Purchasing Power Parities and their Uses

Paul Schreyer OECD
Upfront...

PPPs are not a concept that is immediately and easily grasped by users (everything is relative, unclear links with national accounts and national price indices). This has generated a fair bit of mis-understandings

⇒ PPPs are used for purposes for which they are not suited

⇒ PPPs are not used even when they are the right concept
Contents

1. What are PPPs?
2. Uses of PPPs
1. What are PPPs?

- PPPs are spatial price indices
- Just as temporal price indices allow one to make real/volume comparisons in time, PPPs are designed to make real/volume comparisons in space or across countries
- OECD/Eurostat PPPs are price indices that relate to the expenditure side of GDP
- Weights for aggregation are provided by National Accounts
Why not market exchange rates?

- Market exchange rates are currency price relatives but not spatial price indices of GDP or its main components.
- Market exchange rates reflect relative prices of tradables, capital and investment flows.
- Only under very restrictive assumptions will there be convergence between PPPs and exchange rates.
The organisation of the PPP programme

- **Eurostat**
  - Northern group
    - Finland
    - Denmark
    - Estonia
    - Iceland
    - Ireland
    - Latvia
    - Lithuania
    - Norway
    - Sweden
    - UK
  - Central group
    - Austria
    - Belgium
    - Czech Rep.
    - Germany
    - Hungary
    - Luxembourg
    - Netherlands
    - Poland
    - Slovak Rep.
    - Slovenia
    - Switzerland
  - Southern group
    - Italy
    - Bulgaria
    - Cyprus
    - France
    - Greece
    - Malta
    - Portugal
    - Romania
    - Spain
    - Turkey

- **OECD**
  - Pacific countries
    - Australia
    - Canada
    - Japan
    - Korea
    - Mexico
    - New Zealand
    - United States
    - Israel
  - Non-OECD members
    - Croatia
    - Macedonia
    - Russian Fed.
    - Ukraine
2. Uses of PPPs: a traffic light approach

1. Areas where PPPs are well placed

2. Areas where PPPs may be used but with limitations

3. Areas where PPPs should not be used
Areas where PPPs are well placed

Main indicators:

1. Volume comparisons of GDP
   - GDP per capita
   - GDP per hour worked
   - Size of economies

2. Comparisons of relative price levels
Generally: compare with care…

- PPPs are a useful instrument but with limited precision
- Small differences between countries should not be over-interpreted
- Results may change due revisions in GDP and population data
- Example: GDP per capita across OECD countries
1999 ‘Benchmark’ Results: GDP/head

High income group

High middle income group

Low middle income group

Low income group

OECD OCDE
1999 Results: High middle income group
(Information set: December 2003)

OECD: 22,500$

**857 $**

United Kingdom

Finland
1999 Results: High middle income group under two information sets
1999 Results: High income group under two information sets: small effects of PPP and GDP revisions
GDP per capita

- A measure of output, and with some reservations, a measure of economic well-being (NDP per capita and PPPs for NDP?)
- EU: allocation of structural funds
- Analysis: GDP per capita/GDP per hour worked
- Statistics: zone totals
CPL is intuitively familiar to any international traveller: comparison between the relative prices of the same product at home and abroad and the market exchange rate.

Example:

- Swiss traveller pays hotel room in Paris: 100 EUR
- Traveller’s calculation whether this is “expensive” or not:
  Convert 100 EUR into CHF with market exchange rate, say 0.67EUR/CHF: \(100 \text{ EUR}/(0.67 \text{ EUR/CHF}) = 150 \text{ CHF}\)
- Take price of an equivalent hotel room in Bern.
If the equivalent hotel room there costs 200 CHF, the traveller will perceive the price level for hotels in Bern as high compared to Paris.

Thus, travelling in France is ‘inexpensive’ if the PPP for hotel rooms (100 EUR/200 CHF=0.5 EUR/CHF) is less than the exchange rate (0.67 EUR/CHF) and vice versa.

Comparative price level FRA/SWI= PPP (EUR/CHF)/Exchange rate (EUR/SFR)

Thus, CPL varies with exchange rates

This has to be kept in mind whether observing CPLs over time
A look at Switzerland

Swiss and German price levels compared to the United States…

<table>
<thead>
<tr>
<th>CPLs</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
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<tbody>
<tr>
<td>Switzerland</td>
<td>115</td>
<td>123</td>
<td>138</td>
</tr>
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<td>Germany</td>
<td>89</td>
<td>93</td>
<td>110</td>
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<td>USA</td>
<td>100</td>
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<table>
<thead>
<tr>
<th>Exchange rates</th>
<th>CHF/USD</th>
<th>EUR/USD</th>
<th>USD/CHF</th>
<th>USD/EUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHF/USD</td>
<td>1.687</td>
<td>1.117</td>
<td>0.593</td>
<td>1.557</td>
</tr>
<tr>
<td>EUR/USD</td>
<td>1.117</td>
<td>1.061</td>
<td>0.910</td>
<td>0.885</td>
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</tbody>
</table>
Areas where PPPs may be used but with limitations

- Cost of living index across countries
- Time series analysis of relative GDP per capita
- Analysis of price convergence
Cost of living index yes, but…

- Relative price level of actual final consumption
- For average consumption patterns of resident population

⇒ *Not* normally appropriate for expatriates
Take the Swiss per capita GDP relative to that of the OECD area in 1996

Multiply that measure by the rate of GDP growth for Switzerland relative to that of the OECD area between 1996 and 1999 and divide by the relative population growth

Surely, the resulting GDP per capita index for Switzerland for 1999 corresponds to the one that comes directly out of the 1999 survey?
- Unfortunately, no. And this is a source of much discussion
- Even more so as this is what policy makers want to know: where does my country stand relative to others and how has its position evolved over time?
- Why are there differences?
• The first calculation used fixed PPPs (fixed 1996 international prices)

• The second result comes from the 1999 survey and thus reflects current 1999 international prices

• One source of differences are thus changes in price structures

• But there are other sources. Here is an important one, the underlying samples
Differences in samples: price indices underlying national accounts and PPPs

CPI sample in period t

PPP sample in period t

CPI sample in period t+1

PPP sample in period t+1

$t+1/t$
PPP samples tend to be small and change over time: this makes the temporal comparison of price levels difficult. But PPP samples are conceived to maximise comparability of items across countries.

Samples for temporal price indices tend to be larger and conceived to maximise comparability over time within a country. But they are not set up to deliver international comparability of items.

Thus, when PPP samples change over time, it makes little sense to compare prices over time.
OECD recommends constant PPPs for time-series comparisons, as long as the periods under consideration are not too long.

Note trade-off between advantage of national accounts consistency and disadvantage of imposing constant international price structure.

How about Switzerland, then?
Switzerland’s GDP per capita (OECD = 100)
Analysis of price convergence

- In principle, the spread of prices over time can be used to make a statement about price convergence, in particular in the Euro area.
- But: does not make sense for all products (e.g. non-tradeables) – special basket may be needed.
- Also: small sample size in PPP surveys, such convergence cannot be measured at product level but this is where it should occur.
PPPs are not recommended...

1. As an indicator for the over- or under-valuation of a currency
2. As a precision tool to establish rankings between countries
3. As a measure to generate output and productivity comparisons by industry (unless there are industry-specific PPPs)
4. As a way of constructing national growth rates
5. As a ‘volume’ measure of exports or imports across countries
Conclusion

- Care must be taken not to over-interpret results and not to use PPPs for purposes that they are not designed for.

- But for all the health warnings, PPPs are an important – in fact the only - tool for price and volume comparisons across countries.

- Want to know more?