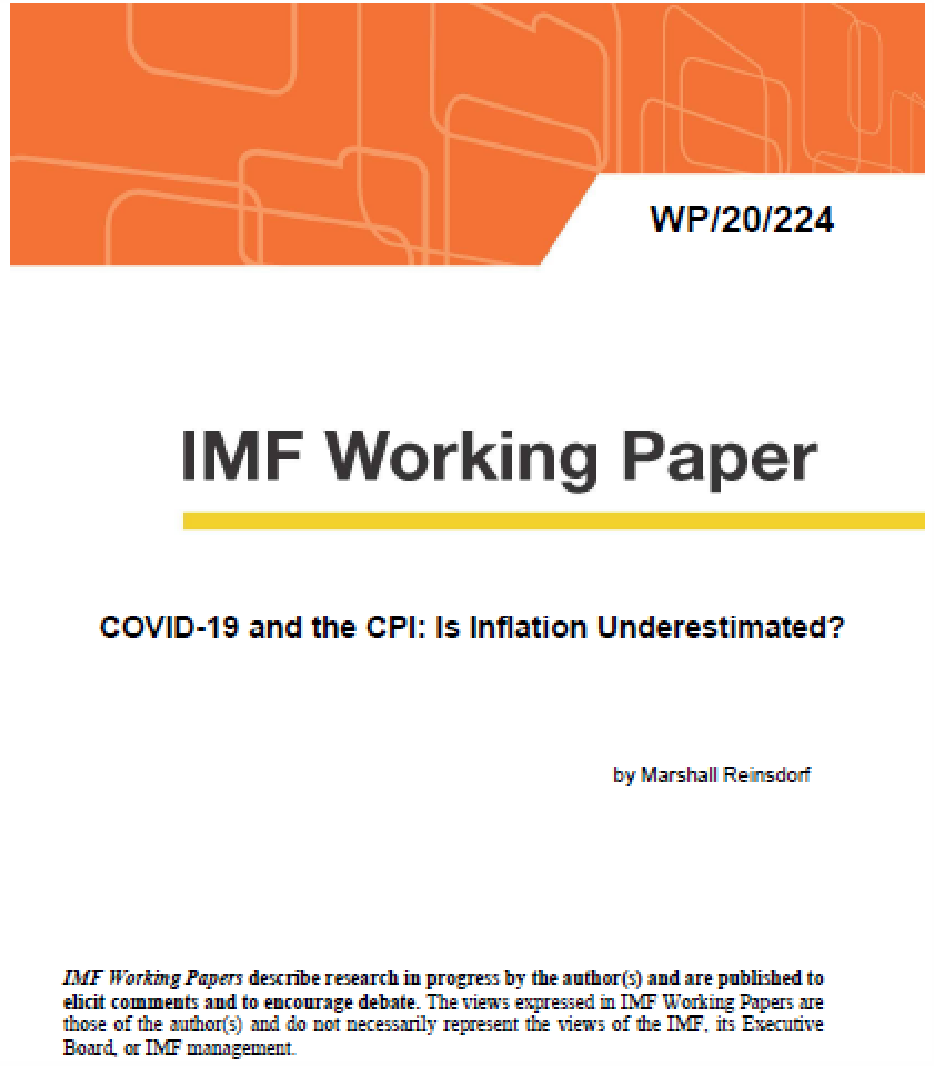
COVID-19 and the CPI: Is Inflation Underestimated?

ICP TAG MEETING
NOVEMBER 9, 2011

Marshall Reinsdorf
IMF – Retired

Context and Purpose of this Presentation


WP/20/224

IMF Working Paper

COVID-19 and the CPI: Is Inflation Underestimated?

by Marshall Reinsdorf

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This presentation discusses my 2020 paper on the difference between the CPI and actual changes in consumers' cost of living given post-COVID expenditure patterns

The data covered early months of the pandemic

The paper pointed out that the effects seen in the first few months of the pandemic would likely end, or even change sign

But the sensitivity of the world's CPIs to the weight shocks from COVID-19 is of long-term interest

Introduction

Arrival of COVID-19 disrupted Consumer Price Index (CPI) compilation with lock-downs, temporary and permanent outlet closures, and product disappearances

Working from home, risk avoidance behavior, and loss of income also altered spending and shopping patterns

The early changes in spending patterns moderated when lock-downs ended, but other factors had durable effects on spending

This paper investigates the gap between the CPI and inflation in the market basket purchased by consumers during the pandemic

What's different about this paper:

- Covers most of the world
- Highlights contributions of individual product groups to difference between the COVID-19 index and the CPI

CPI Weights

Most countries regularly update the CPI base period using household budget survey data or a combination of household consumption data from the national accounts and HH budget survey data

Regular updating usually suffices to keep the CPI weights within an acceptable range of current budget shares

- Modest overstatement of inflation due lagged weights of the Laspeyres/Lowe index: BLS’s chained Törnqvist index rises 0.25 percent per year *less* than the headline CPI on average

But the speed and breadth of the changes in spending during COVID are unlike anything seen in the recent past

Methods

Spending Patterns Disruptions caused by COVID-19

CPI weights suffered sudden obsolescence when the pandemic arrived

Credit card and payments data from advanced economies showed an *increased* budget share for food at home, and *decreased* budget shares for transport, clothing/footwear, recreation/ entertainment, and restaurants/hotels

Flat spending on housing and communications implied increased budget shares because total spending fell

The things people used to buy might have significantly different inflation from the things purchased after the pandemic arrived

Potential Effect on Measurement of Inflation

Typically, consumers' substitution behavior in response to changes in relative prices cause Laspeyres/Lowe index like the CPI to *overstate* the change in consumers' cost of living

But when the shocks are on the demand side, producers tend to respond to falling demand by cutting prices (and to rising demand by raising prices)

COVID effectively changed consumers' preferences

CPI could overweight items with falling prices and underweight items with fast-rising prices

Weights Adjustments

Statistics Canada (in collaboration with the Bank of Canada) developed a price index that adjusted the CPI weights reflect current spending patterns during the pandemic as estimated from credit card and payments data

- These data on spending are very timely but lack detail on what was purchased

IMF database has CPI component indexes for 12 COICOP divisions and CPI weights

I adjusted CPI weights of 83 countries with complete data based on relative changes in spending in Canada

Analyzed months from just before the pandemic up to May 2020

Repeated the analysis using data on spending in the US from Cavallo (2020)

- US data generally similar to the data from Canada,
- But declines in spending on clothing/footwear are smaller (perhaps because of higher penetration of online shopping) and decline in spending on transport is larger

Average COVID-19 Weights based on Spending Changes between February and April in Canada and the US

COICOP Division	Ave. price-updated Weight in CPIs, April 2020	Ave. COVID-19 Weight, based on Spending in Canada	Ave. COVID-19 Weight, based on Spending in the US
01 Food and non-alcoholic beverages	27.1	38.2	36.7
02 Alcoholic beverages, tobacco, and narcotics	4.0	5.1	5.6
03 Clothing and footwear	5.3	2.1	3.9
04 Housing, water, electricity, gas and other fuels	17.7	21.8	22.6
05 Furnishings and household equipment and maintenance	5.4	5.5	5.0
06 Health	4.1	3.9	2.5
07 Transport	11.9	7.0	4.6
08 Communication	3.5	3.8	4.4
09 Recreation and culture	5.6	1.3	2.1
10 Education	2.7	2.5	3.5
11 Restaurants and hotels	6.3	2.8	3.2
12 Miscellaneous goods and services	6.4	6.0	6.0

Source: Authors' calculations using data from the IMF CPI database, Mitchell et al. (2020), and Cavallo (2020).

RESULTS

Highlights of the Estimates

COVID-19 weights imply significantly higher inflation in almost all regions

Global average impact of adjusting the weights based on COVID-19 spending patterns in Canada is +0.23 percentage points, rising to +0.32 ppts if based on spending in the US

An item’s contribution to the difference between the COVID-19 index and the CPI equals:

Change in the item’s weight × Deviation of item’s price index from the overall CPI

Looking at global averages of these contributions, the rising real price of food in all regions contributes 0.16 ppts to the 0.23 ppt. difference between the COVID-19 index and the CPI

Falling real price of transport (except in sub-Saharan Africa) contributes 0.16 ppts.

Seasonal increases in clothing prices in European countries subtract 0.08 ppts

Below-average growth of housing prices subtracts 0.03 ppts

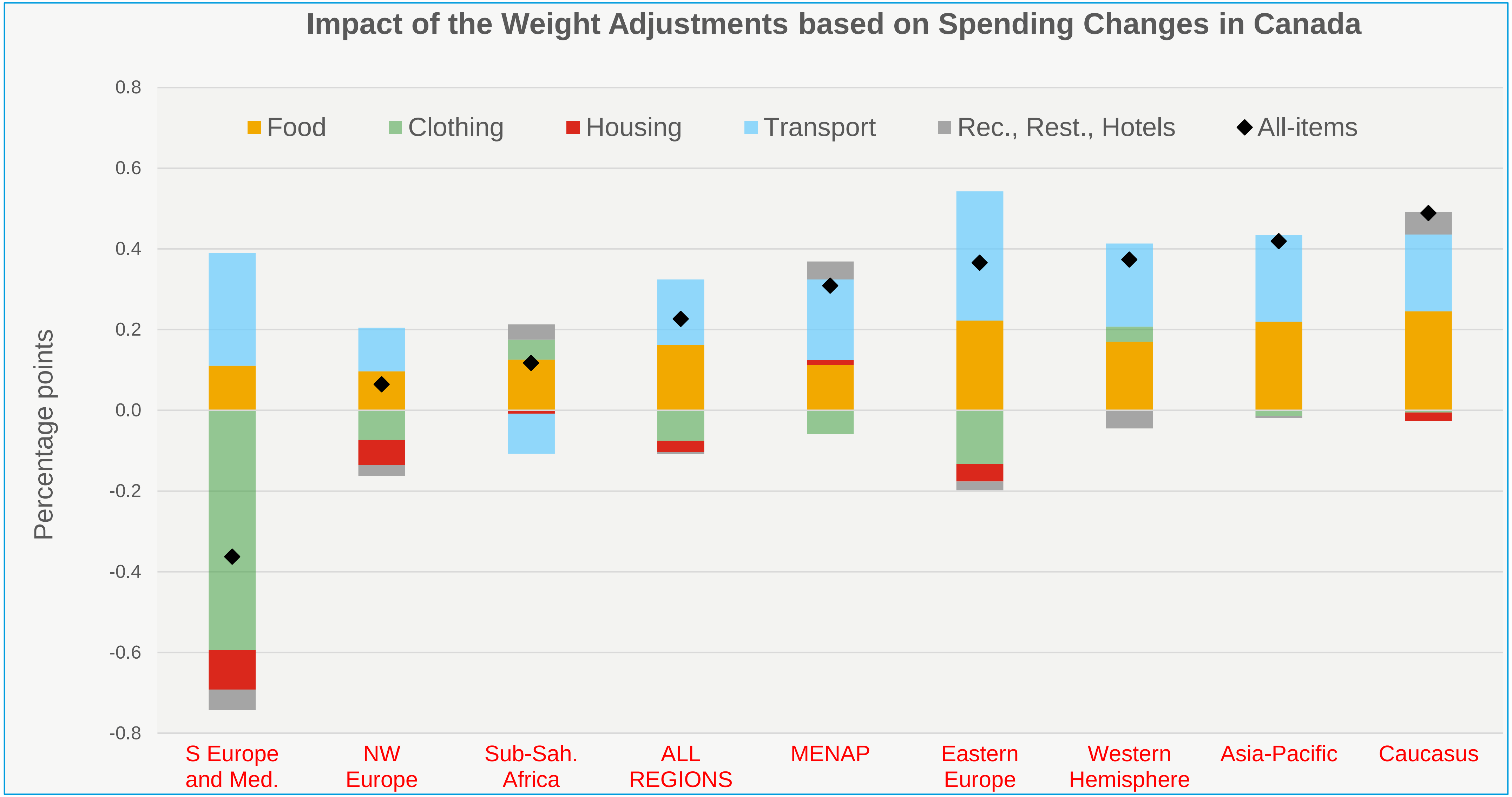
Cautions on Interpretation of the Estimates

The gaps between the COVID-19 index and the CPI could overstate the difference between a COLI and the CPI

- The COVID-19 indexes are Paasche-like indexes; a Törnqvist or Fisher index would be a better benchmark for “true” inflation and would be closer to the CPI
- Impact on spending patterns may be more muted in emerging market and low-income countries, where lockdowns and working from home were less frequent
- Subsequently, spending patterns partially retraced their steps

On the other hand, taking lower-level changes into account might add to the gap between the COVID-19 index and the CPI

Difference between the COVID-19 Index and the CPI over the 3 Months ending May 2020



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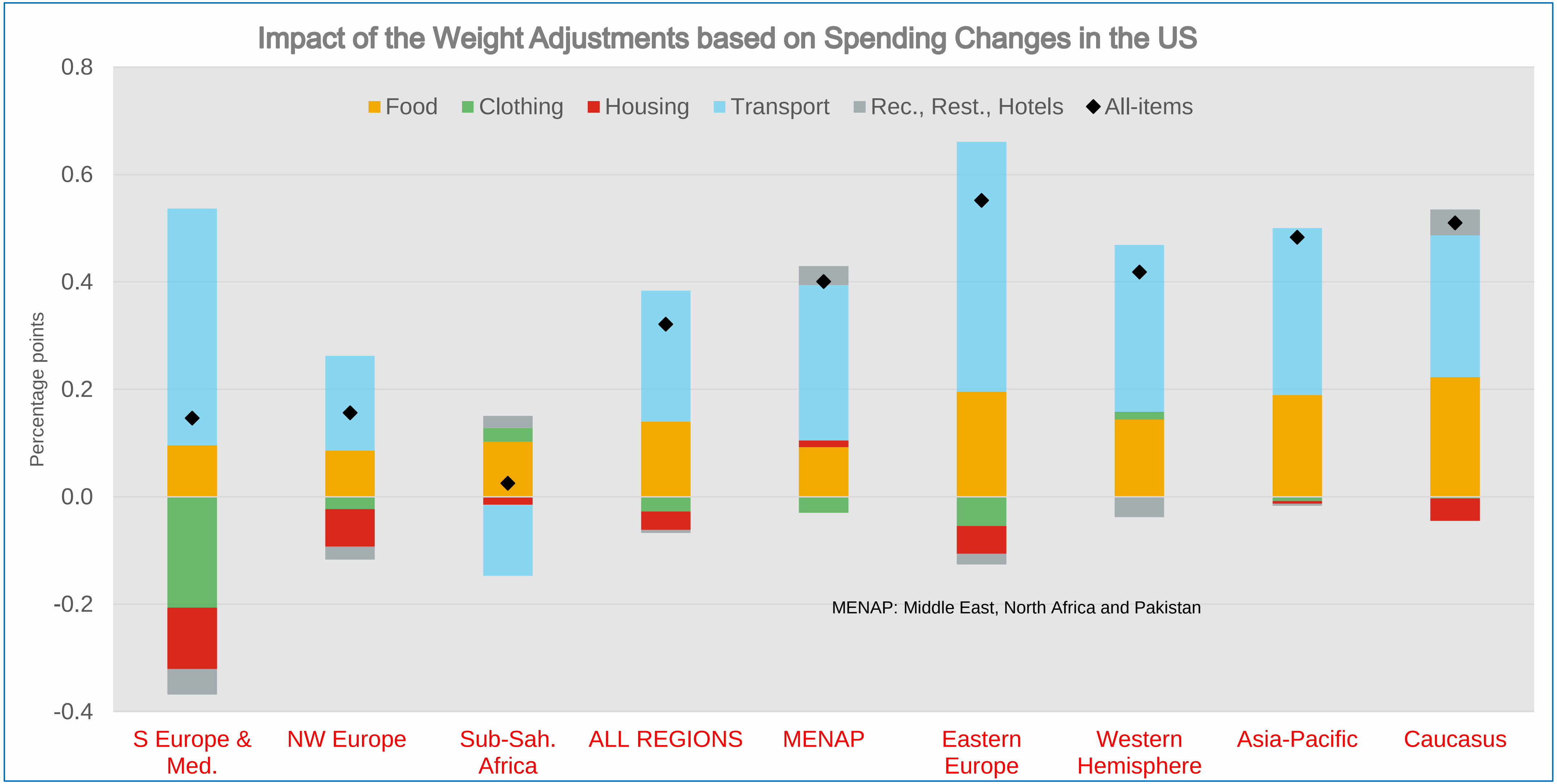
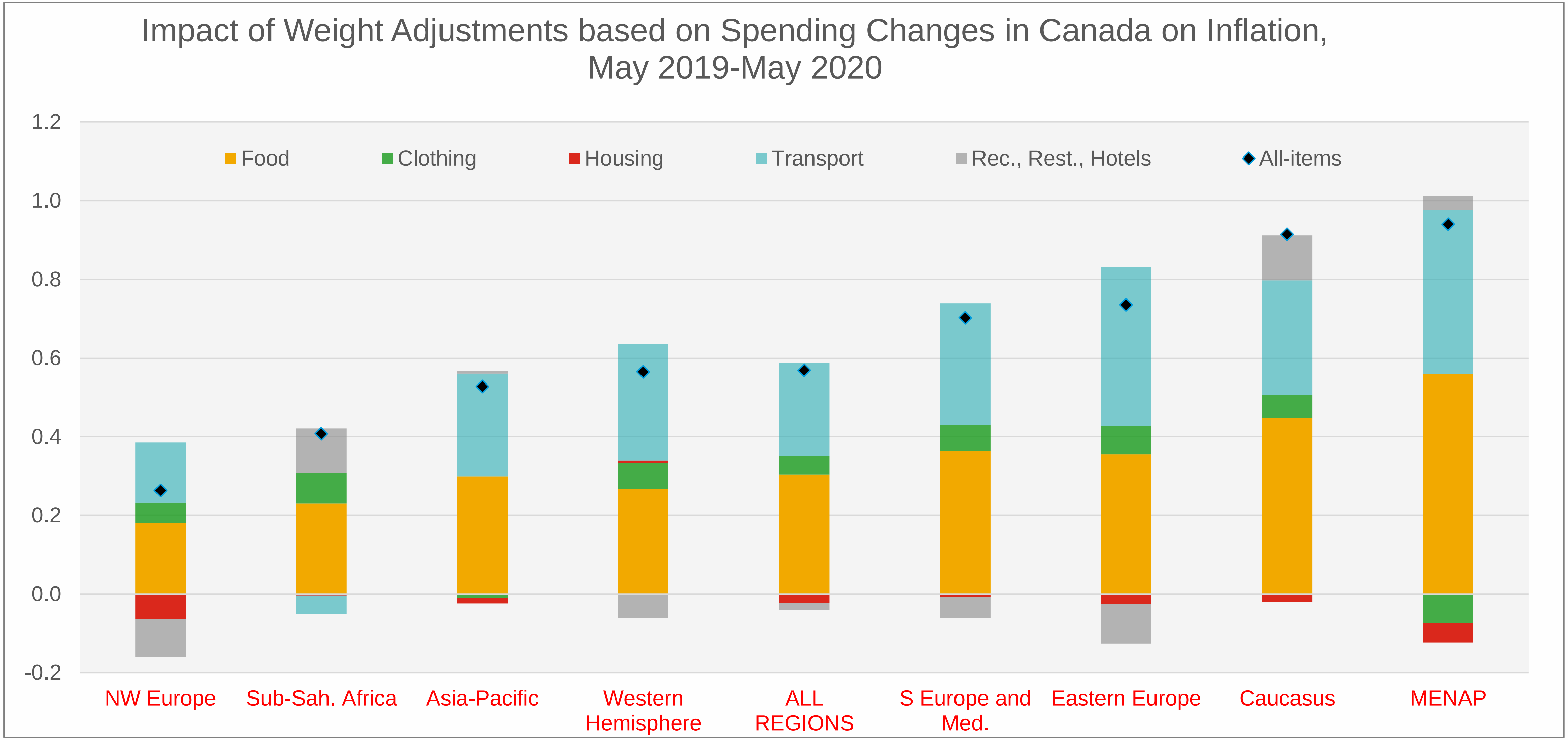


12-Month Difference between COVID-19 Index and CPI and Items' Contributions to that Difference



Subsequent Developments

Weights of StatCan's "adjusted price index" partially reverted to their pre-pandemic configuration

- In Nov. 2020-Feb. 2021, the adjusted index showed same monthly changes as the CPI
- But the long-run difference between the two indexes didn't shrink, in part due to chain drift

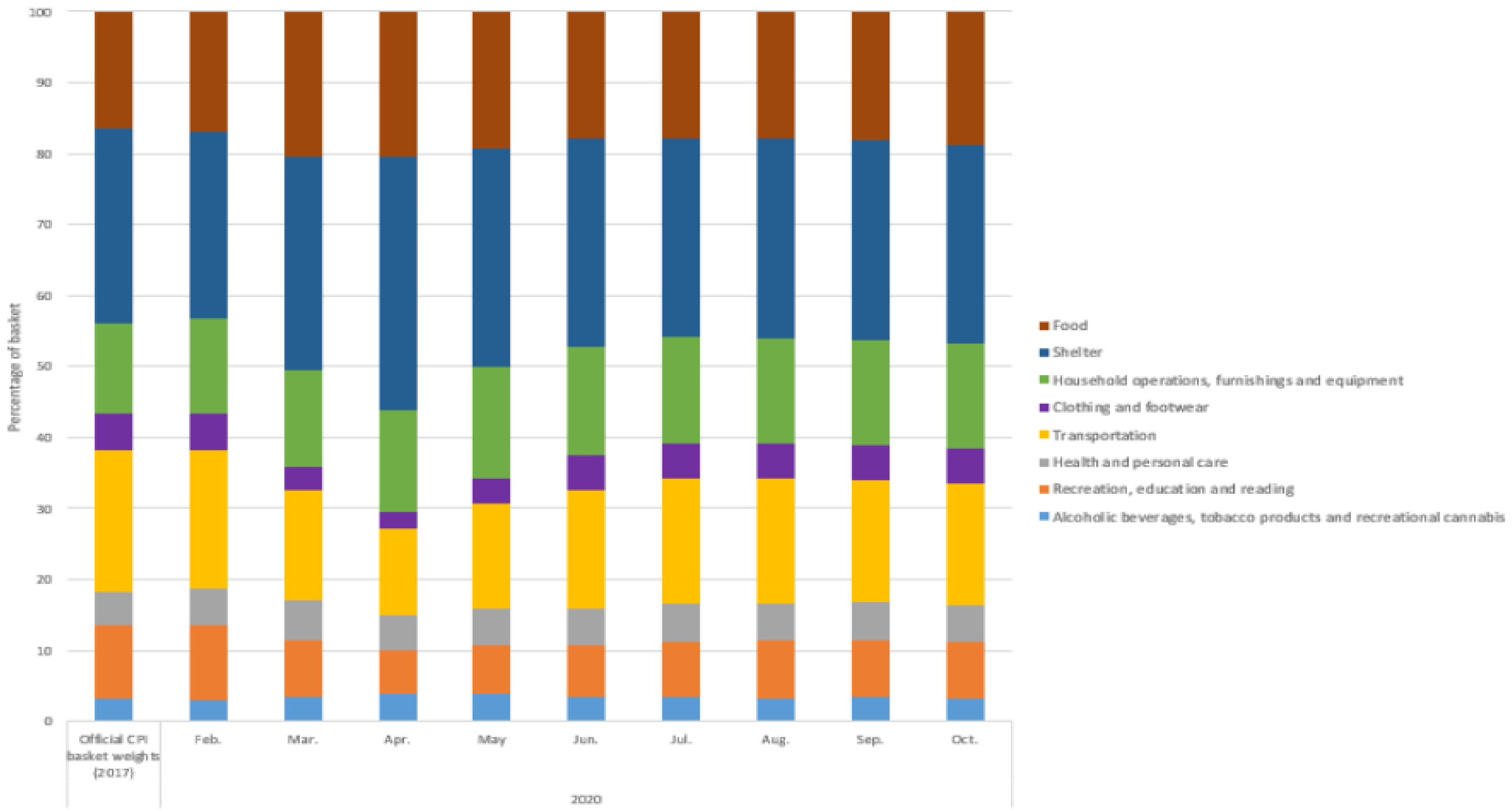
Canada introduced a new CPI basket based on national accounts data for 2020

- Weights of the new basket are closer to those of the previous CPI basket than the weights used in my paper, but the changes from the previous CPI weights are in the same direction

In June 2020, Cavallo's COVID-19 index for the US switched from showing higher inflation than the CPI to showing lower inflation than the CPI

- The monthly declines in the CPI of the early months of the pandemic were replaced with large monthly increases, so over the lifetime of the COVID-19 the prices of the things consumers are currently buying have been more stable than prices tracked by the US CPI

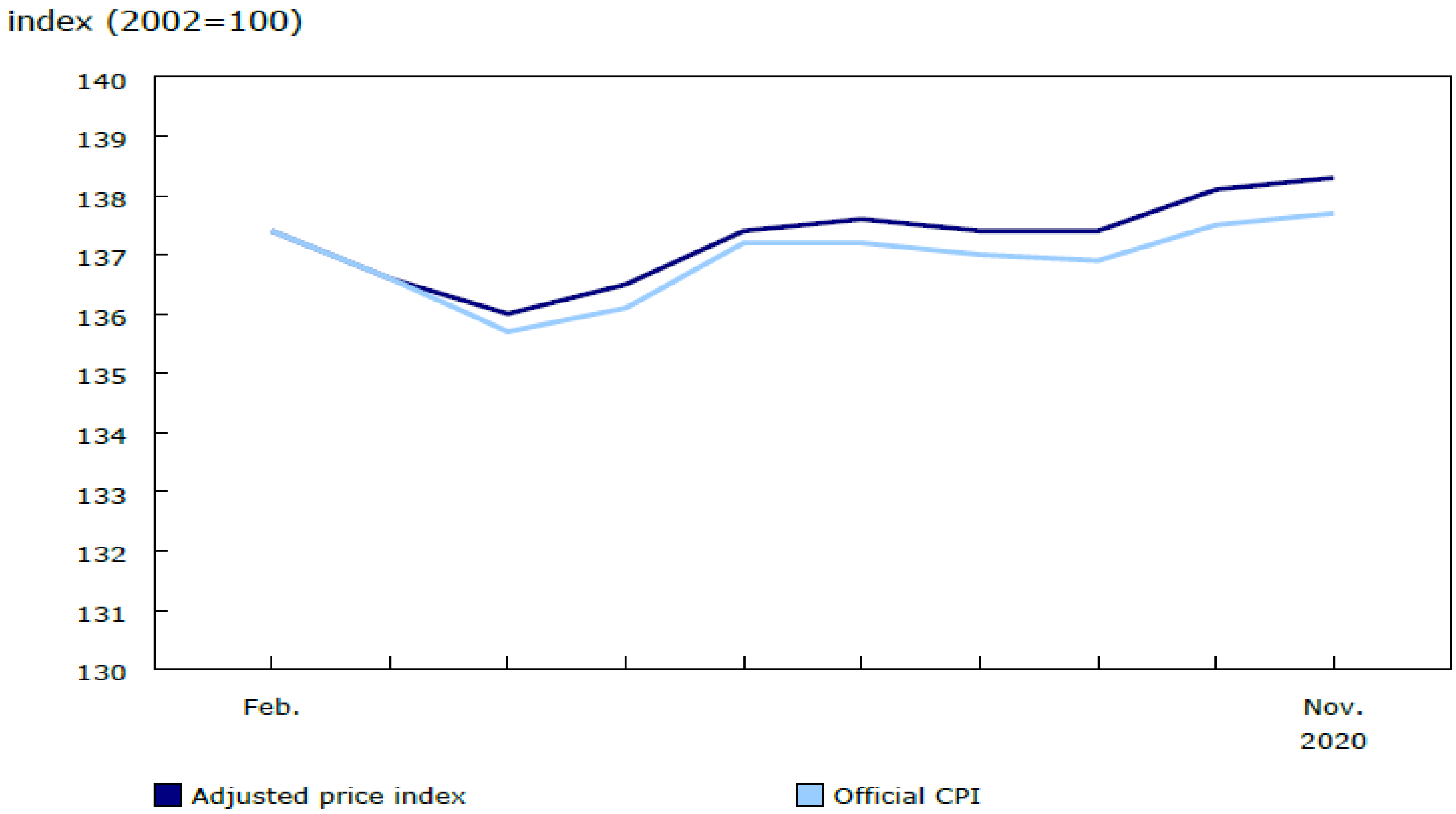
Infographic 1 – Basket weights of major components in the official Consumer Price Index (CPI) and the adjusted price index, Canada, February 2020 to October 2020



Source: Consumer Prices program.

Source: Statistics Canada, *The Daily*, Jan. 12, 2021

Chart 1
Official Consumer Price Index (CPI) and adjusted price index, Canada, February 2020 to November 2020



Source: Statistics Canada, *The Daily*, Jan. 12, 2021

Recommendations and Conclusion

Conclusions

More inflation than measured by the CPI virtually worldwide in early months of the pandemic

Under-weighted food prices rose more than the all-items CPI in all parts of the world

- Low-income households' budgets were particularly vulnerable to rising food prices, so the CPI understated their inflation experience more than that of households in the aggregate

Falling transport prices also contributed to the undermeasurement of inflation (except in sub-Saharan Africa)

Seasonal clothing prices had offsetting effects in Europe

In subsequent months, purchasing patterns partially returned to pre-pandemic configuration, and price declines for certain items more than reversed

Recommendations

A supplementary COVID-19 price index could provide useful information on the prices being paid during the pandemic (but rapidly changing CPI weights could introduce chain drift in long run comparisons)

Credit card and payments data and other alternative data sources can help improve the timeliness of higher-level weights (but they lack product detail and may not be representative of the entire population)

Breaks in the behavior of spending patterns such as the one caused by the pandemic increase the urgency – but also the difficulty – of timely rebasing of the CPI

- The 5-years between rebasings allowed by the international standards may be too long

Thank you for your attention