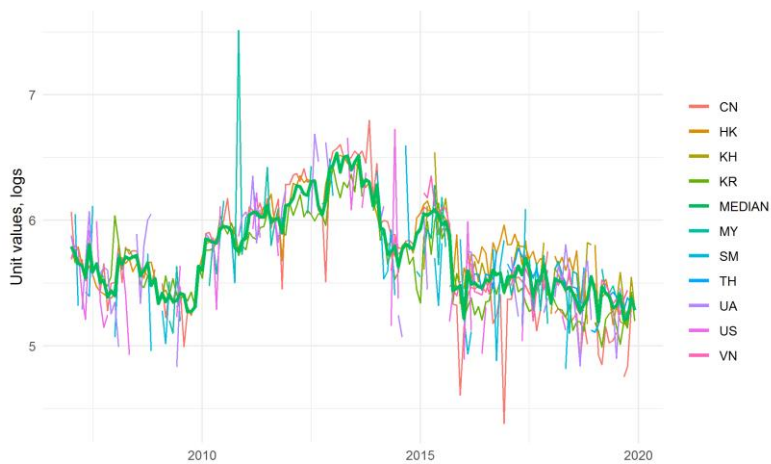
Figure 15. Unit values, in logs, imports of 54223 from Brazil



5. SITC-2 Exports

Exports of 21210 (mink furskins) by one firm largely determines the price for sitc-2 exports.

Figure 16. Exports of 21210, covers 60% of sitc-2 exports



The percentage changes in the new UVI is larger than the corresponding changes in the old index.

In the new index, products/firms with too much missing values are not included, if they are included in the old index (which is probably the case), they will work as deadweights to reduce the percentage variation in 21210, this is only a guess, one needs to check the methodology behind the old indices.

This exercise shows that the trends and patterns in the final indices represent the underlying trends in the micro-data.