China: Input-Output Tables 1992-2010

Douglas Nyhus
Inforum, University of Maryland
20th Inforum World Conference
Florence, Italy

Why?

- Data base for MUDAN model
- Check consistency of Chinese data
- Examine structural change
- Economic imbalances?
- Energy use
- CO2 generation

Basic Data Sources

- Input-output tables: 1992, 1997, 2002, 2007
- China Statistical Yearbook (CSY): 1992-2011
- CSY data in electronic format from 1995-2011
- China Labor Statistics Yearbook: 2001-2010
- China Economic Census Statistics 2004, 1995
- Bilateral Trade model data base
- National Bureau of Statistics of China (monthly data)

Major Problem Areas

- Changes in Statistical System: NMP (1992) to SNA(1997,2002,2007)
- Revisions in statistical coding 1995,2004,2007
- Major changes in scale—GDP revised up 10% in 2009 without revisions in production data
- Tables (CSY) appear and disappear
- Labor (employment) data weak
- Factor income data at national level is nonexistent

Major Strengths

- Historical tables relatively consistent
- Gradually improving data base – especially for services
- Agriculture and Industry data (Mining, Manufacturing and Utilities) are consistent enough over time to be useable
- Expanding detail from the national accounts

Plan I

- Balance tables in current prices
- Balance full four quadrant IO tables at one time—intermediate (59) sectors, final demands and value added (wages, depreciation, taxes less subsidies, surplus)
- Use at much data as can be gleaned from the CSY and other data sources—methods vary greatly due to coverage, general appropriateness, etc.

Plan II

- For each cell in the large matrix attempt to construct a consistent time series between IO table years—e.g. 1992-1997, 1997-2002, etc
- Then “benchmark” the end points based on the IO table and generate a “fix” file for starting points for the intervening years
- This is applied for all gross output of all sectors

Plan III

- Balance backwards and forwards—starting points are important—e.g. balance 1992-96 going forward and the balance 1997-93 going backwards – Remember interdyme can operate backwards as well as forwards in time.
- Use estimates from both of the estimates as a starting point for final balance

Plan IV

- After balancing table we then balance bridge matrices for investment –52 investing industries (columns) and 59 rows
- Similar household consumption matrices—urban (59 rows, 24 columns), rural (59 rows,10 columns)

Plan V

- Deflate the table to obtain constant price estimates
- “Known” prices: (1) gross output; (2) import prices (3) export prices (4) rural consumption prices and (5) urban consumption prices
- Implicit prices for each row of the table are implied—(1) domestically produced goods for particular uses are necessarily different from production prices—e.g. Urban and rural households; (2) user prices (mixture of domestic and import prices).
- “User” prices are used for deflation

Plan VI

- Check estimate of deflated GDP with NA
- How different? Why?
- Estimate service industry output prices– value added prices are the only ones published and these only implicitly
- Assume the implicitly published prices are constructed using a double deflation method

Plan VII

- Estimate new service industry “output” prices that are consistent with “deflated” valued added and the in the IO Table
- Use the resulting matrices as the basis for estimating MUDAN
- Reconcile 2002 estimates for GDP with National Accounts

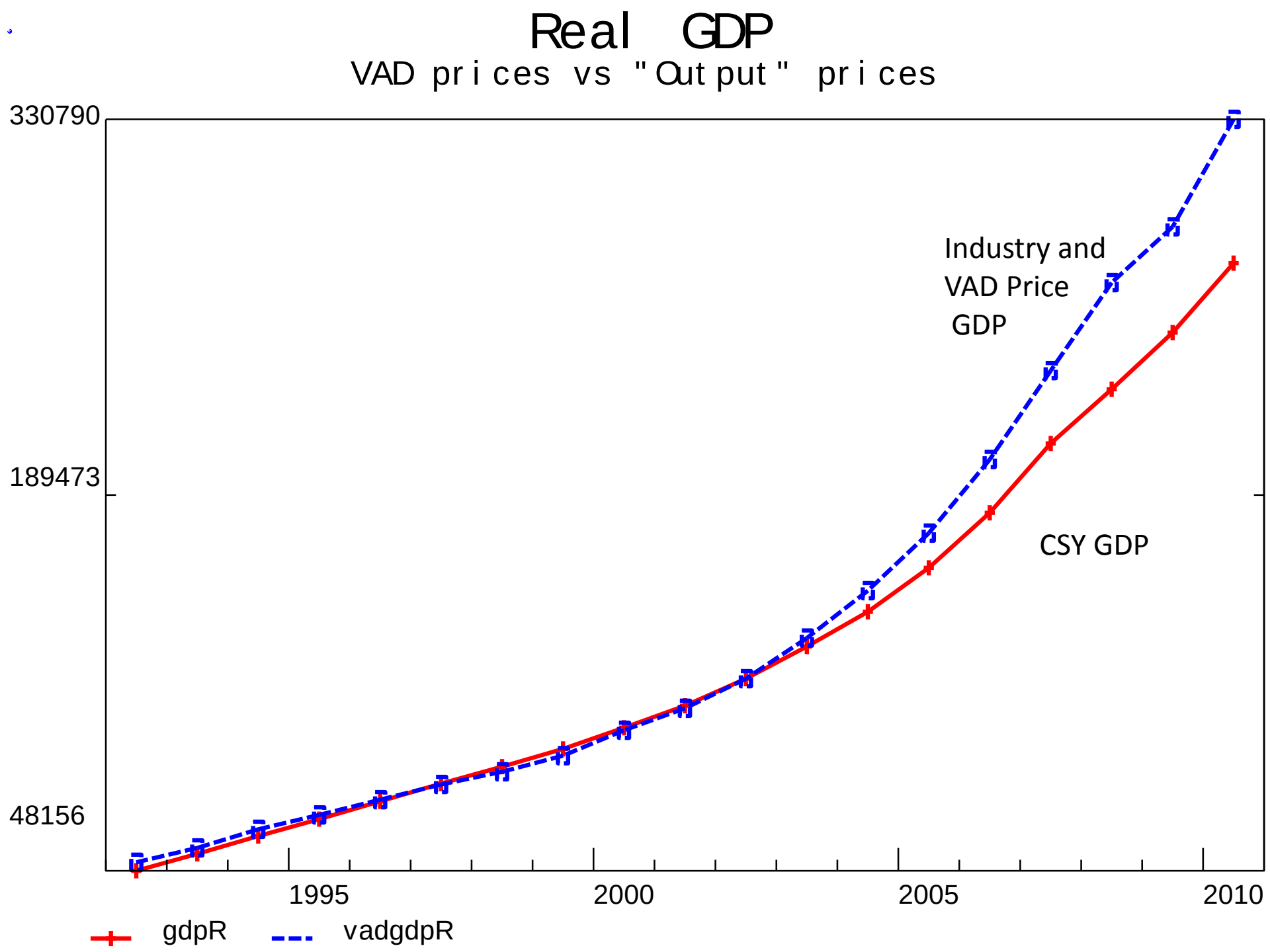
Strengths of Plan

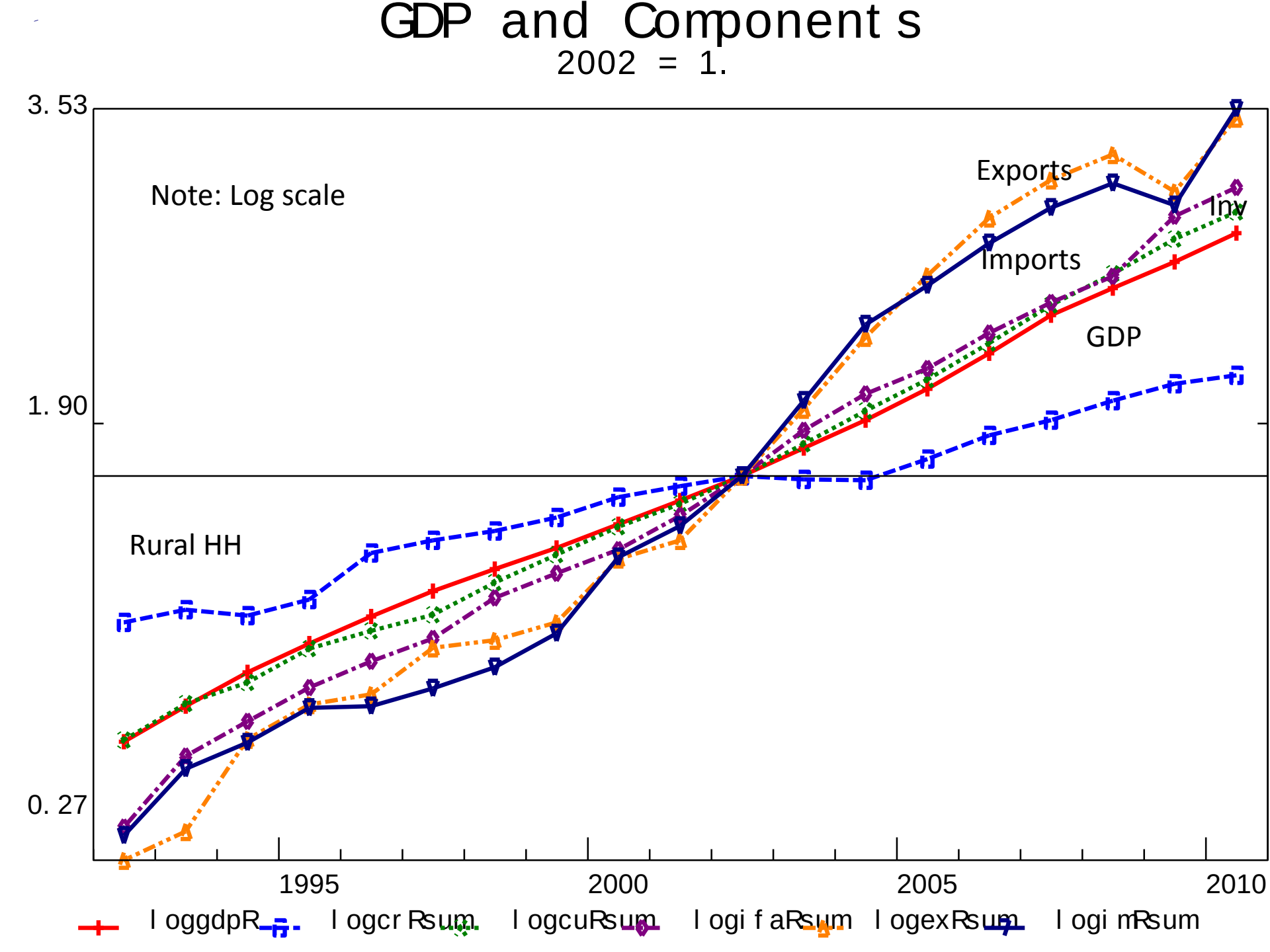
- Internal consistency
- Ability to examine any series as a time series and not just a point estimate
- Ease of updating – documentation –all preparation work is done starting with excel tables in the CSY followed by G7 add files (scripts) preparing the work for interdyme which integrates and completes the work.

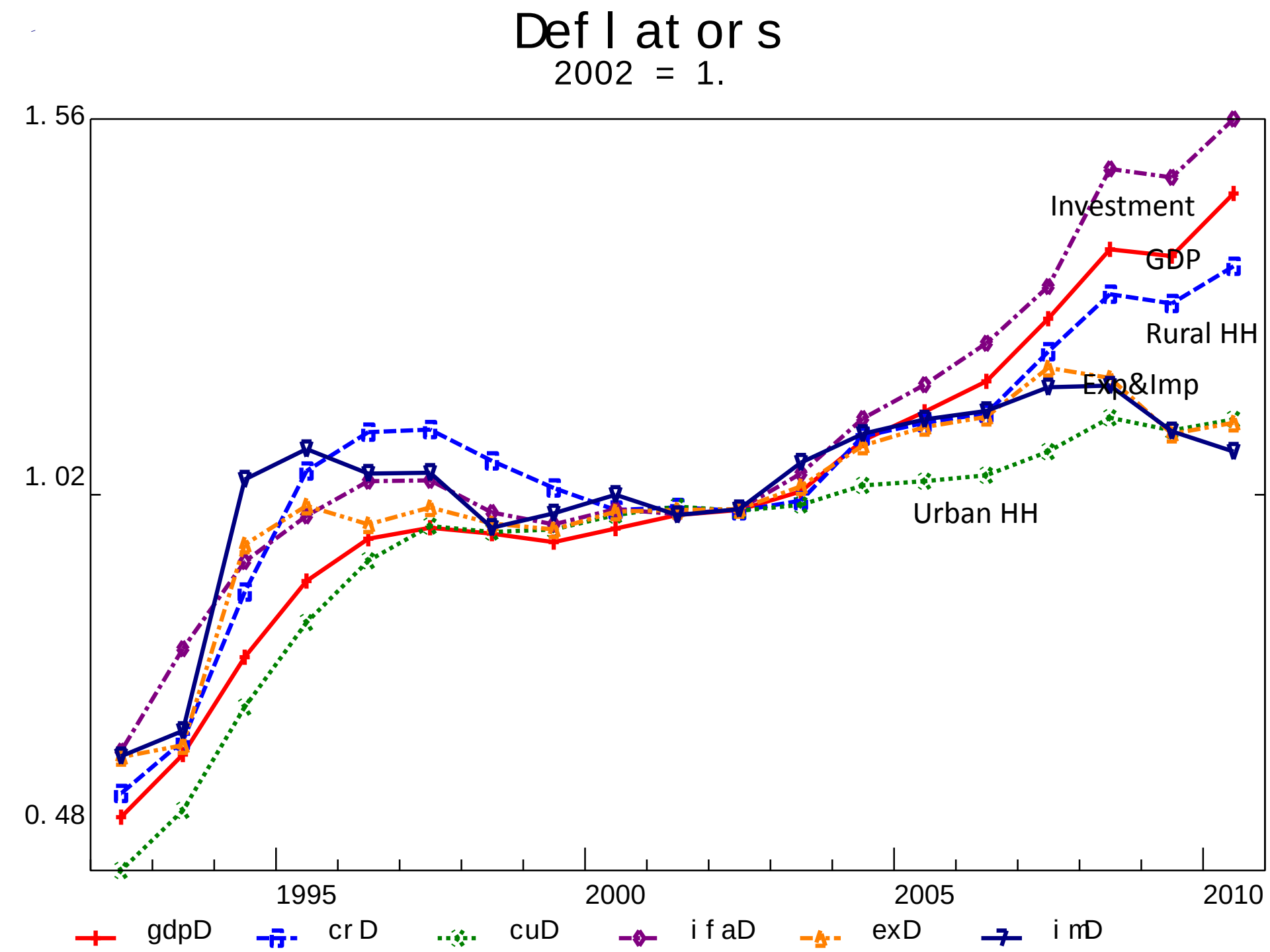
Weaknesses

- Estimates of GDP in 2002 prices not consistent with National Accounts
- Only total household consumption (rural and urban) is available in constant price units on product side national accounts
- Some estimates of the implied prices of domestic production for domestic consumption are not reasonable—indicating a defect in data or method

Some Results

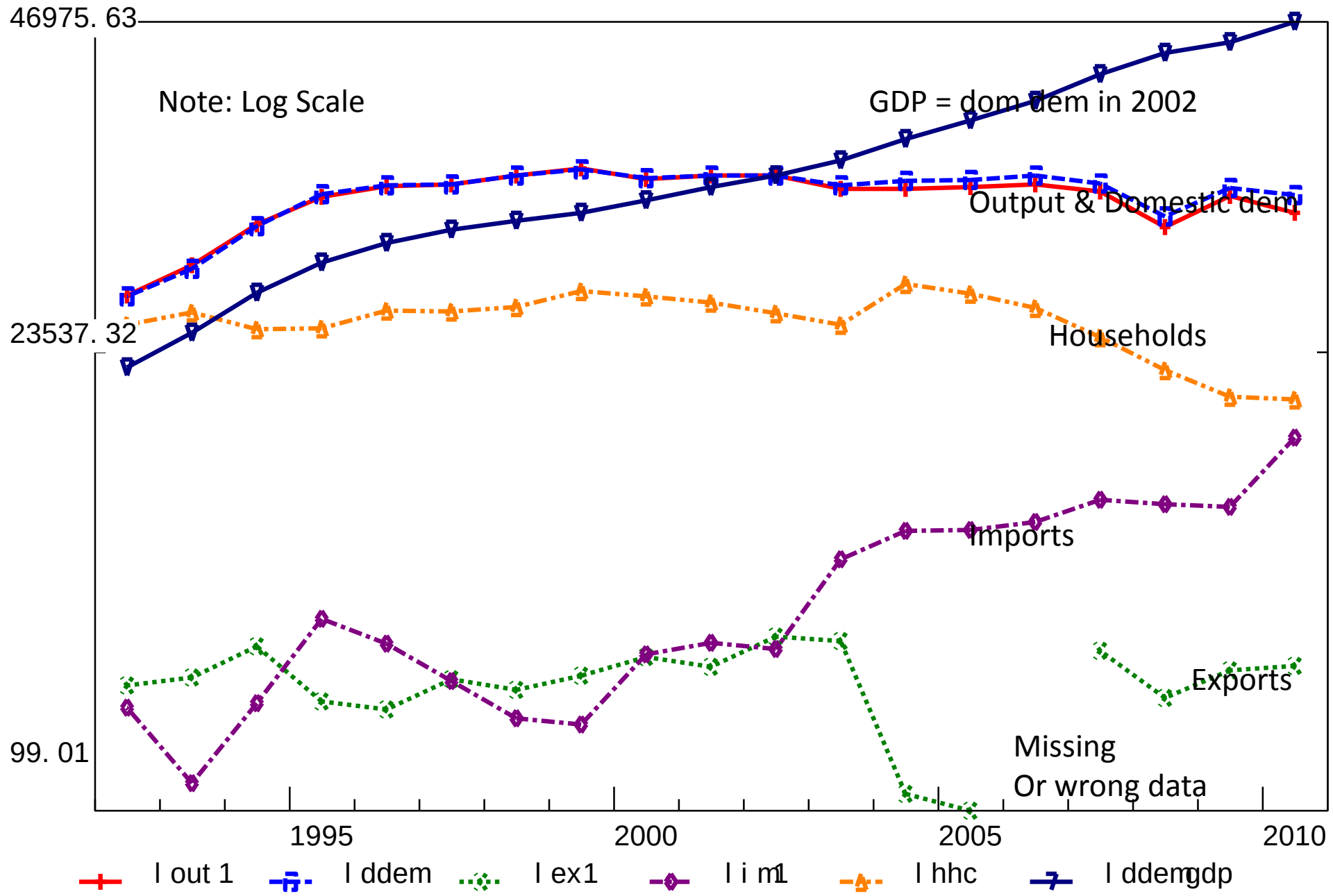

Real GDP
VAD prices vs "Output" prices
330790
189473
48156
Industry and
VAD Price
GDP
CSY GDP
1995
2000
2005
2010
gdpR
vadgdpR


GDP and Components
2002 = 1.
3.53
1.90
0.27
Note: Log scale
Rural HH
Exports
Imports
Inv
GDP
1995
2000
2005
2010
logGDPR
logcrRsum
logcuRsum
logifaRsum
logexRsum
logimRsum


Def l at or s
2002 = 1.
1. 56
1. 02
0. 48
1995
2000
2005
2010
Investment
GDP
Rural HH
Exp&Imp
Urban HH
gdpD
cr D
cuD
i f aD
exD
i mD

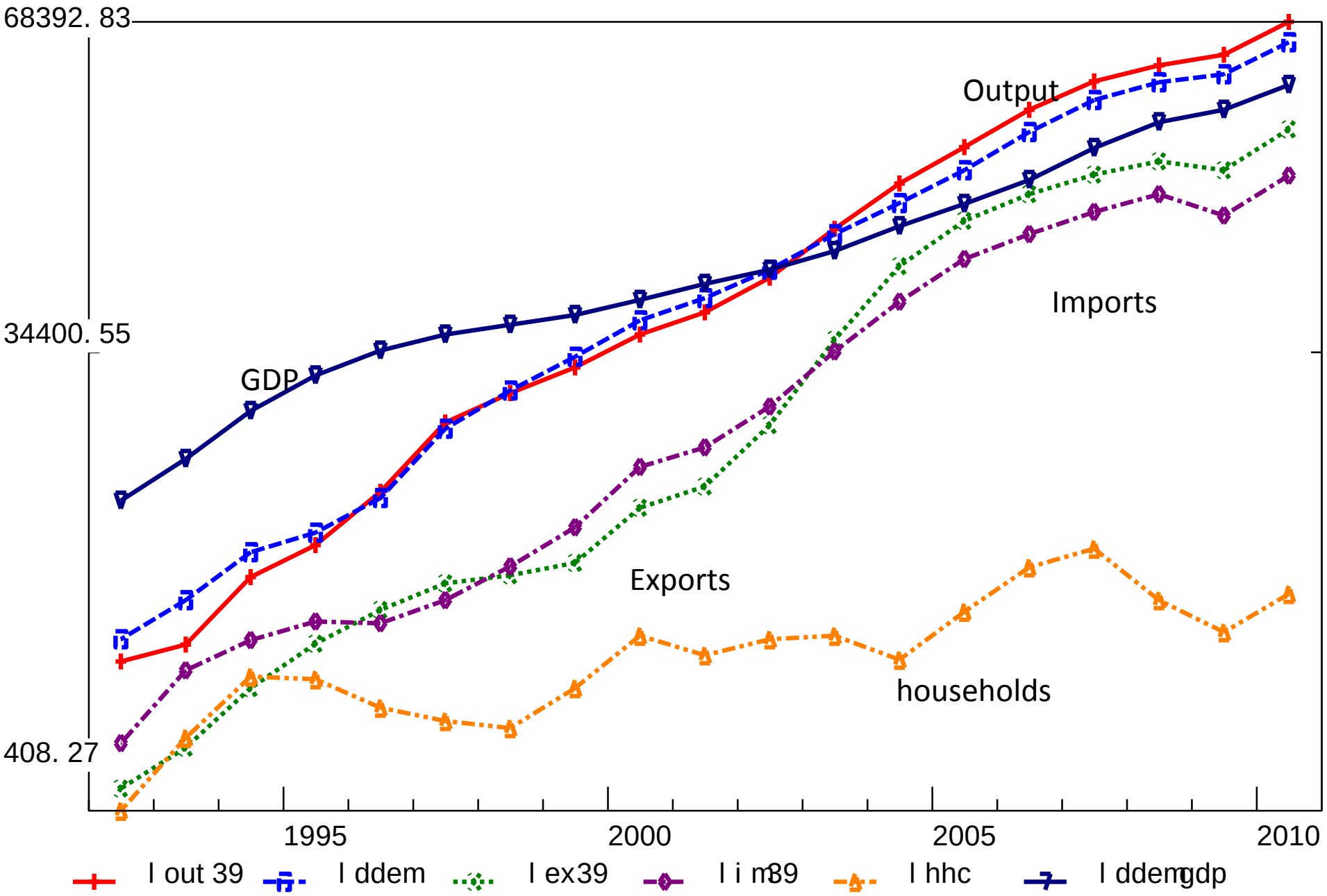
1 Farming

in 2002 prices



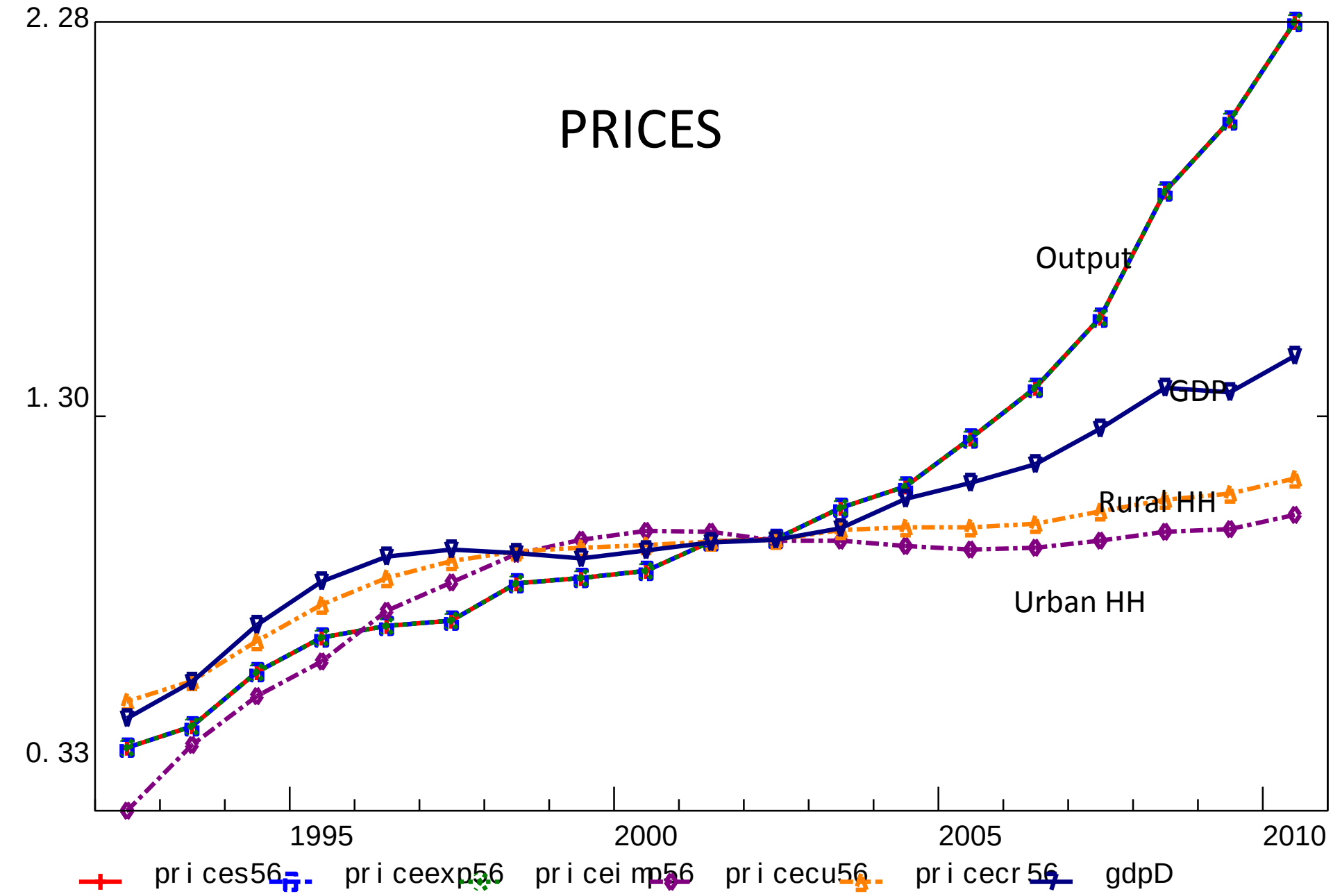
39 Electronic and communication equipment

in 2002 prices



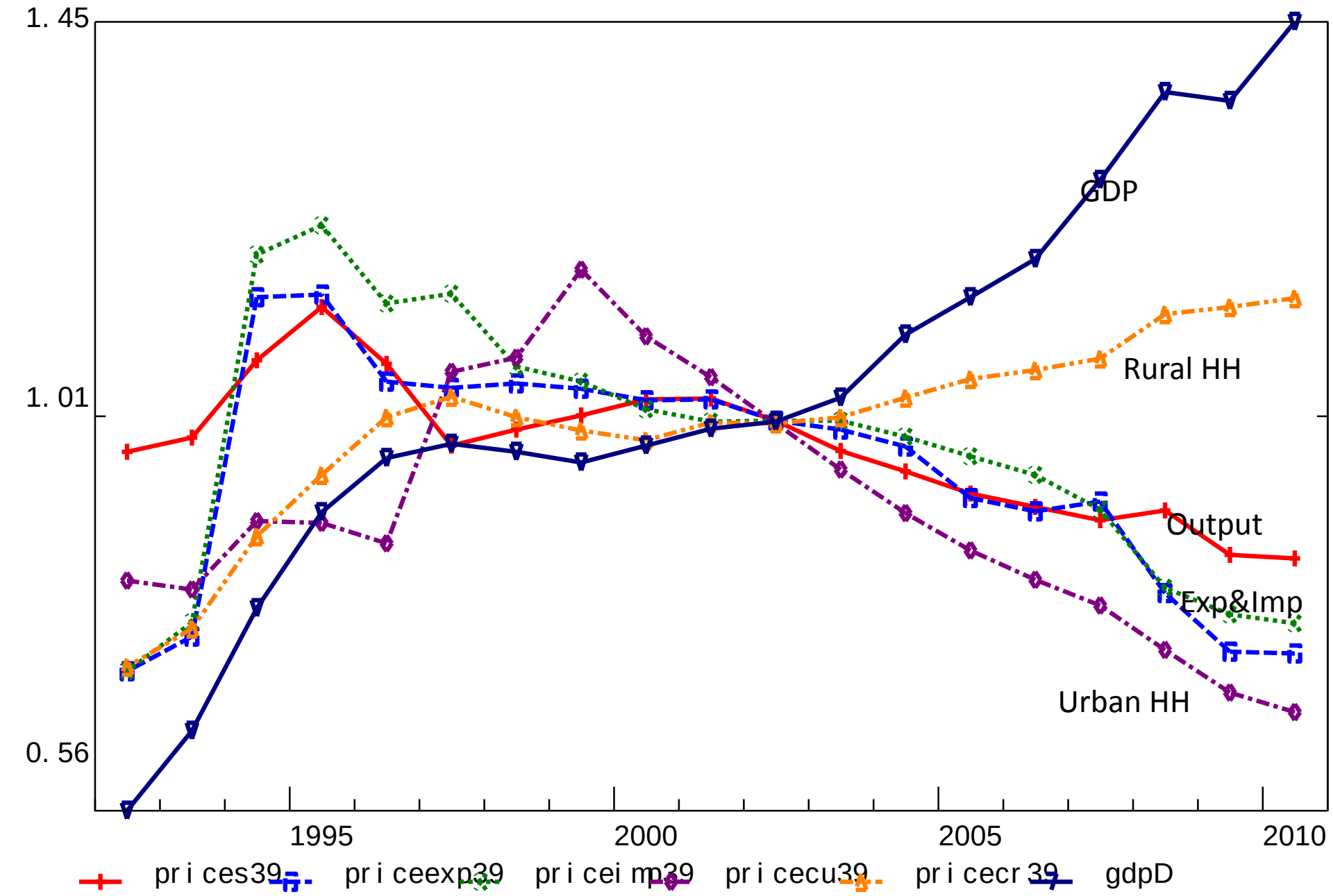
56 Health care, sports and social welfare

prices of output, exports, imports, domestic use



39 Electronic and communication equipment

prices of output, exports, imports, domestic use



Thank You!