EMLV LÉONARD DE VINCI | MANAGEMENT SCHOOL PARIS-LA DÉFENSE

Understanding and managing "forced" technology transfer

OECD, Paris
December 12th 2019

Dan Prud'homme, PhD, LLM
Associate Professor, EMLV School of Business (Paris, France)
Non-resident Research Associate, Duke University's Kunshan, China campus

Contents

1. Motivation and research questions

- **"Forced" technology transfer (FTT) policies faced by MNCs are increasingly controversial**…a basis for WTO disputes and recent US-China trade war

- **<u>Questions</u>:**

1. **How do these policies function to spur technology transfer from foreign MNCs to local firms?**
2. **How do foreign MNCs manage the risks from FTT policies and why?**

- **Some research on aspects of these questions, but still major gaps!**

1. Method and materials

- **Empirical context:** Workings and effects of FTT policies in China, in multiple industries, over last 15 years or so and how MNCs respond
  - Findings should be generalizable to some extent

- **Draws on two recent papers**: **Prud'homme et al. (2018, TFSC) and Prud'homme and von Zedtwitz (2019, JIM)**
  - Survey of >100 European firms operating in China
  - Interviews with IP and R&D managers in > 40 European and US firms operating in China
  - Case studies of Chinese firms benefitting from FTT policies
  - Review of laws and regulations (in Chinese and English)
  - Review of government reports and other documents

Contents

2.1 What are FTT policies?

- **No universal definition of "FTT"!**

- **But some international governance of what MNCs consider "FTT" policies**
  - Multilateral WTO agreements (TRIPs, TRIMs, indirectly other agreements)
  - Plurilateral WTO agreements (e.g., GPA)
  - Country-specific WTO-plus provisions (e.g., Protocol of Accession, Working Party Reports)
  - Plurilateral or bilateral agreements (e.g., investment and trade agreements)

- **My definition of FTT: systematic state measures (de jure or de facto) involving intellectual property (IP) meant to increase foreign-domestic technology transfer that simultaneously weaken appropriability of foreign innovations**

2.1 Types of FTT policies and caveats

- **Three main types (categorized by consequences for non-compliance):**
  1. No choice
  2. Lose the market
  3. Violate the law

- ***With exception*** **of "no choice" policies, MNCs in fact do have a choice (of sorts, although it's always met with consequences) to comply**

- **Still use term "FTT" for policies hereafter because that's how MNCs refer to them**

- **FTT policies are important, but concerns about them in China shouldn't be overblown – Prud'homme (2019, HBR)**

2.1 FTT policies of concern in China in the lead up to the trade war

- **Some of most concerning:**
  - Lose the market: Tech transfer for market access requirements (e.g., NEVs)
  - Violate the law: Several provisions of Technology Import-Export Regulations
  - Violate the law: Burdensome SEP disclosure terms and dubious SEP licensing terms
  - No choice/lose the market: Excessive divulgation of trade secrets in regulatory approval processes and passing that information to competitors
  - No choice: Unfair IP court rulings

- **Other examples (non-exhaustive):**
  - Data localization requirements
  - Requirements in Foreign-Sino equity JV regulations
  - Establish R&D center in JV as precondition to enter market
  - Local content requirements
  - Other investment-related requirements

2.1 FTT policies aren't just in China – US Chamber, UN, Andrenelli et al. (2019)

- **Indonesia** (e.g., 2016 patent law requirement for transfer of patented technologies and processes in Indonesia)
- **South Africa** (e.g., overly broad basis for compulsory licensing)
- **Brazil** (e.g., longstanding restrictions on licensing fees and terms just reformed…yet new areas of concern?)
- **Other markets**

2.2 Determining risks from FTT policies: understanding FTT policy "leverage"

- **Main business risk from FTT policies = appropriability loss (ability to control and profit from tech)**

- **"Leverage" is the overall mechanism determining such loss = ability to shift bargaining power in foreign-domestic tech transfer arrangements to favor domestic firms**

- **Not all FTT policies exert the same leverage!**

- **7 factors determine FTT policy leverage**:
  1. state support for industrial growth,
  2. oligopoly competition,
  3. other policies closely complementing FTT policies,
  4. high technological uncertainty,
  5. policy mode of operation offering basic appropriability and tailored to industrial structure,
  6. reform avoidance by the state, and
  7. stringent policy compliance mechanisms

2.2 Example of leverage from China's NEV FTT policy -- according to the FTT Leverage Forecasting Matrix from Prud'homme et al. (2018)

1. Strong state support for industrial growth	√ (Government subsidies for NEV production, government procurement of NEVs, and consumer subsidies for purchasing NEVs, infrastructure investment [although some decentralization issues] – first two sources of funding and NEV production permit denied if don't comply w/FTT policy)
2. Oligopoly competition	√ (Limited number of firms making NEV engines and other core technology for NEV vehicles)
3. Other policies closely complementing FTT policies	√ (CO2 emissions standards and fuel efficiency standards must be met)
4. (High) degree of tech uncertainty in targeted industries	√ (Still lack fully dominant design in EV engines and some other core tech in the NEVs industry)
5. Policy mode of operation offering basic appropriability and tailored to industrial structure	Y (Some appropriability, at least vis-à-vis unfair court rulings; JV mode of operation suited to leaders in auto industry given relatively concentrated)
6. Reform avoidance by the state	√ (Avoidance despite issue being brought up repeatedly by USG and industry associations)
7. Stringent policy compliance mechanism	√ (MIIT oversight of type of tech transferred, even more extreme requirements as of 2017)
TOTAL SCORE	**6√s + Y = HIGH LEVERAGE**

Contents

3.1 Survey results: Top 10 strategies for managing risks from FTT policies in China (i.e., best at mitigating detrimental effects)

Strategy category	Orientation of strategy	Perceived effectiveness
Policy and law monitoring	Internal	58%
Resources devoted to in-house IP dept. and external IP services	Internal and external	50%
Lobbying via external business groups	External	38%
Efforts to get home government to pressure China	External	31%
Keeping trade secrets	Internal	31%
Lobbying via own government affairs department	External	27%
IP risk assessments	Internal	27%
Avoiding entry into JVs with Chinese partners	Internal	21%
Invention patent filings	External	19%
Establishment of a JV only after careful due diligence	External	19%

Percentages exceed 100% because respondents chose top five strategies, not just one top strategy

3.1 Survey results (continued)

- R&D to take advantage of state policies (17%)
- applying for government contracts (13%)
- adjudicating IP in a civil proceeding (13%)
- changes to product lines in China (10%)
- utility model filings (10%)
- managing sophistication of technology transfer (and R&D/technological dependencies/complementarities) (10%)
- level of technological linkages with Chinese JV partner (8%)
- relocation of manufacturing away from China (8%)
- usage of strategic price discrimination (8%)
- enforcing IP through administrative authorities (8%)
- resources spent on licensing IP (8%)
- changes to Chinese JV partner(s) (6%)
- applying for government subsidies, tax, and/or financing (6%)
- participation in state-funded research collaboration (6%)
- leverage brand familiarity to gain customers (6%)
- filings of other forms of IP outside invention patents and utility models (6%)
- seeking criminal prosecution for IP infringement (6%)
- standards development (6%)
- shifting of sales focus away from China (4%)
- Black-boxing (4%)
- reductions of product price (2%)
- bringing IP invalidation cases (2%)
- R&D spending/strategy for other reasons (2%)

3.2 Main internally-oriented strategies: important but not always sufficient

- Ramp up use of trade secrets to create info. asymmetries (although sometimes pressured transfer of these and/or issues enforcing them)
- Increase in-house R&D in promising areas not subject to FTT policies
- Double-down on promising R&D co-specialized w/tech transferred to maximize complementarities to complicate outside imitation
- Avoid JV if possible

- But not sufficient to manage appropriabilty risks *from highest leverage* FTT policies

3.2 Main externally-oriented strategies

- Heavily invest in IP management
- Expand patent portfolios 2-3X faster than in developed markets
  - Enforce patents in courts and other venues (minding protectionism)
- If must enter JVs w/local firms to get biz license, conduct careful due diligence
- Only transfer tech behind the frontier if can get away with it
- Lobby Chinese government directly
- Lobby via industry associations
- Lobby via home government (reluctance in past, rising willingness as leverage from FTT policies increased)

3.2 (continued) Results of lobbying in particular

- Most major FTT policies in China essentially abolished in 2018 and 2019!!

- **Effect on shipping sector in China too:**
  - Longstanding 49% ownership restriction in ship construction and low-speed marine diesel engine production
    - Seen as "key/strategic" industry, policy goals to acquire foreign expertise and tech in marine subcomponents (Grubb, 2008)
  - In 2018, foreign ownership restrictions to be lifted in design and manufacturing in shipping industry, as well as in international shipping and maritime transport services (CMS, 2018)

Side note: Changes of course don't mean Chinese state is no longer involved in guiding development of shipbuilding and maritime equipment industries

- **Strategic Emerging Industries initiative, some provinces choose to specialize in marine equipment** (Prud'homme, 2016, RP)
- **Made in China 2025 promotes specialization in high-end shipbuilding and offshore engineering equipment manufacturing**
- **National Medium-and Long-Term Plan of the Shipbuilding Industry (2006-2016)**
  - Annual output targets set; annual production targets for medium- and low-speed ship diesel engines set; more than 60% of ship equipment to be produced locally
- **Sources indicate recent subsidies in shipbuilding and supporting industries** (e.g., Haley and Haley, 2013; Thompson, 2014; ShippingWatch, 2018; Kalouptsidi, 2018)
- **Shipbuilding Industry Deeping Structural Adjustment, Accelerating Transformation and Upgrading Action Plan (2016-2020) from MIIT**
  - Eliminate low-end production capacity; increase R&D; further concentrate industry (significant consolidations by CSSC and CSIC); produce more luxury cruise vessels
- **Several implementing plans for overarching plans**
- **Maritime Silk Road investments**

Contents

4. Implications

Policymakers:

- The design of FTT policies *per se* – *in any industry* – doesn't fully determine their risks to foreign MNCs, one must also consider how policies interact with seven conditions determining leverage
- Sometimes the policies achieve their goals, but often they don't or even discourage tech transfer (especially of frontier tech)

Managerial:

- Foreign MNCs may use internally-oriented strategies to manage risks from lower/middle-leverage policies
- But as leverage increases, a combination of internal- and external-oriented strategies may be needed to best manage risks

Thank you