

Understanding national accounts

2012-09

Chapter 4

Production, what it includes and excludes

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Disposition

- Production and productivity
- What is included in GDP?
- Some special cases
- Sources used to calculate production
- Coverage
- Exercise



Output and value added

Output - Intermediate consumption = Value added

$$\text{GDP} = \sum \text{VA}$$



Production and productivity

Production is a process of combining inputs (such as goods and services) to produce an output that can be used or consumed.

Production result from three factor of production (labor, capital and intermediate consumption (IC))

Output-IC=VA - > two factors of production (labor, capital)

$$Y' = (f(L, K) + MFP)'$$

MFP = multifactor productivity

Change in VA not attributed to neither labor nor capital but result of technical progress

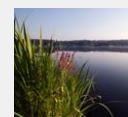
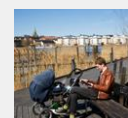
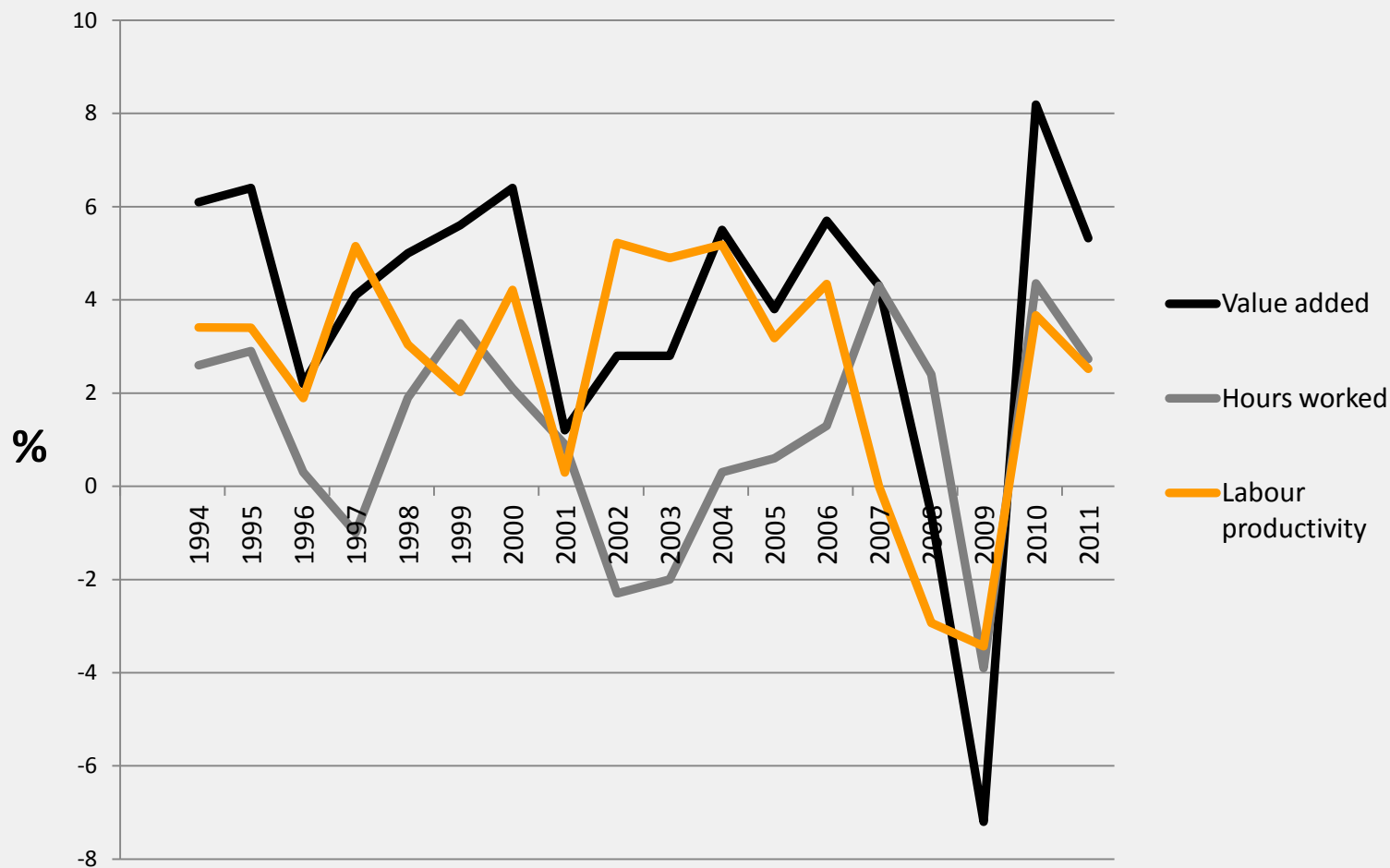
For example: specific combination of inputs, a better organization, economies of scale etc.



Labour productivity market producers

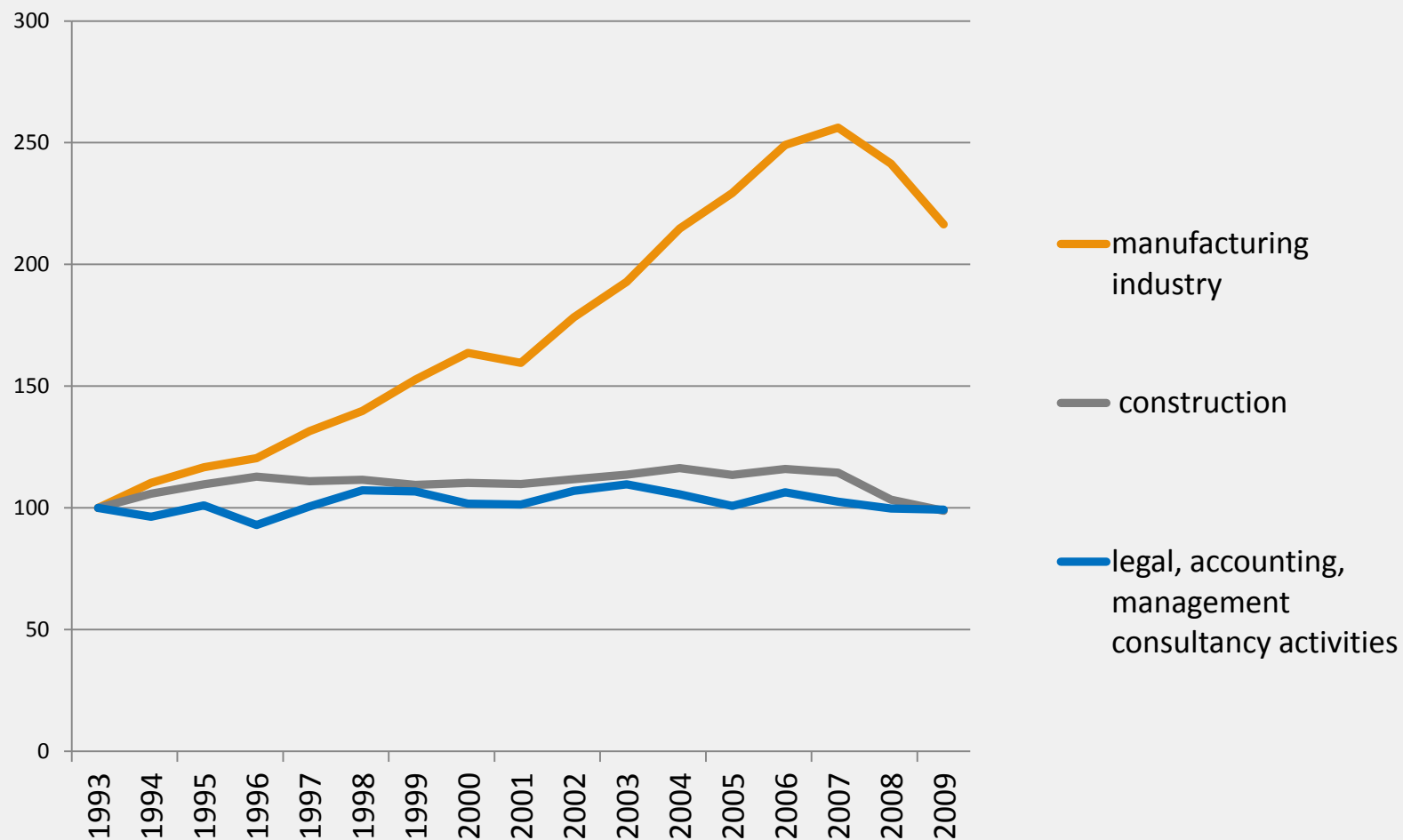


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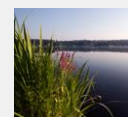
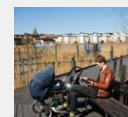


Labour productivity market producers

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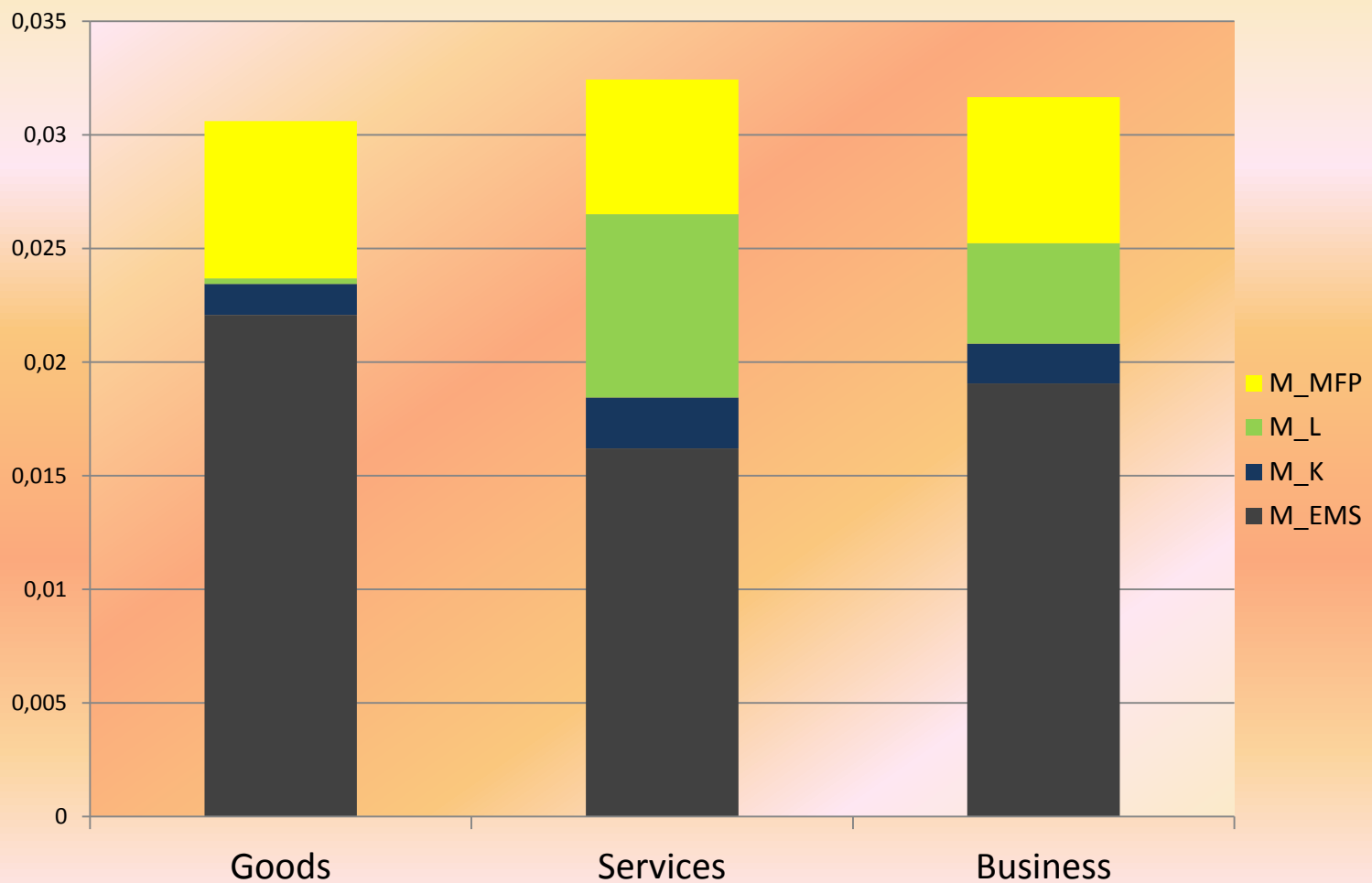
Index 1993=100



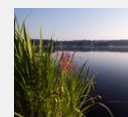
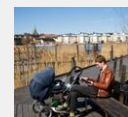
Productivity, KLEMS



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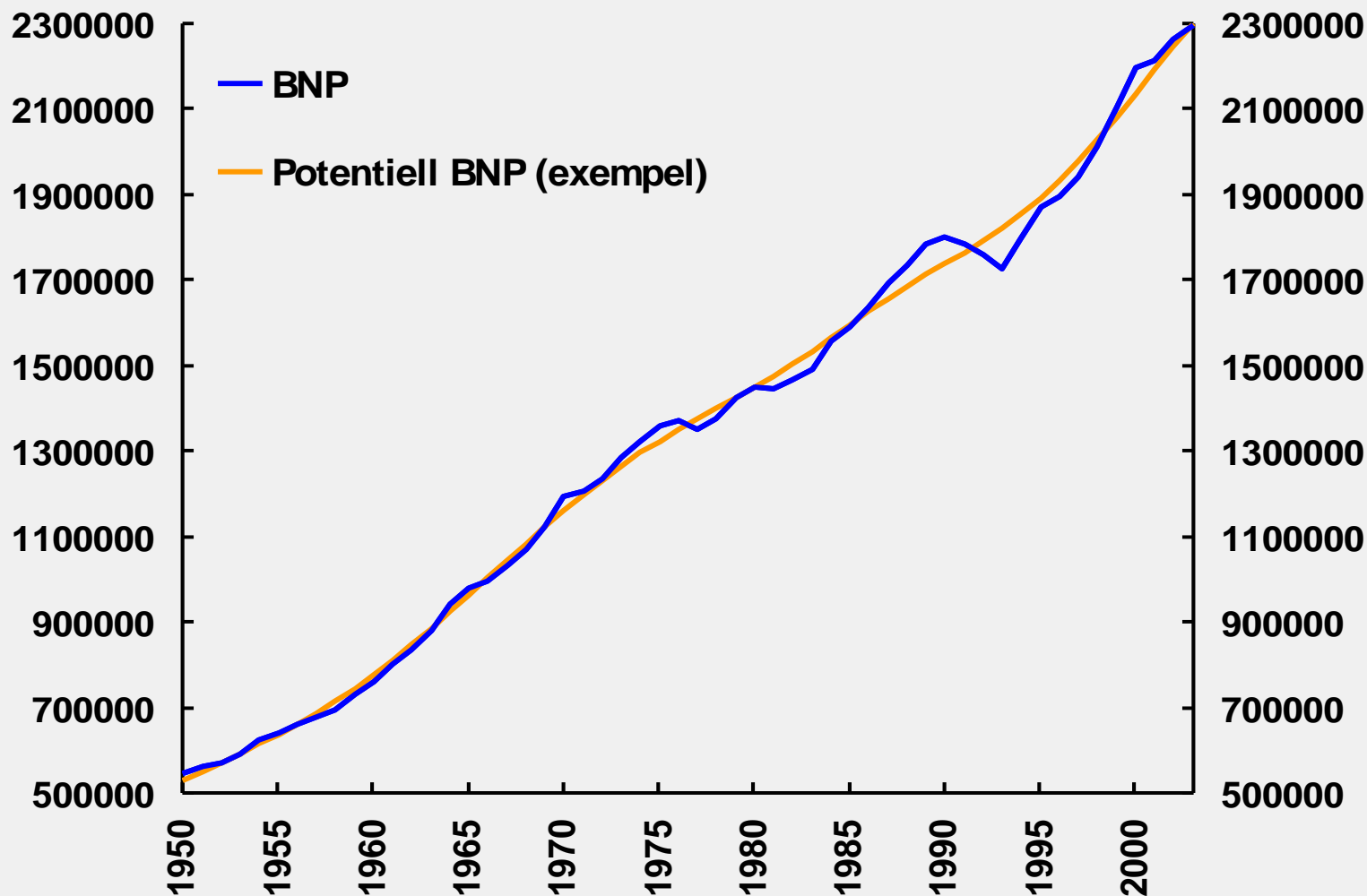
Growth in percent , mean values, 1993-2011



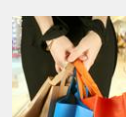
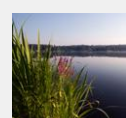
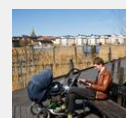
Potential GDP



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Source: SCB and the Swedish Riksbank



What is included in GDP?

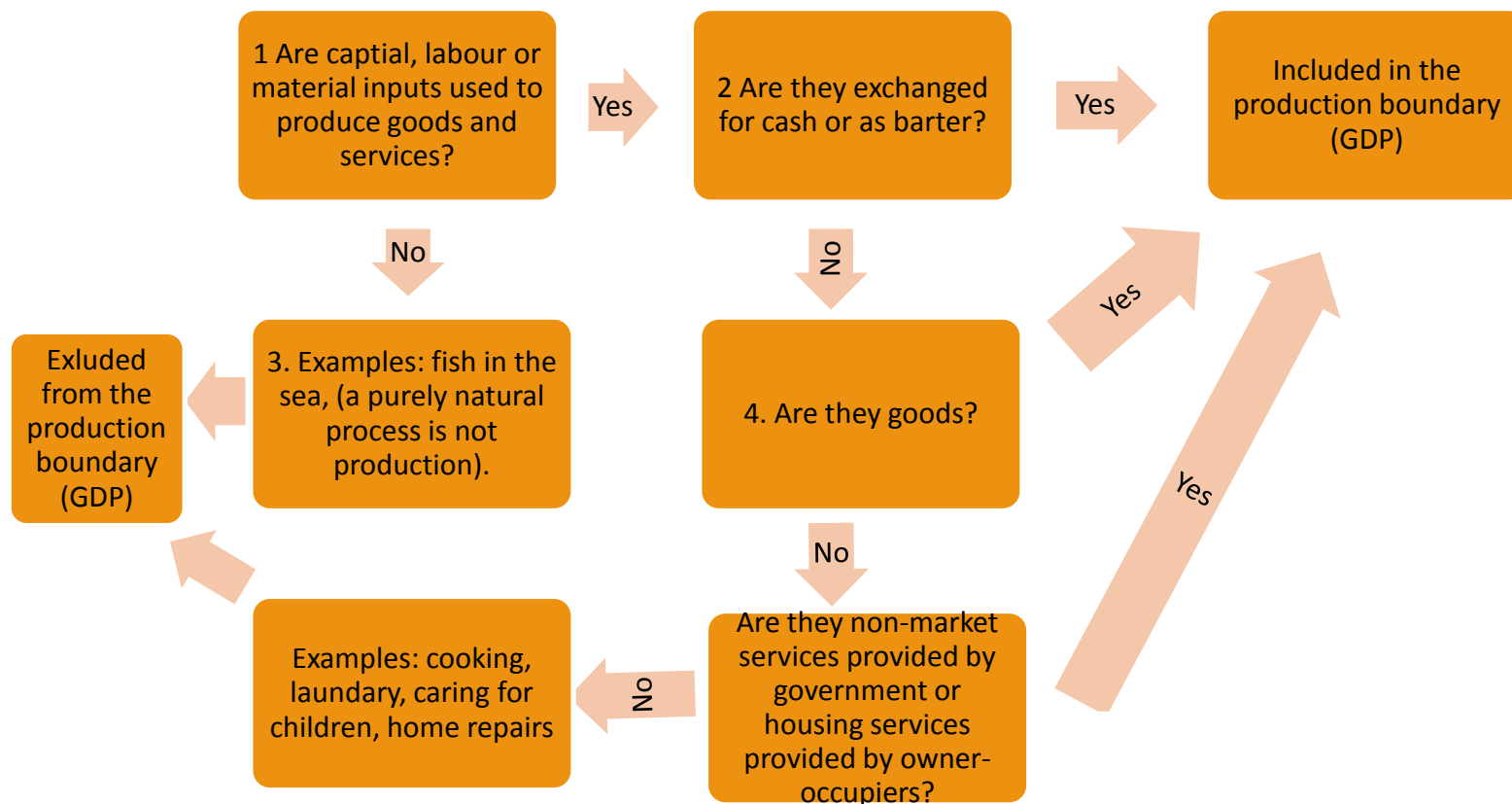
Market production

What about:

- Non-market production?
- Production of goods for own final use?
- Hidden economy?
- Illegal activities?
- Household services?
- Natural fish in the sea?



The production decision tree



Market production

Market output:

The total value of

Goods and services sold at economically significant prices (in EU > 50% of costs)

Goods and services bartered

Goods and services used for payments in kind

Often measured as the sales:

However need to adjust for changes in inventories of ***finished goods and work-in-progress*** intended for one of the above uses (*sales is not automatically output. Since not all goods will be sold in the same period as it's produced*)



Non market production

Non market output:

Goods and services produced for own final consumption or gross fixed capital formation

Goods and services supplied free, or at economically insignificant prices, to other institutional units

Changes in inventories of finished goods and work-in-progress intended for one of the above uses



Non market production, cont.

Example:

Government production .No value of output in market prices ***value of output is defined as sum of total costs***

Costs of:

Energy	25
Renting	200
Office needs	150
Staff	4000
Consumption of fixed capital	100

Output 4475



Illegal and hidden economy

Is also part of the production frontier.

However very difficult to measure.

In Sweden, hidden and illegal economy about 3% of GDP (illegal 0,15%)

Prostitution, drugs, smuggling, illegal gambling



Intermediate consumption

Goods and services *consumed* as inputs by a process of production. Ex. basic materials, electricity, IT services etc.

Attention to:

- change in inventories (IC=purchases *minus* change in inventories of goods and services for IC)
- gross fixed capital formation, for example machines, (longer life span and is not consumed during the period)



Production: Special Items

Wholesale and retail trade

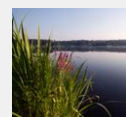
Output value = trade margin

+ sales of goods purchased for resale

- Purchases of goods for resale

(+change in inventories of goods for resale
including normal loss due to wastage and
theft)

=Trade margin



Some other special cases

- Car benefits and PC benefits
- Own produced software
- FISIM - Financial services indirectly measured.

Output=The sum of sales + the difference between interest received from borrowers and the interest paid to lenders.

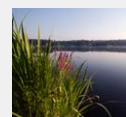
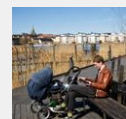


Sources: Manufacturing Industry and services

Main source: Structural Business Statistics (FEK),
Industrial production of goods (IVP)

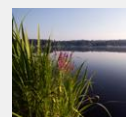
Adjustments made for NA definitions:

financial leasing, 1-2-year investments, software
bought, insurances, etc...



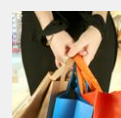
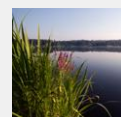
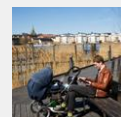
Statistical problems: Total coverage

Org.nr	Business- register	SBS	Income statements	Trade in goods
1				
2				
3				
4				
5				
6				
...				
N				



Statistical problems: Classification in different sources

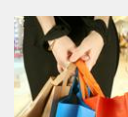
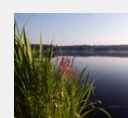
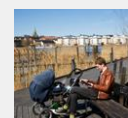
Company	Source in NA industry D	Source in NA industry E
1	Industry D	Industry E
2	Industry E	Industry





Statistical problems: Different classification

		Turnover statistics					SBS
Company	Industry	Q1	Q2	Q3	Q4	Year	Year
Company 1	A	300	300	400	400	1400	1600
Company 2	B	100	100	0	0	200	0

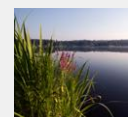
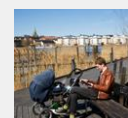




Statistical problems: Different statistical units in sources

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		Turnover statistics					SBS
Company	Industry	Q1	Q2	Q3	Q4	Year	Year
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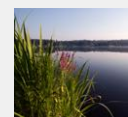
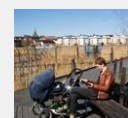


Exercise 1

Are the following activities part of production according to the NA definition?

1. Handing out passport by local government
2. The production and sales of marijuana
3. Polluting the environment
4. Gathering of raspberries in the woods
5. The natural growth of herring in the North Sea
6. Preparing a meal for your own family
7. The growth of trout at a trout-farm

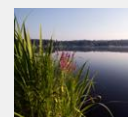
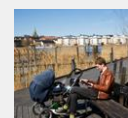
Yes	No



Are the following activities part of intermediate consumption according to the NA definition?

1. Wages and salaries for staff
2. IT-consultant services bought
3. Cars bought by a car retail dealer
4. Using of steel in the production of tools
5. A truck bought by a transport service company

Yes	No



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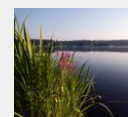
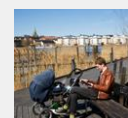
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Yes	No
x	
x	
	x
x	
	x
	x
x	

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Yes	No
	x
x	
	x
x	
	x



Exercise 2

Calculate output, IC and value added at current prices.

Sales of cars: 1400 300:-

Purchases:

Cost of raw material: 600 800:-

Energy costs: 101 400:-

Machine tools: 250 000:-

Inventories of raw material at the start of the period: 60 000:-

Inventories of raw material at the end of the period: 43 000:-

Inventories of finished goods at the start of the period: 200 000:-

Inventories of finished goods at the end of the period: 350 000:-



Exercise 2

Calculate output, IC and value added at current prices.

Production:	Σ	1 550 300
Sales of cars:	+	1 400 300
Inventories of finished products at the end minus at the start of the period:	+	150000
IC:	Σ	719 200
Cost of raw material:	+	600 800
Energy costs:	+	101 400
Inventories of raw material at the end minus at the start of the period:	-	-17000
VA		681 100
Machines=investment		250 000