

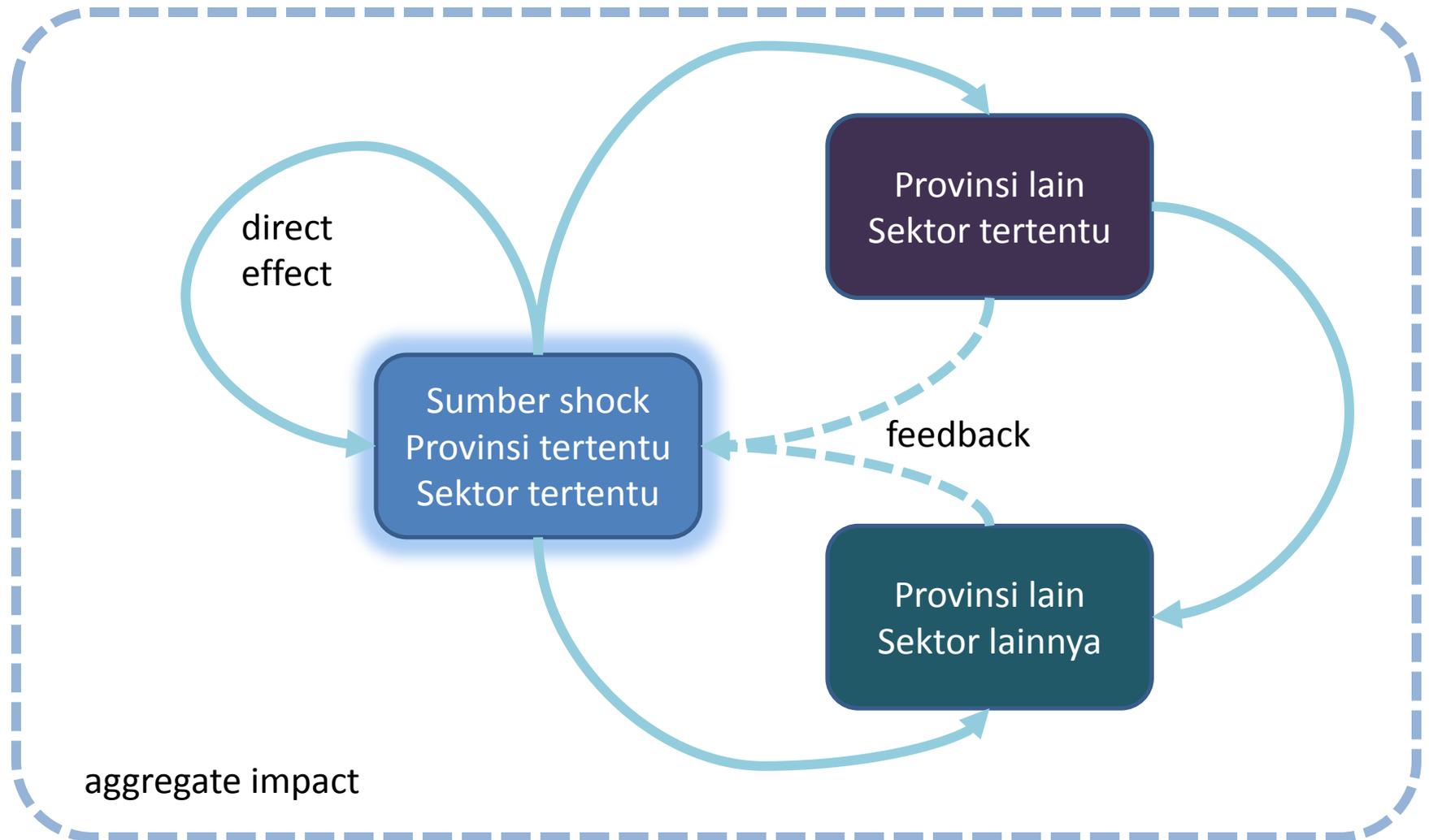
Simulation Guideline

Day 2 Session 1

- (1) IndoTERM and connectivity: A recap
- (2) Simulations guideline

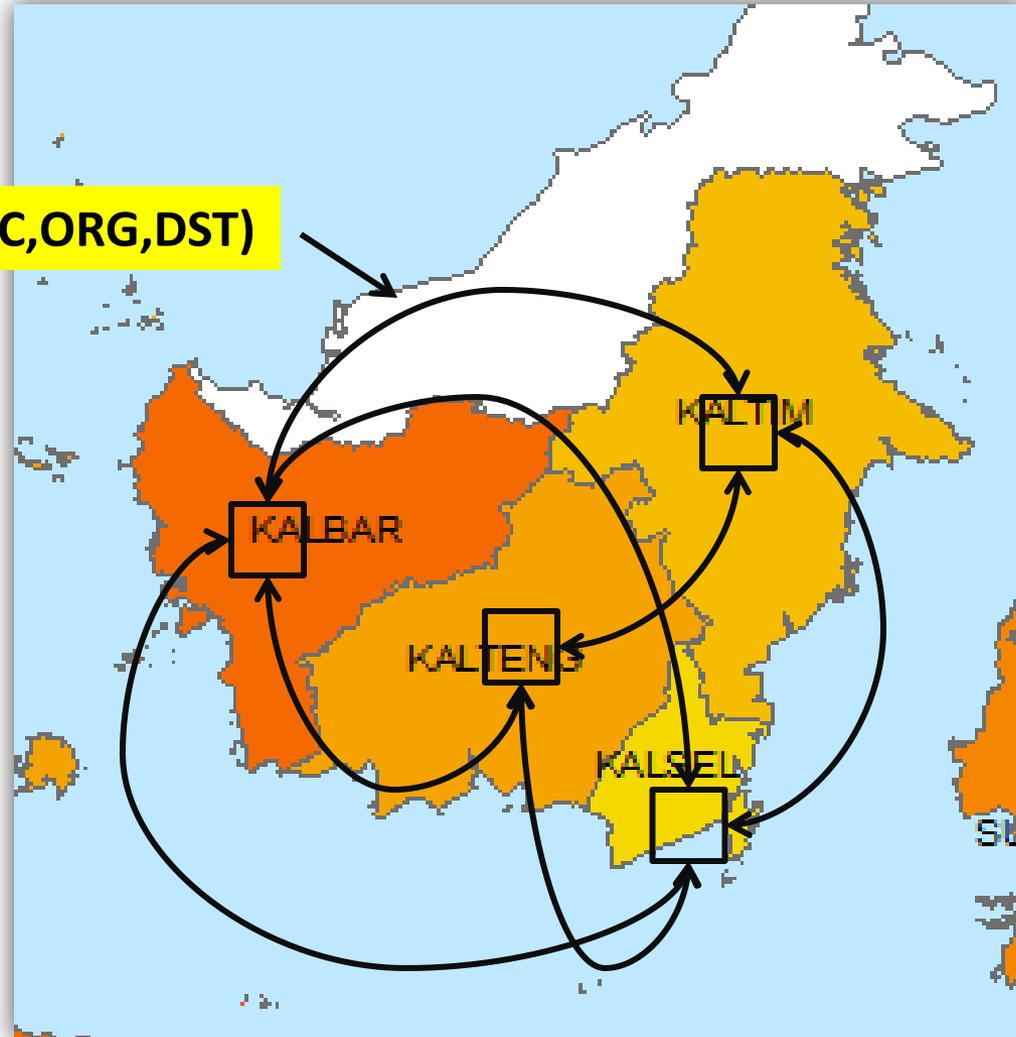
INDOTERM MODEL AS A TOOL TO ANALYZE CONNECTIVITY: A RECAP

IndoTERM: Dampak *economy-wide*

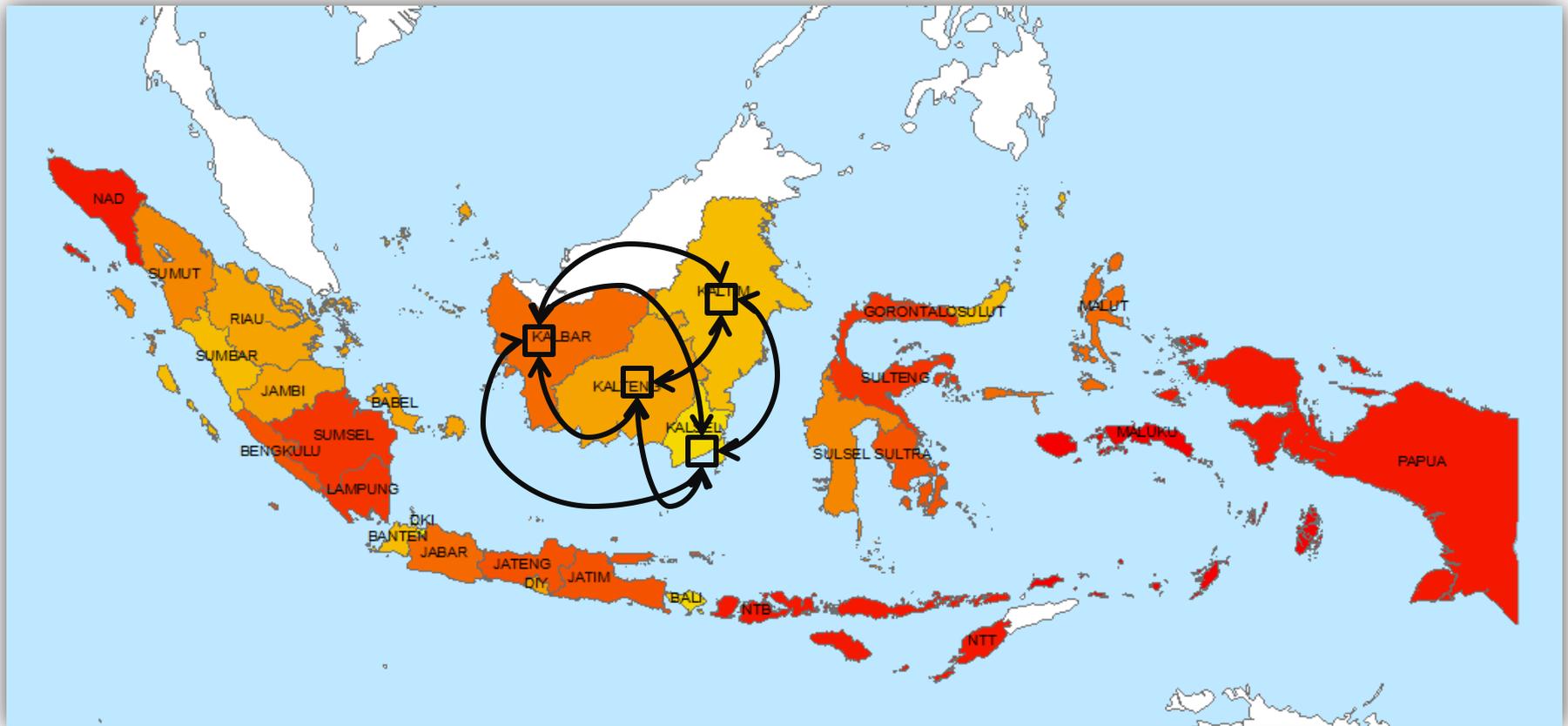


Inter-regional linkage *a.k.a. connectivity*

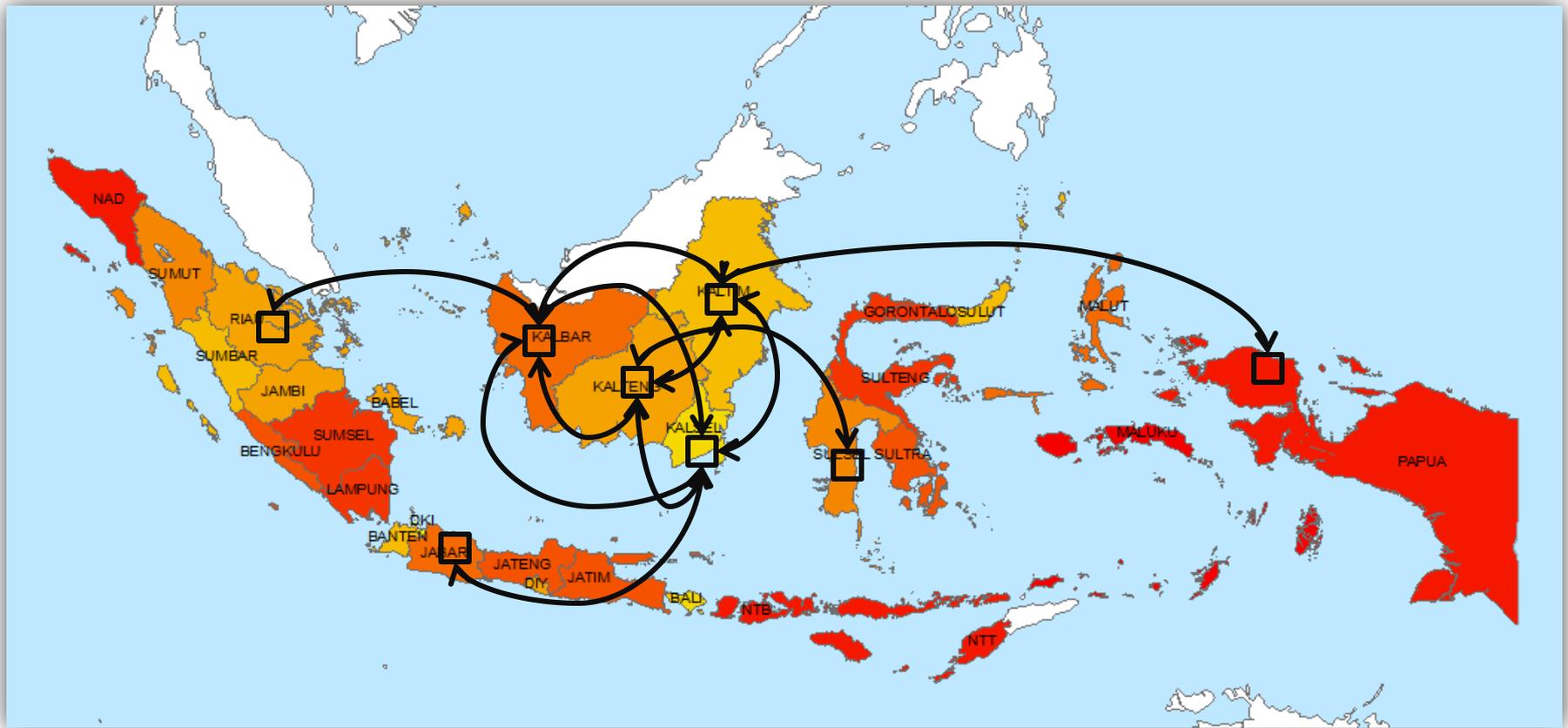
XTRAD(COM,SRC,ORG,DST)



Inter-regional linkage *a.k.a. connectivity*



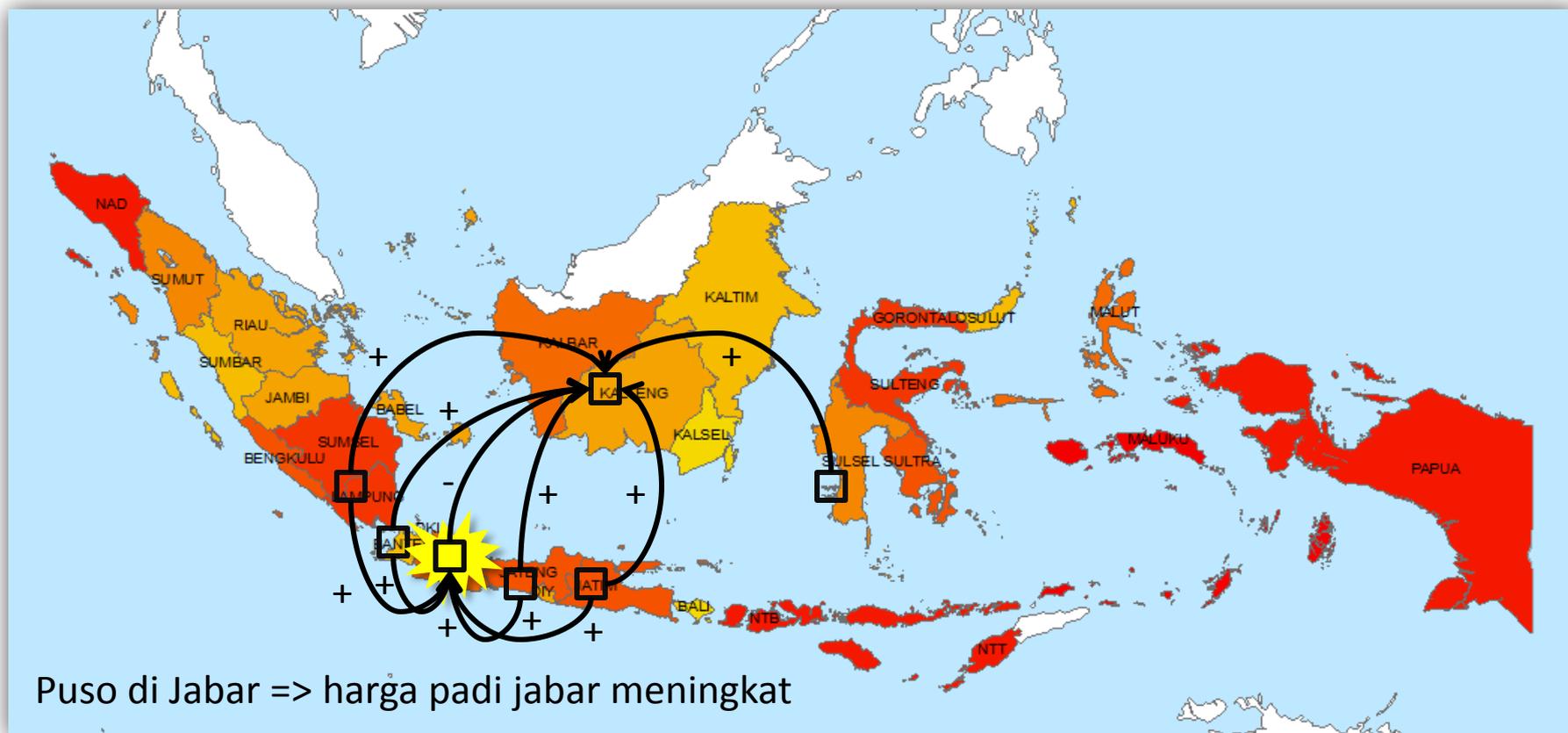
Inter-regional linkage *a.k.a. connectivity*



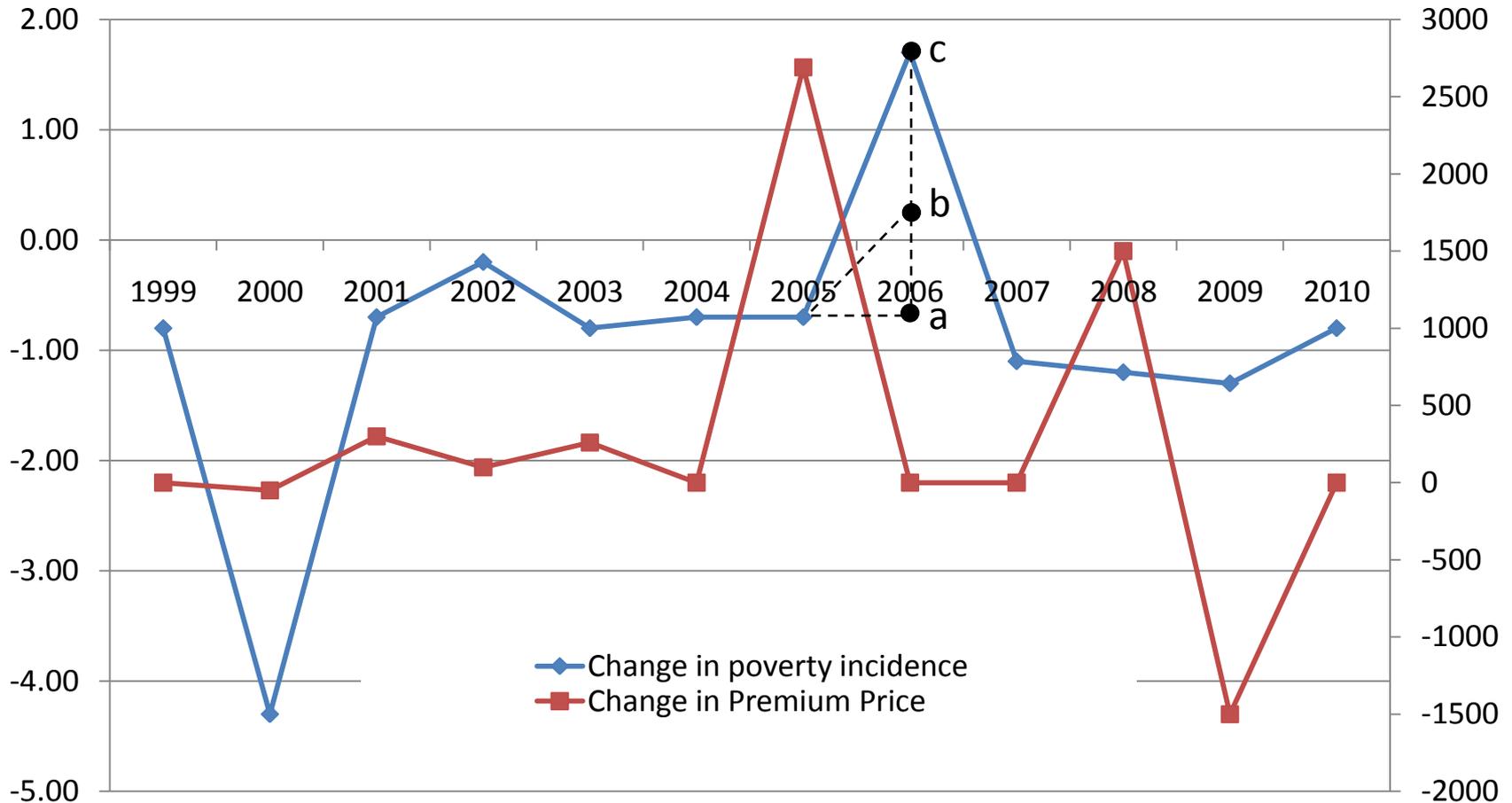
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3 SUMBAR	1	4	86	3	1	2	0	0	0	2	2	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
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18 KALSEL	0	0	0	1	0	1	0	0	0	2	10	1	1	0	5	1	1	70	3	0	0	0	1	1	1	1	1	0	0	1	
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26 NTB	0	0	0	0	0	0	0	0	0	1	2	1	0	0	3	0	0	0	1	0	0	0	0	0	0	42	0	0	0	0	
27 NTT	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	22	0	0	0	
28 MALUKU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	
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4 RIAU	3	11	3		2	6	1	1	3	22	15	9	22	0	15	2	2	2	10	1	0	0	2	1	1	1	0	0	0	1	
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6 SUMSEL	1	2	2	6	2		0	1	7	7	5	2	7	0	9	0	1	1	5	0	0	0	1	0	0	0	0	0	0	1	
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13 JATENG	1	2	1	2	0	1	0	0	1	16	53	7		7	14	1	2	1	3	0	0	0	1	1	1	1	0	0	0	1	
14 DIY	0	0	0	0	0	0	0	0	0	1	1	0	3		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
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22 SULTENG	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	3	0	0		1	0	0	0	0	0	0	0	
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29 MALUT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	
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Inter-regional-impact of shocks

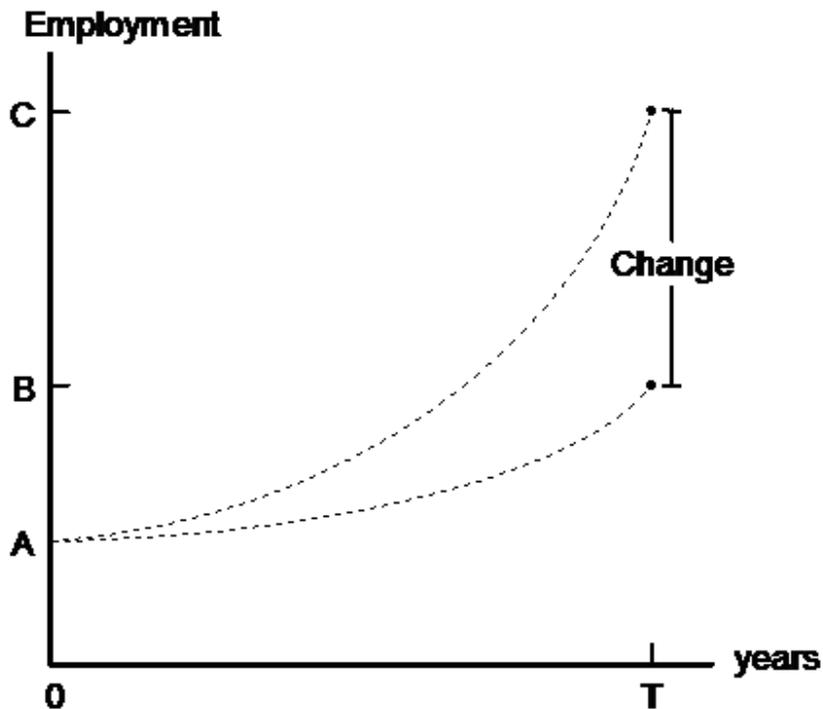


Hubungan sebab-akibat ... *dan pentingnya sebuah model*



Sumber: BPS dan ADB

Interpreting CGE simulation results



- Shock XXX
- Employment change = 5%
- Employment will be 5% higher if XXX compared to without XXX
- XXX = Reduce UMR by 25%
- Employment will be higher by 5% if UMR is reduced by 25% (compared to without UMR being reduced)

IndoTERM: Area Aplikasi

Analyzing regional impact of national or international shock/policies

International oil price shocks

Import Tariff

Nation-wide indirect taxes

Analyzing nation-wide impact of region-specific shocks

Regional policies (regional taxes)

Regional specific productivity shocks (draught)

Analyzing impact of improving connectivity

Efficiency in transport services

Specific source-destination transport efficiency

Closing the model

Each equation explains a variable.

More variables than equations.

Endogenous variables: explained by model

Exogenous variables: set by user

Closure: choice of exogenous variables

Many possible closures

Number of endogenous variables = Number of equations

One way to construct a closure:

(a) Find the variable that each equation explains; it is endogenous.

(b) Other variables, not explained by equations, are exogenous.

TERM equations are named after the variable they SEEM to explain. TABmate *Tools..Closure* uses equation names to make automatic closure.

Variables not explained by any equation
 = possible exogenous list = automatic closure

Dimensions	Var	Equ	Exo	Unexplained
COM*DST	12	10	2	fgov_s tuser_su
COM*ORG	4	3	1	pfimp
COM*SRC	4	1	3	fpexp fqexp tuser_ud
DST	26	23	3	fgovtot flab_io nhou
HOU*DST	7	6	1	xhouhtot
IND	6	5	1	bint_scd
IND*DST	38	28	10	acap alab_o alnd aprim atot delPTXRATE finv1 fstocks xcap xInd
MAR*ORG*DST	3	2	1	atradmar_cs
OCC	8	6	2	flabsup_id flab_id
OCC*DST	8	7	1	flabsupA
Scalar	28	22	6	capslack fgovgen flab_iod houslack invslack phi

! Swaps for short-run closure

! Old exog New exog

swap xhouhtot = fhou; ! Make regional consumption follow regional wage income

swap houslack = natfhou; ! Fix national propensity to consume

swap invslack = NatMacro("RealInv"); ! Fix national real investment

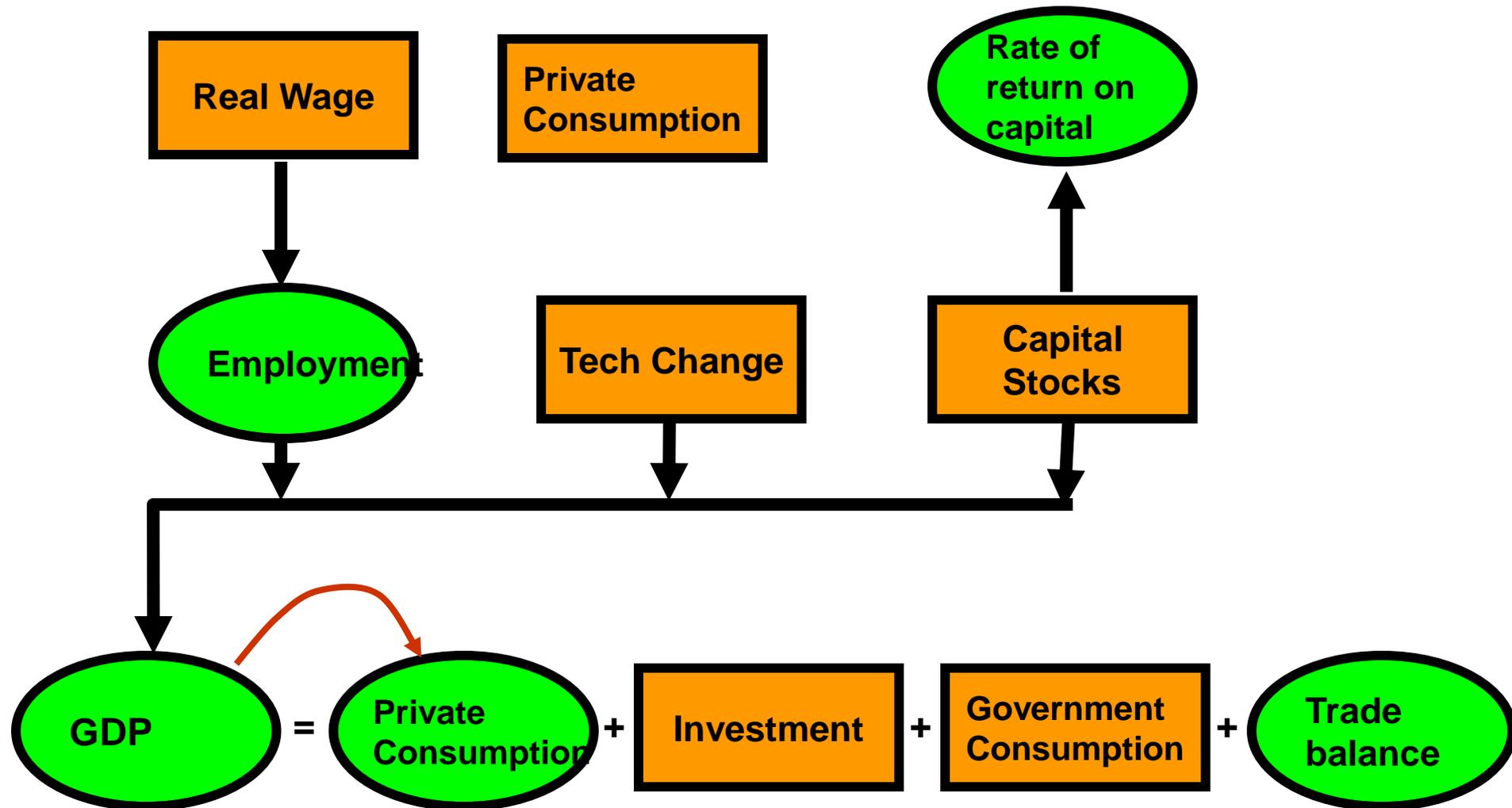
swap flabsup_id = realwage_id; ! National real wage fixed for all OCC; national labour supply elastic

Source: TERM.PPT, CoPS, Monash University

Causation in Short-run Closure

Exogenous

Endogenous



Length of run ,T

T is related to our choice of closure.

With shortrun closure we assume that:

- T is long enough for price changes to be transmitted throughout the economy, and for price-induced substitution to take place.
- T is not long enough for investment decisions to greatly affect the useful size of sectoral capital stocks. [New buildings and equipment take time to produce and install.]

T might be 2 years. So results mean:

a 10% consumption increase might lead to employment in 2 years time being 1.24% higher than it would be (in 2 years time) if the consumption increase did not occur.

A possible long-run closure

- **Capital stocks adjust to maintain fixed rates of return (gret).**
- **Fixed Investment/Capital ratios**
- **Aggregate employment is fixed and the real wage adjusts.**
- **BOT/GDP fixed instead of real household consumption**
- **real government moves with real household**

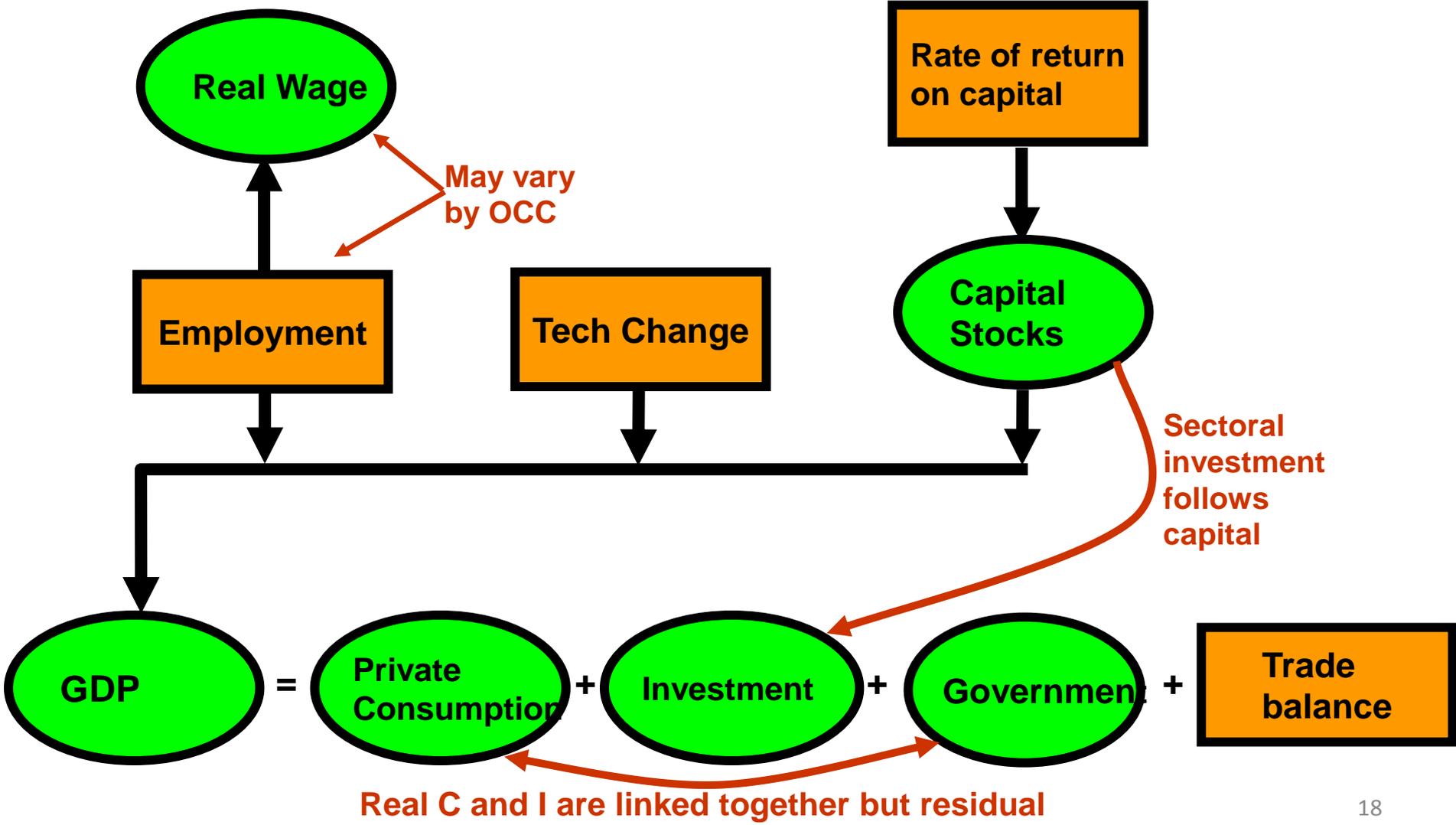
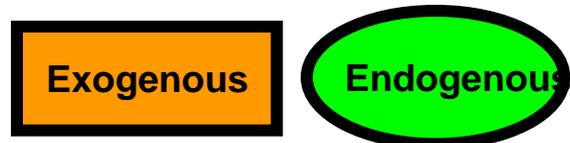
! Swaps for long-run closure

! Old exog New exog

swap	xcap = fgret;	! Capital stocks determined endogenously
swap	finv1 = ggro;	! Sectoral Investment follows xcap
swap	xhouhtot = fhou;	! Consumption follows wage income, by reg
swap	houslack = shrBoTnom;	! Fix nominal BOT/GDP nationally
swap	fgovtot = fgovtot2;	! Link real gov to real hou
swap	flabsup_id = xlab_id;	! fix national employment of each OCC

Causation in Long-run Closure

Source: TERM.PPT, CoPS, Monash University



Different closures

Many closures might be used for different purposes.

No unique natural or correct closure.

Must be at least one exogenous variable measured in local currency units.

Normally just one — called the *numeraire*.

Often the exchange rate, ϕ , or the CPI.

One or more quantity variables must be exogenous, eg:

- primary factor endowments
- final demand aggregates

Three National Macro Don't Knows

- *Absolute price level.* Numeraire choice determines whether changes in the real exchange rate appear as changes in domestic prices or in changes in the exchange rate. Real variables unaffected.
- *Labour supply.* Closure determines whether labour market changes appear as changes in either wage or employment.
- *Size and composition of absorption.* Either exogenous or else adjusting to accommodate fixed trade balance. Closure determines how changes in national income appear.

Simulation strategies: A guideline 1

Categories	Variables	Example of situations	Variable description	Variables in CMF	Dimension
International origins	Export demand	Global recessions or booms	Export demand shifter	fqexp	COM*SRC
	International price	International commodity price shocks	World price of import	pfimp	COM*ORG
Export price shifter			fpexp	COM*SRC	
Policies	Taxes, subsidies, and tariff	Reduction of fuel subsidy, export taxes, import tariff	sales tax by commodity and source	tuser_ud	COM*SRC
			Sales tax by commodity and destination	tuser_su	COM*DST
			Sales tax by commodity and users	tuser_sd	COM*USR
			Sales tax (others)	tuser*	COM*SRC*USR*DST
	Government consumption	Increase in government consumption on specific commodities	Government demand shifter	fgov_s	COM*DST

Note: *) endogenous, or omitted, **) can be created for specific commodities

Simulation strategies: A guideline 2

Categories	Variables	Example of situations	Variable description	Variables in CMF	Dimension
Supply side	Productivity shocks	Draught, disaster, energy efficiency, technical progress, and so on.	all input technical change	atot	IND*DST
			all intermediate input technical change	bint_scd	IND
			labor saving technical change	alab_o*	IND*DST
			capital saving technical change	acap	IND*DST
			land saving technical change	alnd	IND*DST
			all primary input technical change	aprim	IND*DST
			commodity specific leontief	aint_s*	COM*IND*DST
	Supply of capital, land	Increase in capital (investment), or land supply	capital use by industry and regions	xcap	IND*DST
land use by industry and regions			xlnd	IND*DST	
Connectivity	transport efficiency improvement	reduction of transport cost in delivered price	transport cost**	a11trcost	MAR*ORG*DST
		reduction in iceberg transport cost	iceberg cost**	a12icecost	ORG*DST

Note: *) endogenous, or omitted, **) can be created for specific commodities