Identifying Heterogeneity in the Production Components of Globally Engaged Business Enterprises in the United States

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How to measure impact of globalization?

- Increased need to assess impacts of globalization/global value chains on national economies
- One approach to measurement:
  - Trade in Value Added (TiVA)-led by OECD-WTO
- Requires global Supply-Use tables (SUTs)
  - National tables linked together through bilateral international trade flows
  - New work to develop "Extended" SUTs that account for firm-level heterogeneity
    - E.g., ownership characteristics; MNE/Non; exporter/non-exporter

Proof-of-concept analysis on heterogeneity

- To motivate and validate longer-run BEA-Census link project on extended SUT
- Use data available to BEA: tabulations from tax returns for all U.S. firms and from BEA's MNE and SUT
- Decomposition of gross output for
  - Globally engaged firms (MNE)
  - Entirely domestic firms

Highlights of our analysis

- Heterogeneity in output between MNEs and non-MNEs
  - Value added smaller share of output for foreign firms
  - Trade flows larger share of output for foreign firms
  - Exports and imports larger share of output for MNEs
  - Wage premium and higher labor productivity for MNEs
  - Value added smaller share of output for MNEs that export

BEA proposal for extended SUT

	A	B	C	D	E	F	G	H	I	J	K
1	**Preliminary BEA Proposal for Extended Use Table**										
2				Industry 1			Industry 2			Exports	Other final uses
3				Multinational		Non-multinational	Multinational		Non-multinational		
4				U.S. parent	U.S. affiliate		U.S. parent	U.S. affiliate			
5	Industry 1	Multinational	U.S. parent								
6			U.S. affiliate								
7		Non-multinational									
8	Industry 2	Multinational	U.S. parent								
9			U.S. affiliate								
10		Non-multinational									
11	Total domestic intermediate consumption										
12	Total imported intermediate inputs										
13	Total intermediate consumption										
14	Value added										
15	*of which:*										
16	Compensation of employees										
17	Gross operating surplus										
18	*of which:*										
19	Consumption of fixed capital										
20	Taxes on production and imports										
21	Total output										

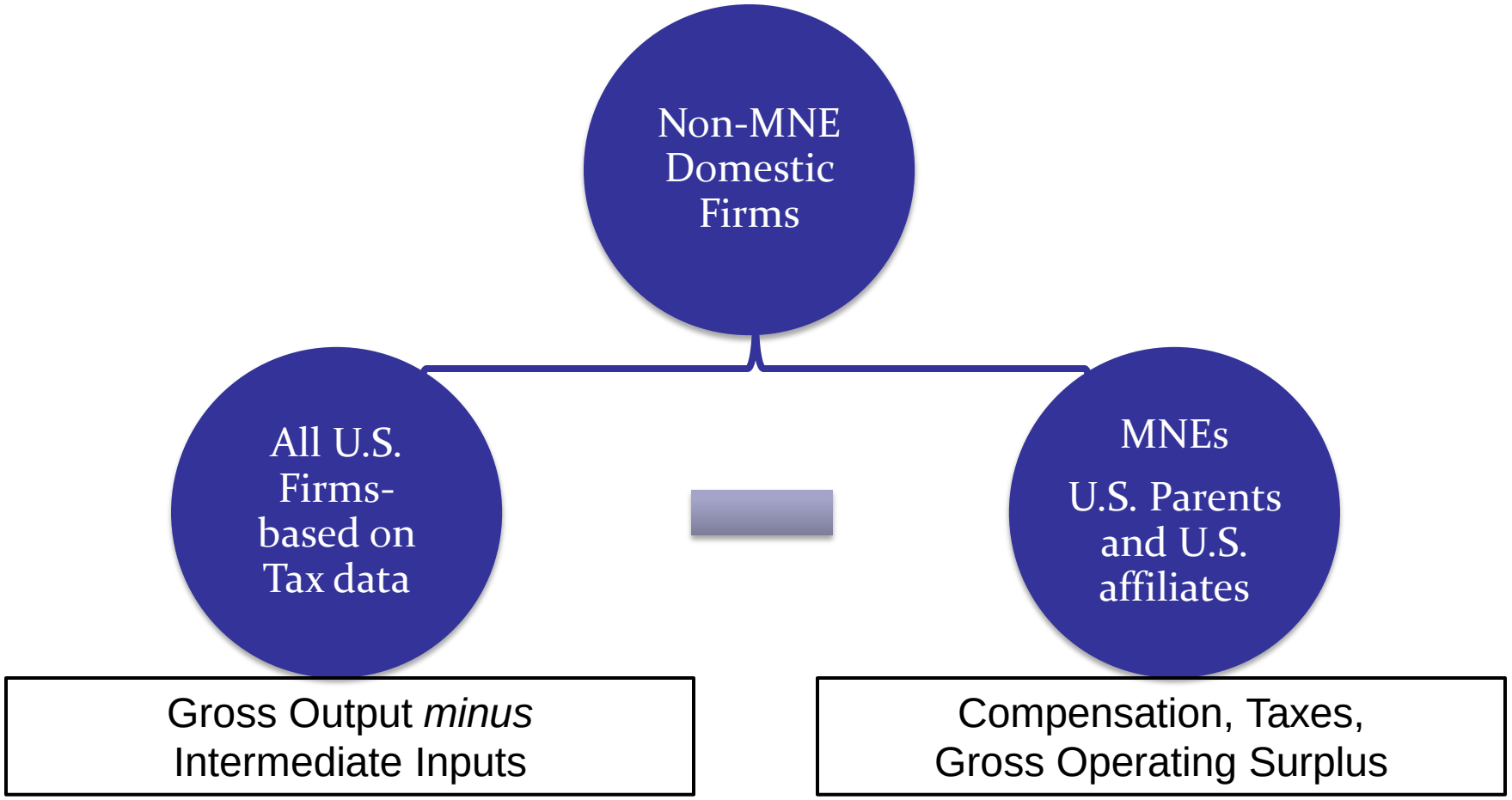
Other work on heterogeneity

- Importance of heterogeneity-Hymer (1976)
- Modeling heterogeneity-Melitz (2013)
- Larger MNE trade flows-Bernard, Jensen and Schott (2009),Barefoot and Koncz-Bruner (2012), Zeile (1998)
- Higher MNE productivity -Doms and Jensen (1998), Helpman, Melitz, and Yeaple (2014)
- Foreign vs. domestic composition of output
  - VA typically a lower share of output
  - Trade flows typically larger share of output
  - Piacentini and Fortanier (2015)-EU plus
  - Ahmad and Araujo (2011)-Turkey
  - Ma, Wang, and Zhu (2015)-China

Methodology for decomposing output

- U.S. parent and affiliate data
  - U.S. parents minus majority foreign owned
  - BEA surveys of U.S. MNEs
  - Value added directly measured as sum of components
- Non-MNEs=All U.S. firms minus MNEs
  - IRS Statistics of Income tax return data
  - BEA IO-Employee comp and trade flows
  - Value added indirectly measured as Output-Intermediate inputs

Methodology for decomposing output



Early results for all private industries

	A	B	C	D	E	F	G
1	Extended Supply/Use Tables for All Private Industries, 2011						
2	(billions of dollars)						
3							
4			Multinational		Non-multinational	Exports of goods	Other final uses
5			U.S. parent	U.S. affiliate			
6	Multinational	U.S. parent				515	8,578
7		U.S. affiliate				317	3,247
8	Non-multinational					667	20,600
9	Total domestic intermediate consumption and imports of services		5,706	2,175	10,200		
10	Total imports of goods		594	643	1,003		
11	Total intermediate consumption		6,300	2,818	11,200		
12	Value added		2,793	746	10,000		
13	*of which:*						
14	Compensation of employees		1,502	439	4,599		
15	Gross operating surplus		1,108	249	4,646		
16	*of which:*						
17	Consumption of fixed capital		370	97	1,012		
18	Taxes on production and imports		183	58	757		
19	Total output		9,093	3,564	21,200		
20	*Addenda:*						
21	Employment (thousands)		20,815	5,699	86,301		
22	Compensation per employee (dollars)		$72,000	$77,000	$53,000		
23							
24	Value added per employee (dollars)		$134,000	$131,000	$116,000		

Note: The experimental estimates presented in this table are provisional and are intended only for discussion and to illustrate the types of analysis that can be performed with this framework.

Early results for all private industries

	A	B	C	D	E	F	G
1	Extended Supply/Use Tables for All Private Industries, 2011						
2	(percentage of total output)						
3							
4			Multinational		Non-multinational	Exports of goods	Other final uses
5			U.S. parent	U.S. affiliate			
6	Multinational	U.S. parent				6	94
7		U.S. affiliate				9	91
8	Non-multinational					3	97
9	Total domestic intermediate consumption and imports of services		63	61	48		
10	Total imports of goods		7	18	5		
11	Total intermediate consumption		69	79	53		
12	Value added		31	21	47		
13	*of which:*						
14	Compensation of employees		17	12	22		
15	Gross operating surplus		12	7	22		
16	*of which:*						
17	Consumption of fixed capital		4	3	5		
18	Taxes on production and imports		2	2	4		
19	Total output		100	100	100		
20							

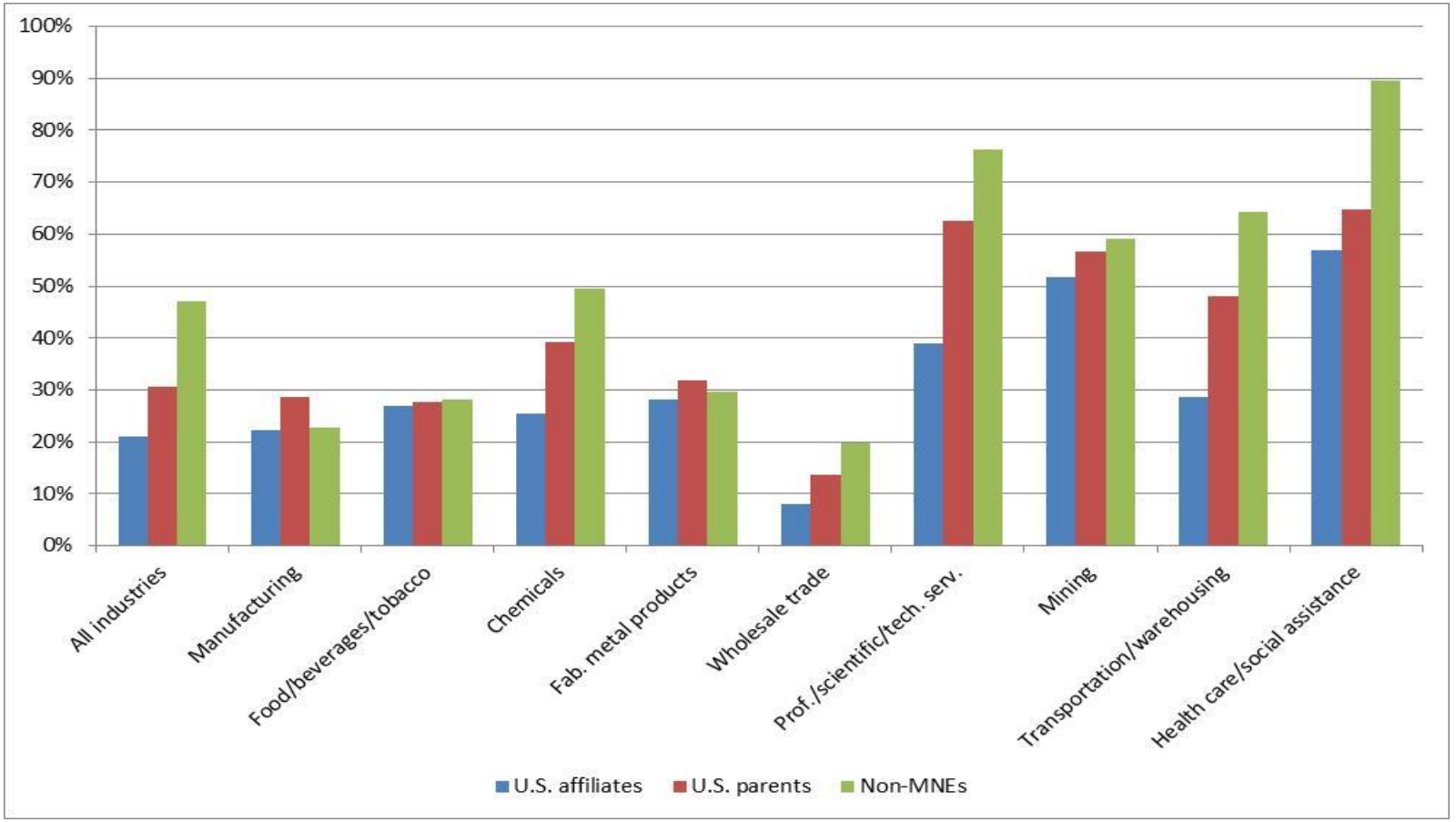
Note: The experimental estimates presented in this table are provisional and are intended only for discussion and to illustrate the types of analysis that can be performed with this framework.

Early results for manufacturing

Extended Supply/Use Tables for Manufacturing, 2011						
(percentage of total output)						
		Multinational		Non-multinational	Exports of goods	Other final uses
		U.S. parent	U.S. affiliate			
Multinational	U.S. parent				12	88
	U.S. affiliate				13	87
Non-multinational					7	93
Total domestic intermediate consumption and imports of services		58	58	76		
Total imports of goods		13	19	1		
Total intermediate consumption		71	78	77		
Value added		29	22	23		
of which:						
Compensation of employees		14	12	5		
Gross operating surplus		13	8	14		
of which:						
Consumption of fixed capital		4	3	3		
Taxes on production and imports		2	2	4		
Total output		100	100	100		

Note: The experimental estimates presented in this table are provisional and are intended only for discussion and to illustrate the types of analysis that can be performed with this framework.

Value added share of output



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Exporters vs. non-exporters

- About one-half of U.S. parents and affiliates export
- Value added share of output for exporters vs. non-exporters
  - All industries
    - Smaller for both U.S. parents and affiliates that export
  - Manufacturing
    - Smaller for U.S. parents that export
    - Larger for U.S. affiliates that export

Recap

- Proof-of-concept analysis validates firm-level heterogeneity across industries
  - Although available data has limitations
- Preliminary results are consistent with related work on heterogeneity, foreign compared with domestic:
  - VA typically a lower share of output
  - Trade flows typically larger share of output

Next steps

- Use results to create a detailed illustrative extended SUT for October 2015 APEC meeting
- Compare production and income measures of value added for SOI data
- Begin longer-run BEA-Census link project to produce official results