Study on the driving force of Regional GDP

——Based on regional input-output table

Li Shantong

Wu Sanmang

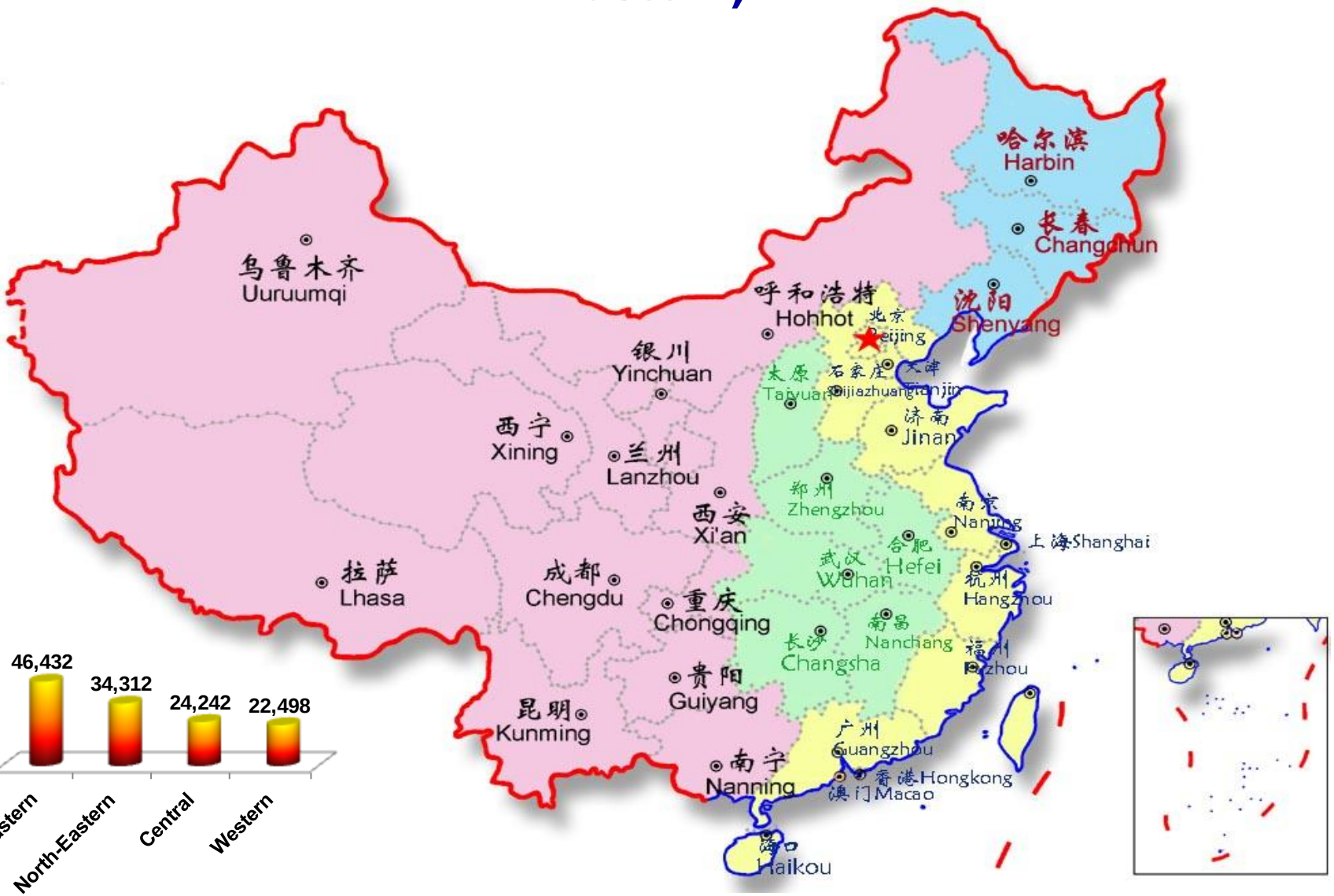
He Jianwu

Development Research Center of the State Council (DRC)

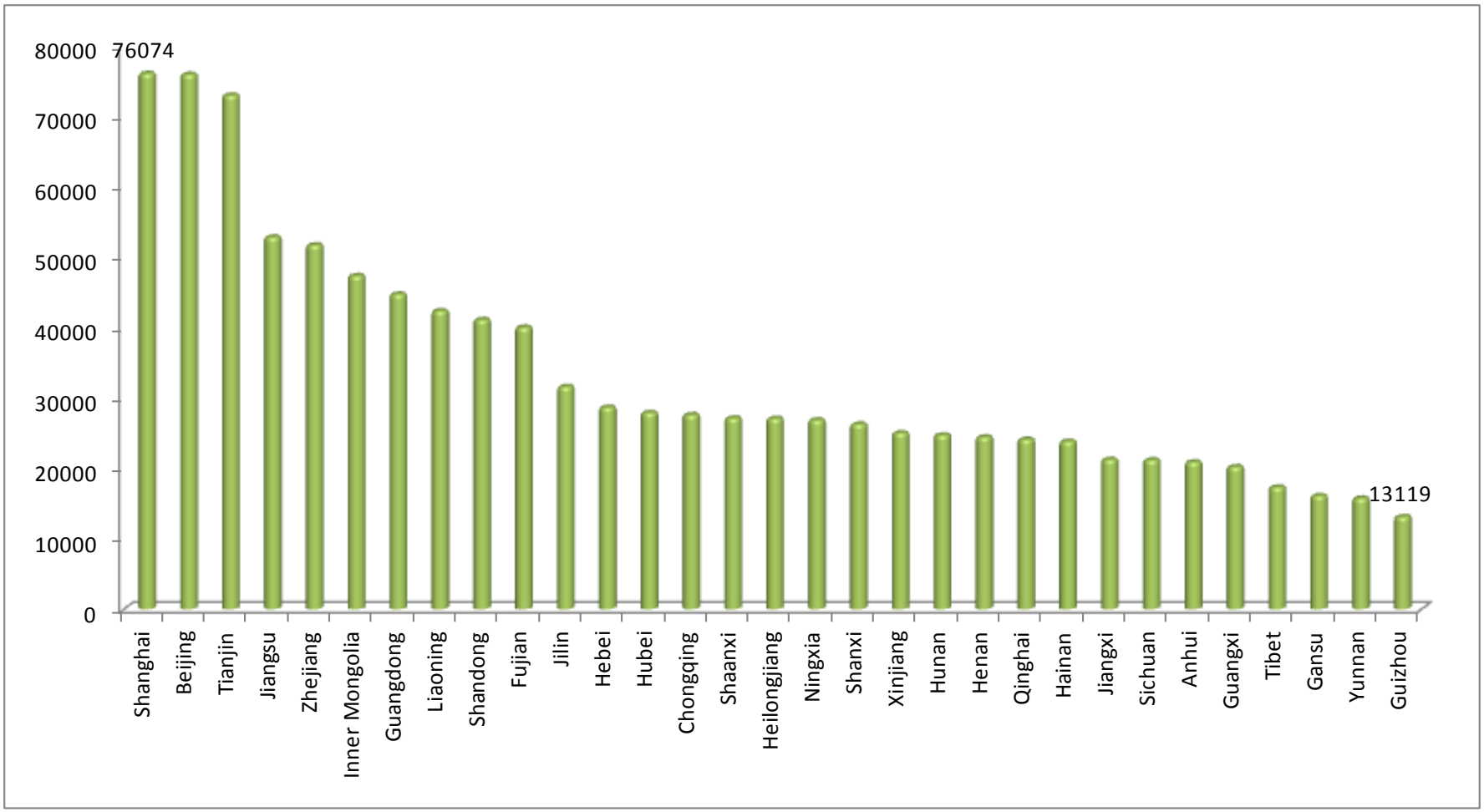
Outline

1. Introduction
2. Data and Model
3. Result and Conclusion

Four Regions(Western, North-Eastern, Central, Eastern)



High regional disparity-GDP per capita



Regional IO model

	Sectors		Final demand					Import	Inflow from other provinces	Total Output
		$1,2,\cdots,n$	Consumption	Capital formation	Export	Outflow to other provinces	Total Final demand			
Sectors	$1,2,\cdots,n$	x_{ij}	c_i	in_i	ex_i	od_i	Y_i	$-M_i$	$-Z_i$	X_i
VA		V_j								
Total input		X_j								

$$X = (I - A)^{-1}(Y - M - Z)$$

Regional IO model

	Sectors		Final demand					Import	Inflow from other provinces	Total Output
		1,2,⋯,n	Consumption	Capital formation	Export	Outflow to other provinces	Total Final demand			
Sectors	Local	x_{ij}^{d}	c_i^d	in_i^d	ex_i^d	od_i^d	Y_i^d			X_i
	Import	x_{ij}^{m}	c_i^m	in_i^m	ex_i^m	od_i^m	Y_i^m	M_i		
	Inflow	x_{ij}^{z}	c_i^z	in_i^z	ex_i^z	od_i^z	Y_i^z		Z_i	
VA		V_i								
Total input		X_i								

$$\sum_{j=1}^{n} x_{ij}^{d} + Y_i^{d} = X_i$$

$$X = (I - A^{d})^{-1} Y^{d}$$

Decomposition of Regional GDP

$$r_j = \frac{V_j}{X_j},$$

$$GDP = \sum_{j=1}^{n} V_j = \sum_{j=1}^{n} r_j X_j = RX \qquad X = (I - A^d)^{-1} Y^d$$

$$GDP = RX = R(I - A^d)^{-1} Y^d \qquad Y^d = C^d + IN^d + EX^d + DO^d$$

$$GDP = R(I - A^d)^{-1}(C^d + IN^d + EX^d + OD^d)$$

$$= R(I - A^d)^{-1} C^d + R(I - A^d)^{-1} IN^d + R(I - A^d)^{-1} EX^d + R(I - A^d)^{-1} OM^d$$

$$= GDP^C + GDP^{IN} + GDP^{EX} + GDP^{OD}$$

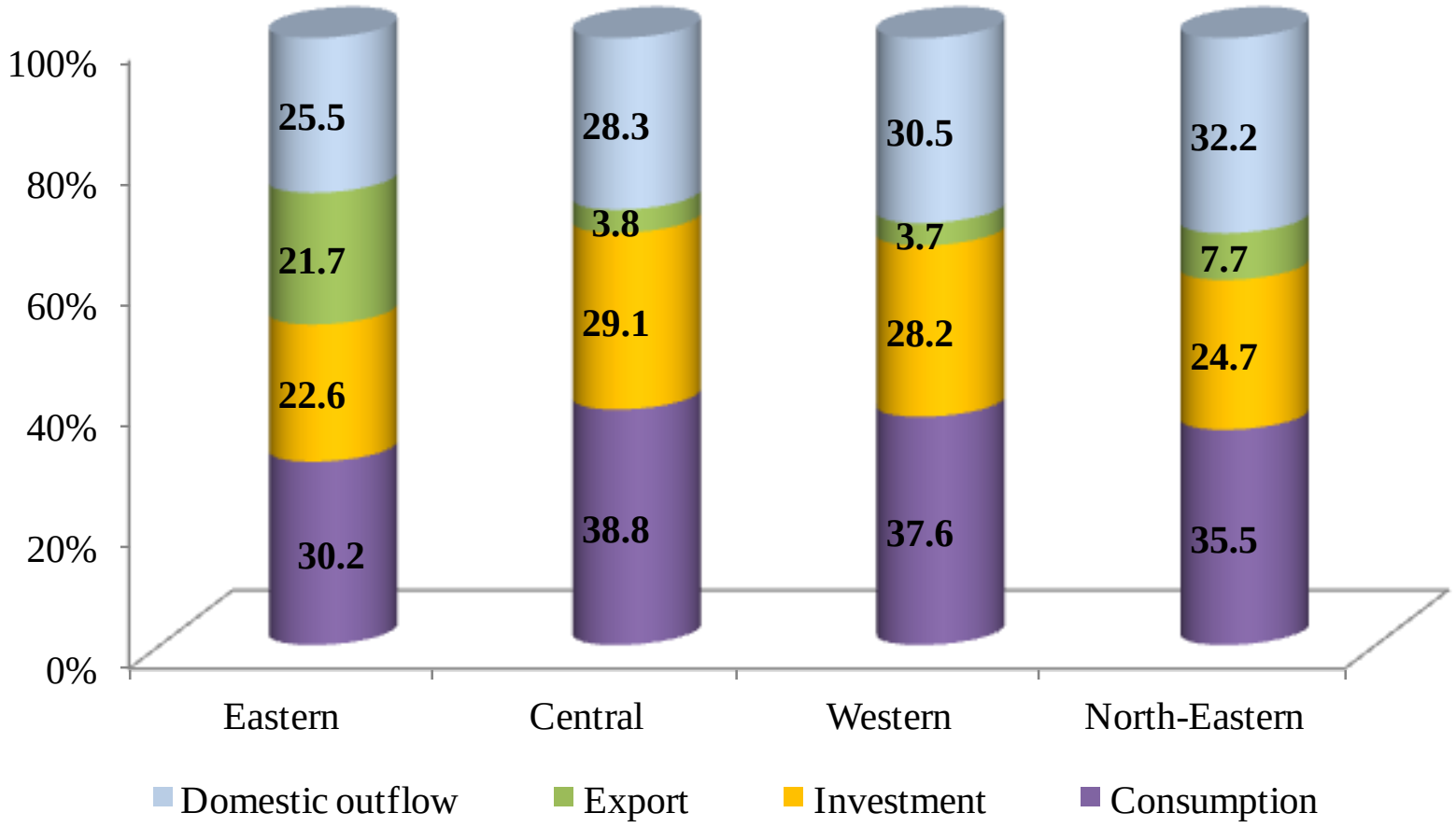
Regional IO Tables in China

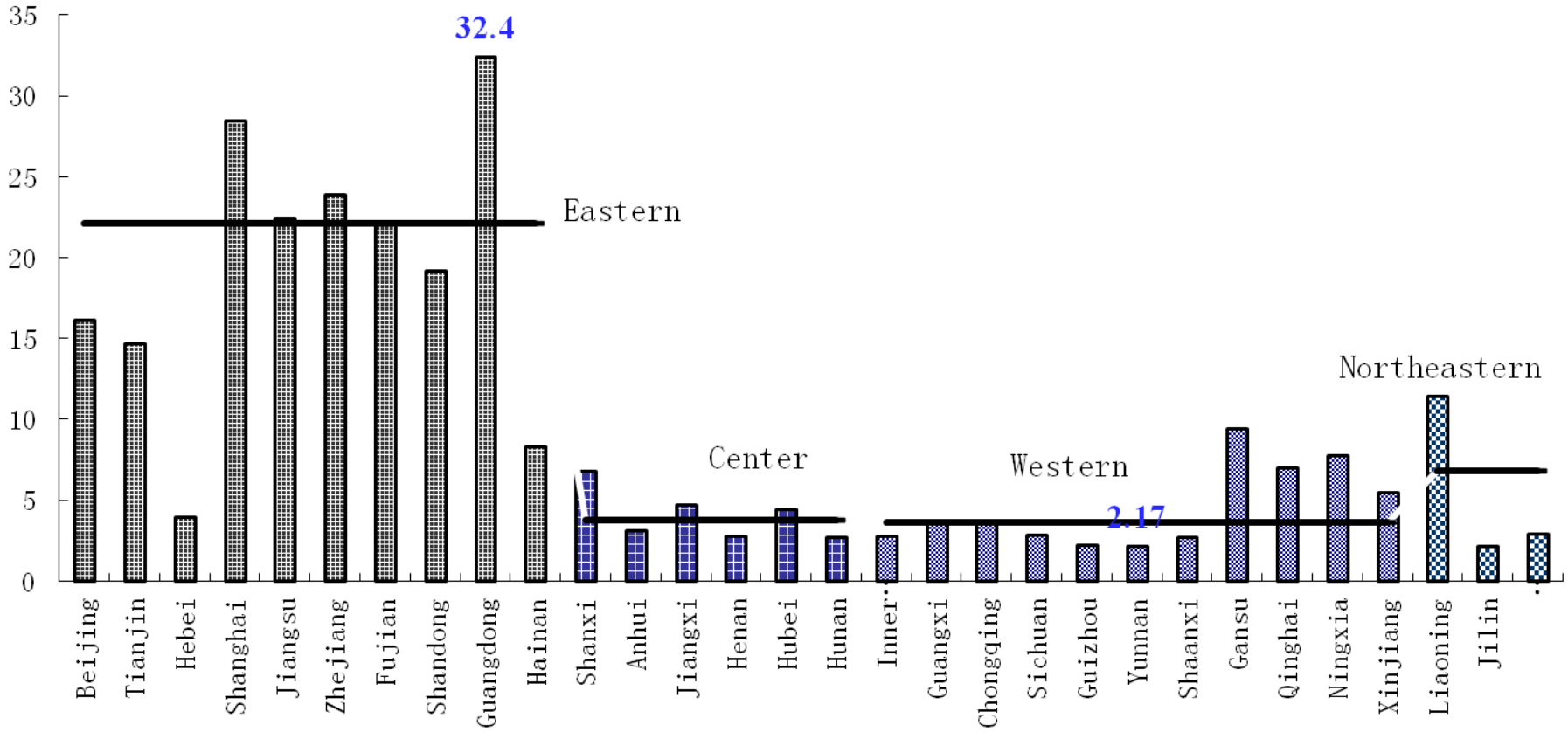
- Years
  - 1987, 1992, 1997, 2002 and 2007
- Region dimension
  - 30 provinces
  - Sectors
  - 42 sectors (2007)

Revised regional IO table

- Breakdown international and domestic trade into four categories for all regional IO table
  - Export
  - Import
  - Domestic Outflow to all other provinces
  - Domestic Inflow from all other provinces
- Transferring competitive table to non-competitive table
  - Separate import from intermediate input and final demand
  - Separate domestic inflow from intermediate input and final demand

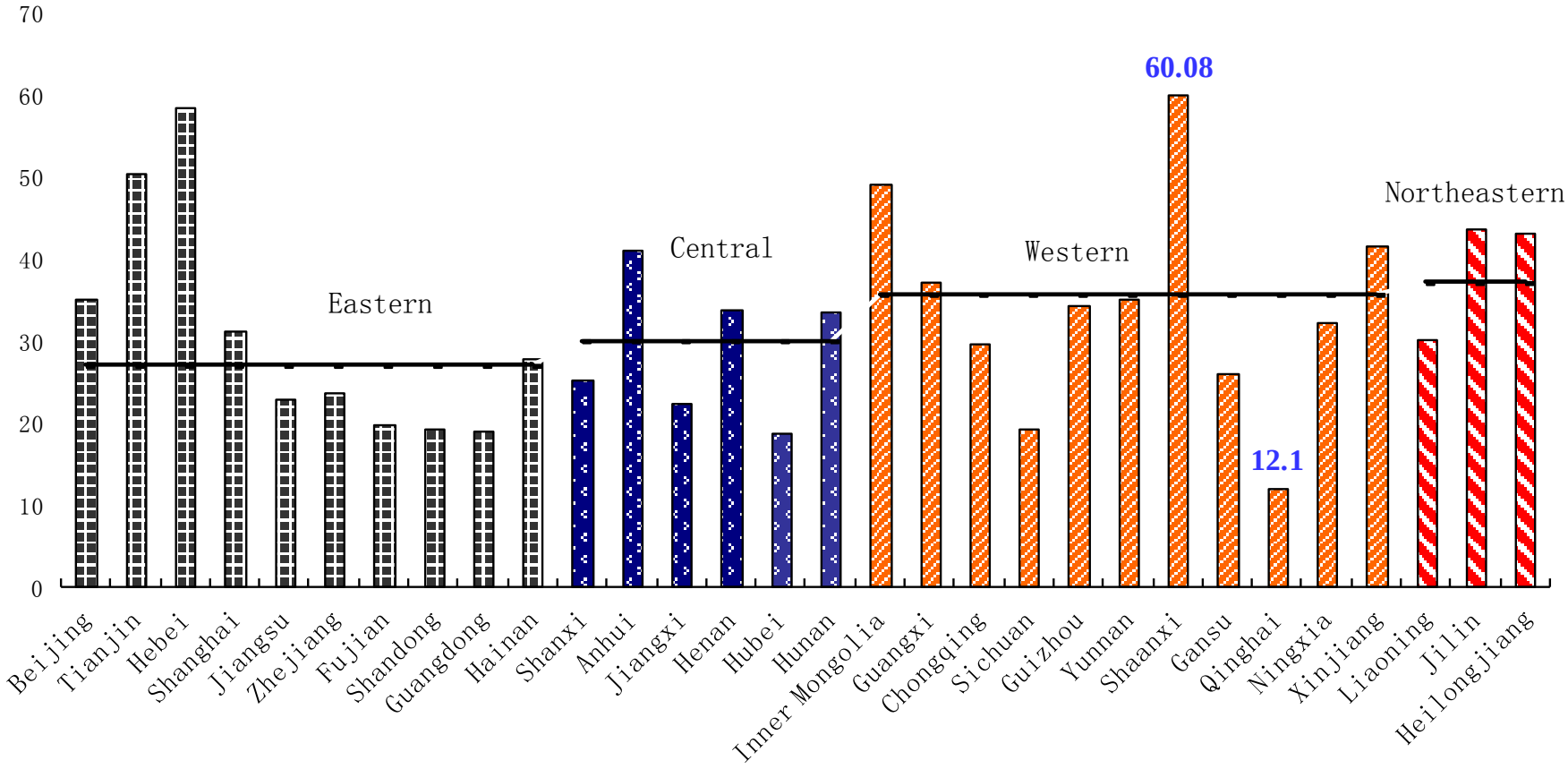
Contribution of four driving forces to regional GDP, 2007



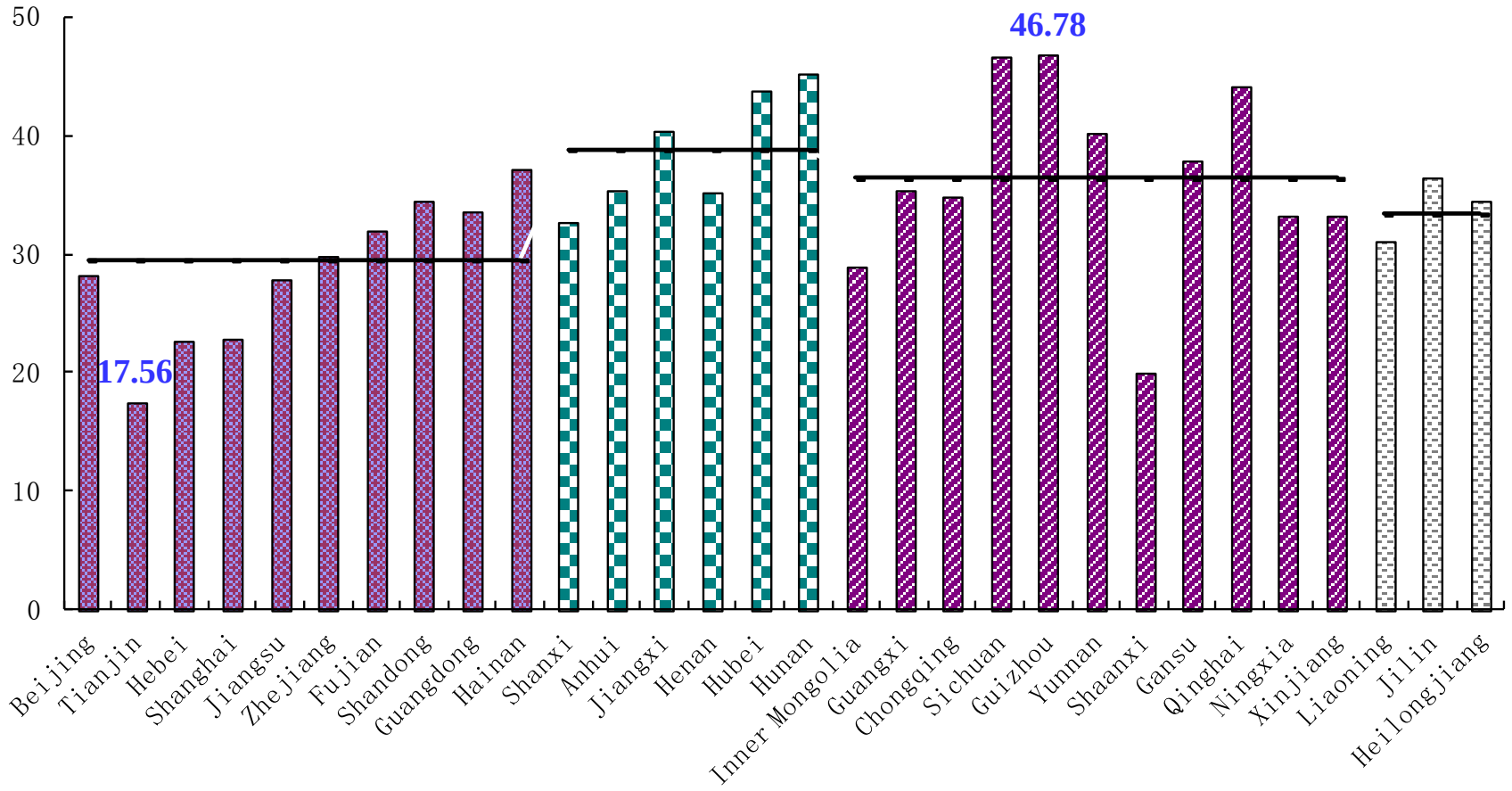


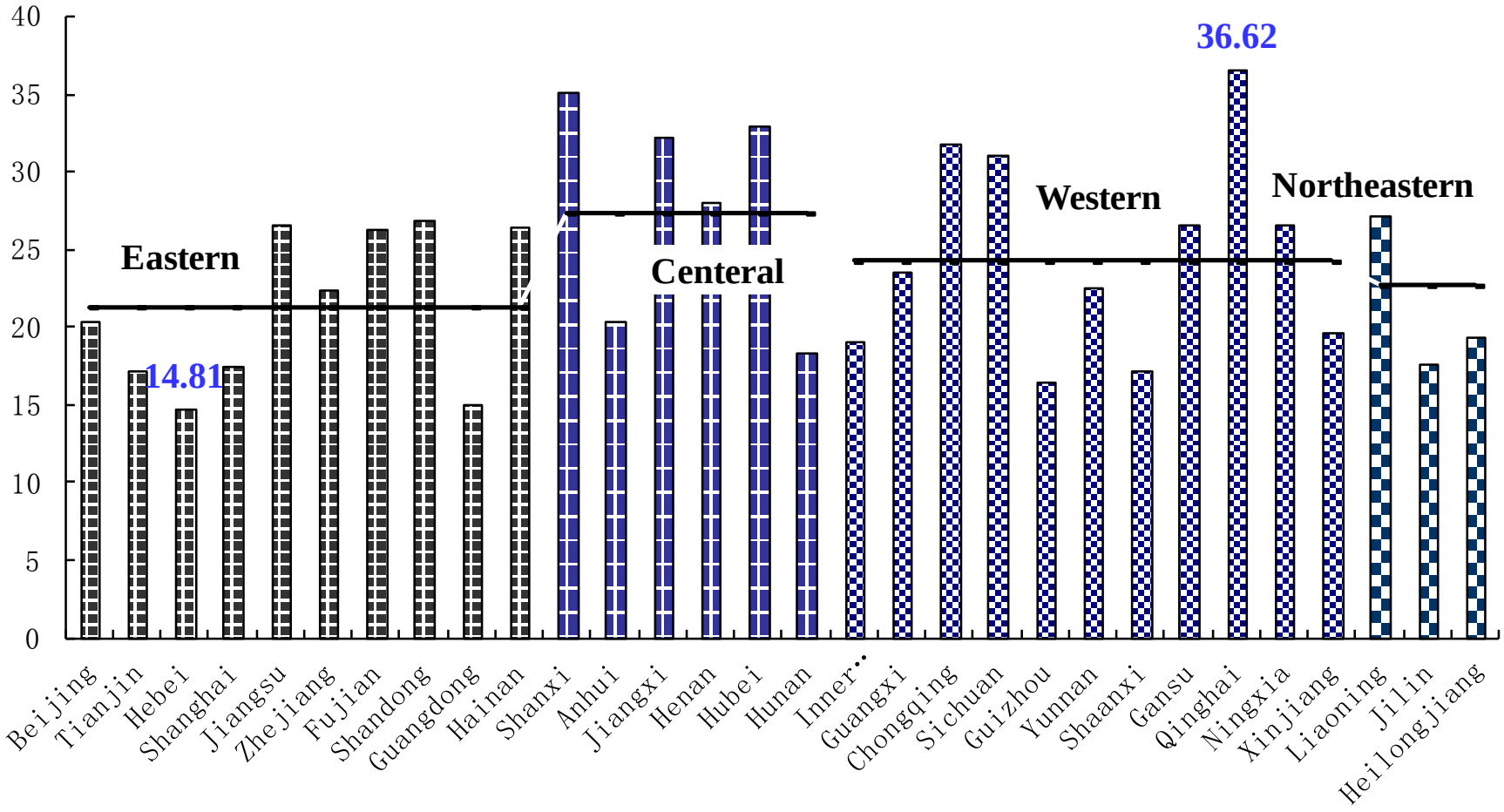
Contribution of Export to GDP by provinces (%, 2007)

Contribution of domestic outflow to GDP by provinces (%, 2007)



Contribution of consumption to GDP by provinces (%, 2007)





Contribution of Investment to GDP by provinces (%, 2007)

Further work

- Compare the results in different years
- Construct multi-regional input output model


Thanks for
your attention!