



The Global Firm

Lecture 5

Expansion Strategies of U.S. MNEs

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Announcements

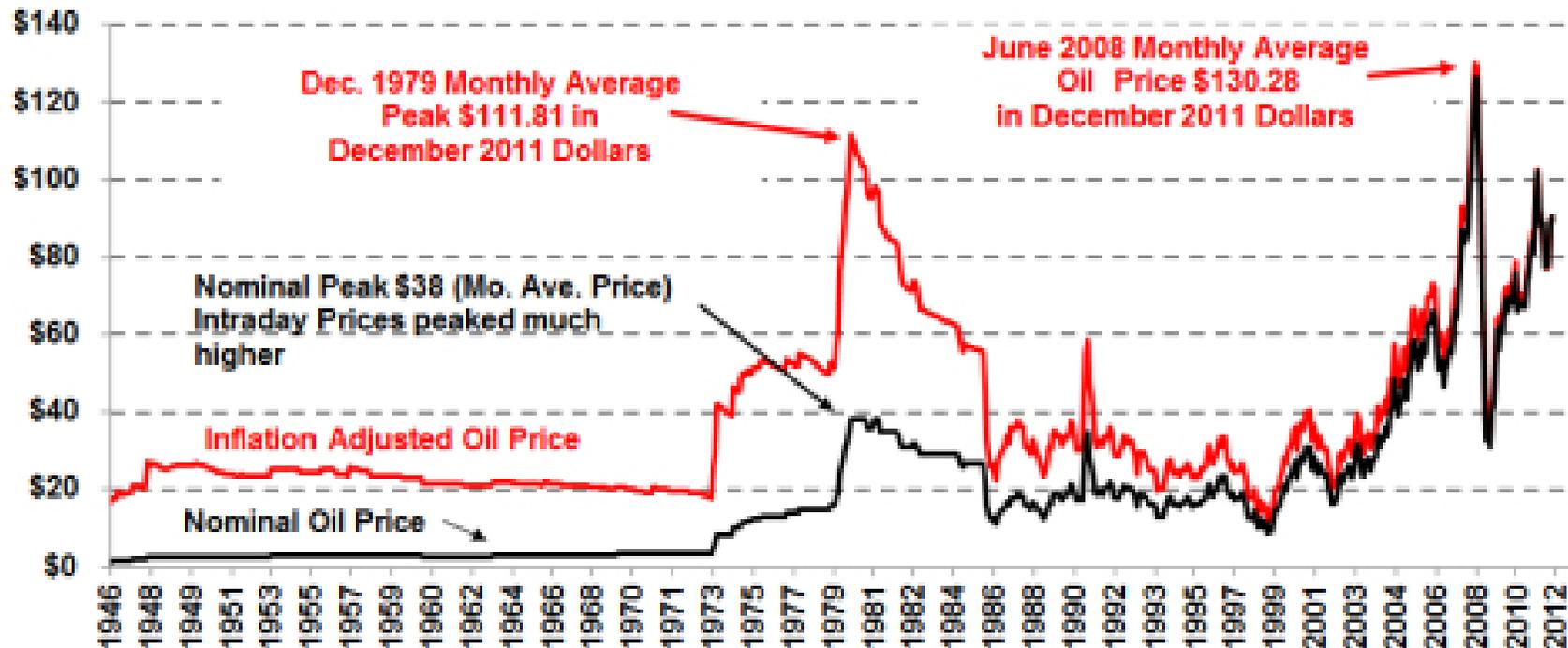
1. Group presentations from next week
 - 3 groups, 5-6 people in each group
 - read the paper in advance, understand it, and present the paper during the next 3 exercise sessions

2. From now on, it's good to start thinking about your term paper seriously.
 - It's best you work gradually, rather than rush everything in a couple of weeks.

Big Picture

Inflation Adjusted Monthly CRUDE OIL PRICES (1946-Present) In December 2011 Dollars

© www.InflationData.com
Updated 1/19/2012



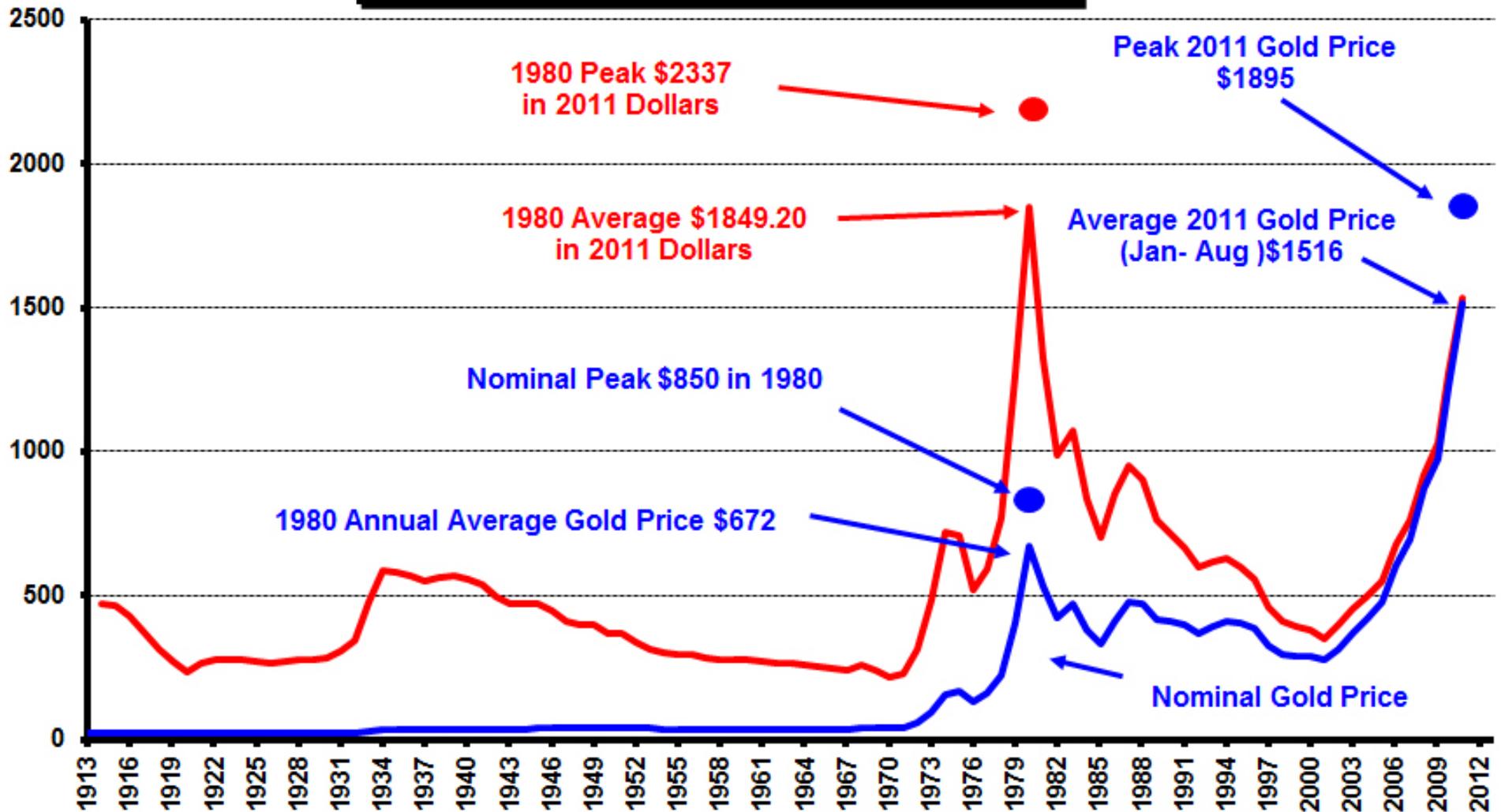
Source of Data:
Oil Prices- www.ioga.com/Special/crudeoil_Hist.htm
CPI-U Inflation index- www.bls.gov

Inflation Adjusted Annual Average Gold PRICES (1914- Current)

In August 2011 Dollars

© www.InflationData.com

Updated 09/15/2011





Hanson-Mataloni-Slaughter (2001), Expansion Strategies of US MNEs

Highlights of HMS paper:

- Using recent data, documented multinational activities are not limited to the simple dichotomy of horizontal vs. vertical FDI.
- MNE's activities are more diverse, and wide-range, such as:
 - Export platforms
 - Global outsourcing
 - Distribution FDIs
- Host country's characteristics play a big role in MNE's decision making (e.g., market size, trade barrier, regulations, and tax rates).



HMS: Expansion Strategies of US MNEs

Highlights of HMS paper:

- MNEs appear to face three overlapping choices:
 1. Use foreign affiliates to produce or to distribute?
 2. When using production FDI, choose horizontal or vertical FDI?
 - Within vertical FDI, should it be standalone operation or relying on global outsourcing network?
 3. For production output, choose to sell locally or export to other countries?

Data Source

- A dataset of US MNEs from BEA (same in Yeaple 2003 paper, but more recent and with multiple-year surveys: 1982, 1989, 1994, 1998)
- Publicly available, check BEA website at <http://www.bea.gov/international/index.htm#omc> . For a good description of the data, refer to data appendix in HMS paper.
- Aggregated industry level data from firm-level. Firm-level data only available upon request, but with user restrictions.

HMS: Expansion Strategies of US MNEs

- Rather than look at HFDI vs. VFDI, HMS look at three overlapping foreign activities of US MNEs:
 - Export platform
 - Foreign affiliate's export vs. local sales (in host country)
 - Global outsourcing
 - Import of factor inputs for further processing
 - Wholesale trading
 - Production FDI vs. Distribution FDI – but few in coexistence.

Expansion Strategies of US MNEs

- Export platform
 - Traditional HFDI only considers market access to host country
 - But production facility could be used as a platform to export to other countries, rather than selling to the host country.
 - And it's also likely that MNEs do both: local sales & export platform. The local sales part is traditional HFDI, but the export platform part is new.
 - So what determines the relative share of export (to other countries) vs. local sales in US foreign affiliate' total sales? --- The research question of HMS.

Export Platform of US MNEs

Table 3: *Affiliate Exports as a Share of Affiliate Total Sales, by Region*

	1982	1989	1998
All Countries	34.5	32.3	34.5
Canada	23.3	26.5	31.4
OECD Europe	37.3	34.1	36.8
Other Europe	60.1	66.5	19.8
Mexico	10.3	31.9	40.2
Other Latin America	44.0	36.4	29.8
Africa	44.0	43.5	33.1
Middle East	25.0	38.3	46.2
OECD Asia / Pacific	11.0	14.8	11.4
East Asia	60.5	52.9	48.9
China	22.7	5.8	36.0
Other Asia / Pacific	5.9	7.5	7.5

Export Platform of US MNEs

Table 4: Affiliate Exports as a Share of Affiliate Total Sales, by Industry

	1982	1989	1998
All Industries	34.5	32.3	34.5
Petroleum	35.4	25.6	22.4
Manufacturing	33.9	37.8	44.4
Food and kindred products	15.6	19.6	26.1
Chemicals and allied products	31.7	33.4	36.2
Primary and fabricated metals	25.7	35.4	33.8
Industrial machinery and equipment	40.6	44.9	60.4
Computer and office equipment	38.9	44.5	65.9
Electronic and other electric equipment	40.7	45.0	57.1
Transportation equipment	43.3	46.8	52.3
Other manufacturing	30.7	30.7	33.8
Wholesale trade	41.7	29.9	34.5
Durable goods	35.3	24.0	29.9
Nondurable goods	51.3	41.6	43.1
FIRE	37.8	29.6	29.3
Services	19.8	20.0	17.3

Export vs. Local Sales

Estimation equation:

What drives the wedge between affiliate exports vs. Local sales?

$$\begin{aligned} \ln(\text{AEX}_{ijt}) - \ln(\text{ALS}_{ijt}) = & \beta_0 + \beta_1 * \ln(\text{GDP}_{jt}) + \beta_2 * \ln(\text{GDP}_{jt}/\text{POP}_{jt}) + \beta_3 * (\text{ENG}_j) \\ & + \beta_4 * \ln(\text{DST}_j) + \beta_5 * \ln(1 - \text{TAX}_{jt}) + \beta_6 * \ln(\text{SKL}_{it}) + \beta_7 * \ln(\text{SCL}_{it}) \\ & + \beta_8 * \ln(1 + \text{TC}_{ijt}) + \beta_9 * \ln(1 + \text{TAR}_{ijt}) + \beta_{10} * (\text{NTB}_{ijt}) + \mu_{ijt} \end{aligned} \quad (1)$$

What do you expect the sign of the each coefficient to be?

Export vs. Local Sales: estimation results (Table 5)

Dependent Variable	(3) Exports/ Local Sales	(5) Exports/ Local Sales
GDP	-0.285 (0.048)	-0.112 (0.081)
Per Capita GDP	0.319 (0.074)	0.341 (0.158)
(1-Tax Rate)	2.127 (0.418)	2.736 (0.628)
Distance From USA	-0.037 (0.102)	0.240 (0.135)
English Speaking	0.029 (0.184)	-0.243 (0.251)
U.S. Skill Intensity	-0.589 (0.151)	-0.311 (0.232)
Average Aff. Employ.	-0.120 (0.113)	0.458 (0.242)
Transport Costs		-6.396 (2.188)
Tariffs		-1.150 (1.696)
NTBs		-0.493 (0.209)
No. Observations	1054	455
Adjusted R-Squared	0.18	0.50



Summary of Main Findings

- Foreign affiliates tend to be more oriented toward export markets (or export platform) when located in countries that are smaller (size), less protected, and less taxed.
- The regression also suggests that export platform is more popular with low-skill US industries, which runs contradictory to the data: computers, electronics are not low-skilled. Why?
- Tax and trade policies in host countries matter for MNE's decision on their operation type and scale.

Expansion Strategies of US MNEs

■ Global outsourcing:

- So far, we have considered production outputs (sales, exports), not inputs.
- In this part, HMS include factor inputs via global outsourcing into play
- They use BEA outsourcing data – not used before.
- Manufacturing outsourcing involves movement of inputs for the next-stage production to a different country – another kind of VFDI.
- Affiliate imports include:
 - goods for resale
 - goods for further processing
 - capital goods
 - other imports

Expansion Strategies of US MNEs

■ Global outsourcing:

- HMS use *affiliate imports for further processing* as the dependent variable. One could also potentially use *affiliate exports for further processing* ---the other side of the same coin.
- *So what determines the import volume of factor inputs of a host country?* --- The research question.
- Since global outsourcing (in production) can be thought as VFDI, so our previous analysis regarding what determines VFDI applies here too.

US Global Outsourcing

Table 6: Affiliate Imports of Goods for Further Processing
as a Share of Affiliate Total Sales,
by Industry and Region

	World	OECD Europe	OECD Asia	Canada	Mexico	Other LatinAm.	Other Asia
1982							
Manufacturing	9.8	5.0	6.9	21.6	19.8	9.4	25.7
Food and kindred products	5.2	6.1	1.2	5.7	1.1	3.1	8.0
Chemicals and allied products	6.0	5.1	7.1	7.8	5.4	5.5	13.9
Primary and fabricated metals	4.6	4.0	2.8	7.0	4.6	1.7	7.8
Industrial machinery and equipment	8.1	6.7	9.4	12.8	6.2	8.1	17.2
Electronic and other electric equipment	16.3	5.1	14.7	11.1	--	33.1	39.7
Transportation equipment	17.7	1.0	3.6	43.8	33.9	17.4	8.9
Other manufacturing	7.6	7.0	9.1	10.2	--	6.2	5.9
1994							
Manufacturing	12.2	4.9	9.2	33.5	36.7	6.7	14.3
Food and kindred products	2.5	1.4	5.1	7.0	2.4	2.6	3.3
Chemicals and allied products	7.0	4.4	8.8	19.8	8.5	8.2	9.6
Primary and fabricated metals	8.2	3.8	8.0	17.0	26.3	6.8	13.0
Industrial machinery and equipment	10.9	8.2	7.8	36.7	44.3	10.3	8.7
Electronic and other electric equipment	22.2	10.0	18.0	21.2	66.5	21.1	25.9
Transportation equipment	23.2	2.5	5.3	49.6	50.4	5.9	7.0
Other manufacturing	7.7	5.2	10.6	14.3	17.1	6.8	11.4



Global Outsourcing: Estimation Equation

- Similar to eq. (1) in export platform
- Replace dependent variable with log of affiliate imports for further processing, or the ratio relative to total affiliate sales

Table 8: Regression Results, Affiliate Imports for Further Processing

	(1)	(2)	(3)	(4)	(5)
Dependent Variable	Imports for Processing	Total Sales	Imports/ Total Sales	Imports for Processing	Imports/ Total Sales
GDP	0.647 (0.052)	0.764 (0.054)	-0.119 (0.044)	0.711 (0.075)	-0.127 (0.063)
Per Capita GDP	0.531 (0.084)	0.995 (0.088)	-0.462 (0.071)	0.433 (0.146)	-0.539 (0.123)
(1-Tax Rate)	1.837 (0.449)	1.756 (0.471)	0.083 (0.384)	1.299 (0.583)	-0.299 (0.488)
Distance From USA	-0.882 (0.110)	-0.566 (0.116)	-0.309 (0.094)	-0.717 (0.125)	-0.273 (0.105)
English Speaking	1.187 (0.195)	1.023 (0.205)	0.166 (0.167)	1.115 (0.236)	0.287 (0.198)
U.S. Skill Intensity	0.965 (0.182)	0.921 (0.191)	0.040 (0.155)	1.121 (0.219)	0.104 (0.184)
Average Aff. Employ.	0.279 (0.190)	-0.428 (0.199)	0.705 (0.162)	0.159 (0.231)	0.812 (0.194)
Transport Costs	-4.098 (1.571)	-2.121 (1.649)	-1.936 (1.344)	-3.626 (2.028)	-2.454 (1.700)
Tariffs				-2.833 (1.569)	-1.359 (1.315)
NTBs				-0.367 (0.195)	0.102 (0.163)
No. Observations	604	604	604	436	436
Adjusted R-Squared	0.49	0.48	0.49	0.47	0.44



Expansion Strategies of US MNEs

- On wholesale trading, it's an interesting phenomenon and little research have been done. Due to time limit, I will skip this part. Refer to section 5 of HMS paper for detailed discussions.

Some Further Thoughts

- HMS offered a more sophisticated analysis than the simple choice model of *either* HFDI *or* VFDI. Indeed, same MNE often engages in both activities.
 - e.g., affiliate export platform can be thought as VFDI, while affiliate local sales can be thought as HFDI.
- VFDI has become more important since 1990s, and especially when taking into consideration factor inputs and global outsourcing.
- Host country's characteristics are very important
 - A country with large market size, cheap factor cost, and located in an economic active region naturally becomes top destinations for both H and V FDI
- So far, the research we've seen only focus on the "treated" group – i.e., the countries which have received FDI. Will such analyses suffer selection bias problem?
- One could test a model that captures MNE's decision among four choices (0, 1, 2, 3). (0: not picked for FDI destination; 1: picked for HFDI; 2: picked for VFDI; 3: Picked for both H and V FDI).



Next time...

- Read Pol Antras (QJE, 2009), “MNEs, FDI Flows, and Imperfect Capital Markets.”
- In the exercise session, we will have the first group presentation.
 - Bernard, Redding and Schott (AER, 2010), “Intra-Firm Trade and Product Contractibility.”