

[Home](#) > [Asia Pacific Journal of Management](#) > Article

# The genesis of fabless business model: Institutional entrepreneurs in an adaptive ecosystem

| Published: 28 October 2016

| Volume 34, pages 587–617, (2017) [Cite this article](#)

Bookmark [Save article](#)

[View saved research >](#)



## [Asia Pacific Journal of Management](#)

[Aims and scope →](#)

[Submit manuscript →](#)

[Sumita Sarma](#)<sup>1</sup> & [Sunny Li Sun](#) 

 2820 Accesses  49 Citations  3 Altmetric [Explore all metrics →](#)

## Abstract

How does an institutionally-contested business model originate, survive, and grow? What roles do institutional entrepreneurs play in the different stages of evolution of the business model? In the past four decades, the fabless model (which allows a semiconductor firm to operate without a fabrication unit) has changed the global semiconductor industry with significant impact in the Asian regions. In this paper, we trace the origin and evolution of the fabless model through a mixed-method approach, utilizing historic milestones, events, and financial data of publicly-traded semiconductor firms. We have applied theories of institutional entrepreneurship and adaptive ecosystem to identify four stages in

this history: differentiation, mobilization, legitimization, and symbiosis to conceptualize the fabless model's co-creation and co-evolution. Our findings indicate that actions of institutional entrepreneurs within specific temporal locations and structures played a crucial role in the fabless business model's origin and co-evolution.

 This is a preview of subscription content, [log in via an institution](#)  to check access.

### Access this article

[Log in via an institution](#) 

### Subscribe and save

 Springer+

from €37.37 /Month

- Starting from 10 chapters or articles per month
- Access and download chapters and articles from more than 300k books and 2,500 journals
- Cancel anytime

[View plans](#) 

### Buy Now

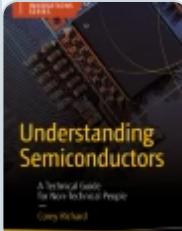
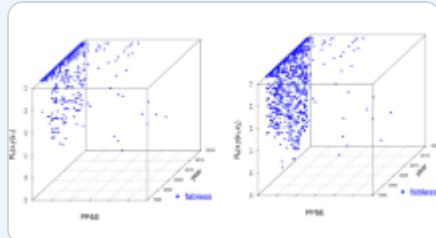
[Buy article PDF 39,95 €](#)

Price includes VAT (Poland)

Instant access to the full article PDF.

[Institutional subscriptions](#) 

### Similar content being viewed by others



## Vertical integration vs. specialization: a nonparametric conditional

Article | Open access

13 September 2021

## The Semiconductor Industry – Past, Present, and Future

Chapter | © 2023

## The Relationship Between Financing Decision of SMEs and Their Performance

Chapter | © 2022

## Explore related subjects

Discover the latest articles, books and news in related subjects, suggested using machine learning.

[Corporate History](#)

[Entrepreneurship](#)

[Institutional and Evolutionary Economics](#)

[Organization Theory](#)

[Organizational Development](#)

[Organizational Theory](#)

## Notes

1. *Businessweek* Archives “Real Men Have Fabs.” Apr. 10, 1994: <http://www.bloomberg.com/bw/stories/1994-04-10/real-men-have-fabs>.
2. As told by Dr. Morris Chang, who pioneered a controversial pricing strategy of semiconductors ahead of the cost curve (as per featured interview with Dr. Chang, [SemiWiki.com](#), Daniel Nenni)
3. Source: IC Insights: <http://www.icinsights.com/news/bulletins/Nine-Of-The-Top-20-Semiconductor-Suppliers-Are-Forecast-To-Register-DoubleDigit-Growth-In-2014>.
4. Xilinx gradually started contracting with several suppliers to spread their risk

on timely supply and price fronts. After UMC started offering foundry services, Xilinx shifted their complete production to it. In turn, the FPGA technology helped UMC to ramp up and improvise their process technologies and quality control. Xilinx is now market leader today with over 2500 patents on FPGA, and maintain deep relationships with the foundries for their latest process technology.

5. Liou ([2011](#): 955) suggests to use “ROIC – WACC –  $r$ ” to describe the return on intangible assets (or “light assets”). In our sample, we found that Fabless group has significantly higher ROIC – WACC –  $r$  than IDM group ( $t$  value =  $-1.95$ ,  $p < 5\%$ ). It supports our proposition that fabless model has different way of distributing resources and power.
6. Gompers ([1995](#)) found that venture capital shows an increasing exponential during the period 1980–1990.
7. FSA and GSA history in Wikipedia:  
[https://en.wikipedia.org/wiki/Global\\_Semiconductor\\_Alliance](https://en.wikipedia.org/wiki/Global_Semiconductor_Alliance).
8. Higher market value of equity (evaluated from investor) results in higher Tobin’s Q, a market-based performance measure. Banalieva, Eddleston, and Zellweger ([2015](#): 1365) suggest that “it is considered a forward-looking measure since it incorporates investors’ expectations about firm performance.” Therefore, we are confident that investors in public market are more likely to pay a higher price to invest in fabless firms than to invest in IDMs. However, since Tobin’s Q is a ratio, slight difference could be sensitive to the investor. So, we carried out  $T$ -test for two groups, and find  $t$  value =  $13.66$ , ( $p < .001$ ). We further tested the standard deviation of Tobin’s Q within three-year periods, which can proxy the investor’s risk (Lang & Stulz, [1993](#)). We found that fabless group has significantly higher risk than IDM group ( $t$  value =  $8.54$ ,  $p < .001$ ).

9. In fact, IBM paid GF \$1 billion to take away its foundry. See [http://www.eetimes.com/document.asp?doc\\_id=1324321](http://www.eetimes.com/document.asp?doc_id=1324321) and SemiWiki.com.

10. Source: Hruska J. 2014. TSMC announces its first 16 nm FinFET networking chip: 32-core ARM Cortex-A57. Sept. 26, ExtremeTech: <http://www.extremetech.com/computing/190941-tsmc-announces-its-first-16nm-finfect-networking-chip-32-core-arm-cortex-a57>. Accessed Apr. 14, 2015.

11. Source: IDC. 2015. Smartphone vendor market share, Q4 2014: <http://www.idc.com/prodserv/smartphone-market-share.jsp>.

12. Source: Lan, K. 2015. Rockchip works closely with Intel on Atom X3 based nobile devices. *CTIMES*, Apr. 08: <https://en.ctimes.com.tw/DispNews.asp?O=HJZ48BYMOC2SAA00NP>.

## References

---

Adner, R. 2006. Match your innovation strategy to your innovation ecosystem. *Harvard Business Review*, 84(4): 98–107. 148.

[Google Scholar](#)

Angel, D. P. 1990. New firm formation in the semiconductor industry: Elements of a flexible manufacturing system. *Regional Studies*, 24(3): 211–221.

[Article](#) [Google Scholar](#)

Arthur, W. B. 1990. Positive feedbacks in the economy. *Scientific American*, 262(2): 92–99.

[Article](#) [Google Scholar](#)

Autio, E., & Thomas, L. 2014. Innovation ecosystems: Implications for innovation management?. In M. Dodgson, D. M. Gann, & N. Phillips (Eds.). *The Oxford handbook of innovation management*: 204–288. Oxford: Oxford University Press.

[Google Scholar](#)

Balconi, M., & Fontana, R. 2011. Entry and innovation: An analysis of the fabless semiconductor business. *Small Business Economics*, 37(1): 87–106.

[Article](#) [Google Scholar](#)

Baldwin, C. Y., & Clark, K. B. 2000. *Design rules, vol. 1: The power of modularity*. Cambridge: MIT Press.

[Google Scholar](#)

Banalieva, E. R., Eddleston, K. A., & Zellweger, T. M. 2015. When do family firms have an advantage in transitioning economies? Toward a dynamic institution-based view. *Strategic Management Journal*, 36(9): 1358–1377.

[Article](#) [Google Scholar](#)

Barley, S. R. 2010. Building an institutional field to corral a government: A case to set an agenda for organization studies. *Organization Studies*, 31(6): 777–805.

[Article](#) [Google Scholar](#)

Battilana, J., Leca, B., & Boxenbaum, E. 2009. How actors change institutions: Towards a theory of institutional entrepreneurship. *Academy of Management Annals*, 3(1): 65–107.

[Article](#) [Google Scholar](#)

Beckert, J. 2010. Institutional isomorphism revisited: Convergence and divergence in institutional change. *Sociological Theory*, 28(2): 150–166.

Bengtsson, M., & Kock, S. 2014. Coopetition—Quo vadis? Past accomplishments and future challenges. *Industrial Marketing Management*, 43(2): 180–188.

[Article](#) [Google Scholar](#)

Brown, C., & Linden, G. 2009. *Chips and change: How crisis reshapes the semiconductor industry*. Cambridge: MIT Press.

Campbell, J. L. 2004. *Institutional change and globalization*. Princeton: Princeton University Press.

[Google Scholar](#)

Chen, M.-J., & Miller, D. 2012. Competitive dynamics: Themes, trends, and a prospective research platform. *Academy of Management Annals*, 6(1): 135–210.

[Article](#) [Google Scholar](#)

Cohen, B. 2006. Sustainable valley entrepreneurial ecosystems. *Business Strategy and the Environment*, 15(1): 1–14.

[Article](#) [Google Scholar](#)

Cornelissen, J. P. 2005. Beyond compare: Metaphor in organization theory. *Academy of Management Review*, 30(4): 751–764.

[Article](#) [Google Scholar](#)

DeCarolis, D. M., & Deeds, D. L. 1999. The impact of stocks and flows of organizational knowledge on firm performance: An empirical investigation of the biotechnology industry. *Strategic Management Journal*, 20(1): 953–968.

[Article](#) [Google Scholar](#)

DiMaggio, P. J., & Powell, W. W. 1983. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2): 147-160.

[Article](#) [Google Scholar](#)

Drucker, P. F. 1964. *Managing for results*. New York: Harper & Row.

Dunning, J. H. 1980. Toward an eclectic theory of international production: Some empirical tests. *Journal of International Business Studies*, 11(1): 9-31.

[Article](#) [Google Scholar](#)

Dunning, J. H., & Lundan, S. M. 2008. Institutions and the OLI paradigm of the multinational enterprise. *Asia Pacific Journal of Management*, 25(4): 573-593.

[Article](#) [Google Scholar](#)

Fuller, D. B., Akinwande, A. I., & Sodini, C. G. 2003. Leading, following or cooked goose? Innovation successes and failures in Taiwan's electronics industry. *Industry and Innovation*, 10(2): 179-196.

[Article](#) [Google Scholar](#)

Garud, R., Jain, S., & Kumaraswamy, A. 2002. Institutional entrepreneurship in the sponsorship of common technological standards: The case of Sun Microsystems and Java. *Academy of Management Journal*, 45(1): 196-214.

[Article](#) [Google Scholar](#)

Gompers, P. A. 1995. Optimal investment, monitoring, and the staging of venture capital. *Journal of Finance*, 50(5): 1461-1489.

[Article](#) [Google Scholar](#)

Greenwood, R., & Suddaby, R. 2006. Institutional entrepreneurship in mature fields: The big five accounting firms. *Academy of Management Journal*, 49(1): 27-48.

[Article](#) [Google Scholar](#)

Greenwood, R., Suddaby, R., & Hinings, C. R. 2002. Theorizing change: The role of professional associations in the transformation of institutionalized fields. *Academy of Management Journal*, 45(1): 58-80.

[Article](#) [Google Scholar](#)

GSA. 2016. *Charting a new course for semiconductors*. Global Semiconductor Alliance. <http://www.gsaglobal.org/gsa-resources/publications/>. Accessed Aug. 15, 2016.

Gurses, K., & Ozcan, P. 2015. Entrepreneurship in regulated markets: Framing contests and collective action to introduce pay TV in the US. *Academy of Management Journal*, 58(6): 1709-1739.

Hambrick, D. C., & Chen, M. J. 2008. New academic fields as admittance-seeking social movements: The case of strategic management. *Academy of Management Review*, 33(1): 32-54.

[Article](#) [Google Scholar](#)

Khavul, S., Chavez, H., & Bruton, G. D. 2013. When institutional change outruns the change agent: The contested terrain of entrepreneurial microfinance for those in poverty. *Journal of Business Venturing*, 28(1): 30-50.

[Article](#) [Google Scholar](#)

Lang, L. H., & Stulz, R. M. 1993. Tobin's q, corporate diversification and firm

performance. NBER working paper no. w4376, National Bureau of Economic Research, Cambridge.

Levie, J., & Lichtenstein, B. B. 2010. A terminal assessment of stages theory: Introducing a dynamic states approach to entrepreneurship. *Entrepreneurship: Theory and Practice*, 34(2): 317-350.

[Article](#) [Google Scholar](#)

Li, P. P. 2007. Toward an integrated theory of multinational evolution: The evidence of Chinese multinational enterprises as latecomers. *Journal of International Management*, 13(3): 296-318.

[Article](#) [Google Scholar](#)

Li, P. P. 2012. Toward an integrative framework of indigenous research: The geocentric implications of Yin-Yang Balance. *Asia Pacific Journal of Management*, 29(4): 849-872.

[Article](#) [Google Scholar](#)

Li, P. P., Leung, K., Chen, C. C., & Luo, J. D. 2012. Indigenous research on Chinese management: What and how. *Management and Organization Review*, 8(1): 7-24.

[Article](#) [Google Scholar](#)

Liou, F.-M. 2011. The effects of asset-light strategy on competitive advantage in the telephone communications industry. *Technology Analysis & Strategic Management*, 23(9): 951-967.

[Article](#) [Google Scholar](#)

Macher, J. T., Mowery, D. C., & Di Minin, A. 2007. The “non-globalization” of innovation in the semiconductor Industry. *California Management Review*, 50(1): 217-243.

Maguire, S., Hardy, C., & Lawrence, T. B. 2004. Institutional entrepreneurship in emerging fields: HIV/AIDS treatment advocacy in Canada. *Academy of Management Journal*, 47(5): 657-679.

[Article](#) [Google Scholar](#)

Mahoney, J., & Rueschemeyer, D. 2003. *Comparative historical analysis in the social sciences*. Cambridge: UK: Cambridge University Press.

[Book](#) [Google Scholar](#)

Markóczy, L., Sun, S. L., Peng, M. W., Shi, W., & Ren, B. 2013. Social network contingency, symbolic management, and boundary stretching. *Strategic Management Journal*, 34(11): 1367-1387.

[Article](#) [Google Scholar](#)

Mathews, J. A. 2006. Dragon multinationals: New players in 21st century globalization. *Asia Pacific Journal of Management*, 23(1): 5-27.

[Article](#) [Google Scholar](#)

Nambisan, S., & Baron, R. A. 2013. Entrepreneurship in innovation ecosystems: Entrepreneurs' self-regulatory processes and their implications for new venture success. *Entrepreneurship Theory and Practice*, 37(5): 1071-1097.

Nenni, D. 2013. *Fabless: The transformation of the semiconductor industry*. SemiWiki.com.

Park, B.-J., Srivastava, M. K., & Gnyawali, D. R. 2014. Walking the tight rope of coooperation: Impact of competition and cooperation intensities and balance on

[Article](#) [Google Scholar](#)

Peng, M. W., Sun, S. L., Pinkham, B., & Chen, H. 2009. The institution-based view as a third leg for a strategy tripod. *Academy of Management Perspectives*, 23(3): 63-81.

[Article](#) [Google Scholar](#)

Pénin, J. 2012. Strategic uses of patents in markets for technology: A story of fabless firms, brokers and trolls. *Journal of Economic Behavior & Organization*, 84(2): 633-641.

[Article](#) [Google Scholar](#)

Pitelis, C. 2012. Clusters, entrepreneurial ecosystem co-creation, and appropriability: A conceptual framework. *Industrial and Corporate Change*, 21(6): 1359-1388.

[Article](#) [Google Scholar](#)

Sanders, W. G., & Tuschke, A. 2007. The adoption of institutionally contested organizational practices: The emergence of stock option pay in Germany. *Academy of Management Journal*, 50(1): 33-56.

[Article](#) [Google Scholar](#)

Santos, F. M., & Eisenhardt, K. M. 2009. Constructing markets and shaping boundaries: Entrepreneurial power in nascent fields. *Academy of Management Journal*, 52(4): 643-671.

[Article](#) [Google Scholar](#)

Sarasvathy, S. D., & Venkataraman, S. 2000. Strategy and entrepreneurship:

Outlines of an untold story. In M. A. Hitt, R. E. Freeman, & J. S. Harrison (Eds.). *The Blackwell handbook of strategic management*. Malden: Blackwell.

[Google Scholar](#)

Scharmer, C. O., & Kaufer, K. 2013. *Leading from the emerging future: From ego-system to eco-system economies*. San Francisco: Berrett-Koehler Publishers.

Schilling, M. 2000. Toward a general modular systems theory and its application to interfirm product modularity. *Academy of Management Review*, 25(2): 312-334.

[Google Scholar](#)

Scott, W. R. 2013. *Institutions and organizations: Ideas and interests*. Thousand Oaks: Sage.

[Google Scholar](#)

Shi, W. S., Sun, S. L., Pinkham, B., & Peng, M. W. 2014. Domestic alliance network to attract foreign partners: Evidence from international joint ventures in China. *Journal of International Business Studies*, 45(3): 338-362.

[Article](#) [Google Scholar](#)

Shih, W., Shih, C., & Chien, C. F. 2009. *Horizontal specification and modularity in the semiconductor industry*. Case of Harvard Business School.

Stryker, R. 1996. Beyond history versus theory: Strategic narrative and sociological explanation. *Sociological Methods & Research*, 24(3): 304-352.

[Article](#) [Google Scholar](#)

Su, J., Zhai, Q., & Karlsson, T. 2016. Beyond red tape and fools: Institutional

theory in entrepreneurship research, 1992-2014. *Entrepreneurship Theory and Practice*, Forthcoming.

Suddaby, R., & Greenwood, R. 2005. Rhetorical strategies of legitimacy. *Administrative Science Quarterly*, 50(1): 35-67.

[Article](#) [Google Scholar](#)

Sun, S. L., Chen, H., & Pleggenkuhle-Miles, E. 2010. Moving upward in global value chains: The innovations of mobile phone developers in China. *Chinese Management Studies*, 4(4): 305-321.

[Article](#) [Google Scholar](#)

Sun, S. L., & Im, J. 2015. Cutting microfinance interest rates: An opportunity co-creation perspective. *Entrepreneurship: Theory and Practice*, 39(1): 101-128.

[Google Scholar](#)

Sun, S. L., & Lee, R. P. 2013. Enhancing innovation through international joint venture portfolios: From the emerging firm perspective. *Journal of International Marketing*, 21(3): 1-21.

[Article](#) [Google Scholar](#)

Sun, S. L., & Yang, X. 2013. Transformative capacity and absorptive capacity: The rise of Chinese wind turbine manufacturers. In P. P. Li (Ed.). *Disruptive innovations in China and India: The strategic implications for local entrepreneurs and global incumbents*: 109-135. New York: Routledge.

[Google Scholar](#)

Sun, S. L., & Zhang, Y. 2013. Corporate governance and organizational survival under punctuational change: The case of China's burgeoning banking industry, 1897-1927. *Nankai Business Review International*, 4(4): 268-289.

Sun, S. L., & Zhang, Y. 2015. Qihoo 360: Building a “free” business model. *The CASE Journal*, 11(2): 163-183.

[Article](#) [Google Scholar](#)

Tang, Y.-C., & Liou, F.-M. 2010. Does firm performance reveal its own causes? The role of Bayesian inference. *Strategic Management Journal*, 31(1): 39-57.

[Article](#) [Google Scholar](#)

Teece, D. J. 1986. Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. *Research Policy*, 15(6): 285-305.

[Article](#) [Google Scholar](#)

Thelen, K., & Mahoney, J. 2015. Comparative-historical analysis in contemporary political science. In J. Mahoney & K. Thelen (Eds.). *Advances in comparative-historical analysis*: 3-36. Cambridge: Cambridge University Press.

[Chapter](#) [Google Scholar](#)

Thomas, L. D., & Autio, E. 2013. The fifth facet: The ecosystem as an organizational field. *Academy of Management Proceedings*.  
doi:[10.5465/AMBPP.2014.10306abstract](https://doi.org/10.5465/AMBPP.2014.10306abstract).

[Google Scholar](#)

Tseng, F.C. 1999. Semiconductor Industry Evolution for the 21<sup>st</sup> Century. *Symposium on VLSI Circuits Digest of Technical Papers*, IEEE, pp. 1--4.

Vaara, E., & Lamberg, J.-A. 2015. Taking historical embeddedness seriously:

Three historical approaches to advance strategy process and practice research.  
*Academy of Management Review*, Forthcoming.

Williamson, P. J., & Meyer, A. D. 2012. Ecosystem advantage: How to successfully harness the power of partners. *California Management Review*, 55(1): 24-46.

[Article](#) [Google Scholar](#)

Zimmerman, M. A., & Zeitz, G. J. 2002. Beyond survival: Achieving new venture growth by building legitimacy. *Academy of Management Review*, 27(3): 414-431.

[Google Scholar](#)

Zott, C., & Amit, R. 2007. Business model design and the performance of entrepreneurial firms. *Organization Science*, 18(2): 181-199.

[Article](#) [Google Scholar](#)

Zott, C., Amit, R., & Massa, L. 2011. The business model: Recent developments and future research. *Journal of Management*, 37(4): 1019-1042.

[Article](#) [Google Scholar](#)

## Acknowledgments

---

Support for this project was provided by Henry Bloch Foundation for Summer Research at University of Missouri-Kansas City. Sunny Li Sun thanks Duane Kuang and Gang Ding for that they helped Sunny's start-up receive the fund from Intel Capital in 2001 and mentored its growth strategy and business model. The two authors also thank the editor Peter Ping Li and two reviewers for excellent guidance, especially in the semiconductor industry. An earlier version of this manuscript was presented at United States Association for Small Business and Entrepreneurship (USASBE) conference and the Academy of Management Annual

Meeting 2016. Two authors thank Shenghui Ma and the conference participants for their helpful comments.

## Author information

---

### Authors and Affiliations

**Henry W. Bloch School of Management, University of Missouri-Kansas City, 5100 Rockhill Road, Kansas City, MO, 64110-2499, USA**  
Sumita Sarma & Sunny Li Sun

### Corresponding author

Correspondence to [Sunny Li Sun](#).

### Rights and permissions

---

#### [Reprints and permissions](#)

### About this article

---

#### Cite this article

Sarma, S., Sun, S.L. The genesis of fabless business model: Institutional entrepreneurs in an adaptive ecosystem. *Asia Pac J Manag* **34**, 587–617 (2017). <https://doi.org/10.1007/s10490-016-9488-6>

Published Issue date

28 October 2016 September 2017

DOI

<https://doi.org/10.1007/s10490-016-9488-6>

### Keywords

[Fabless](#)

[Business model](#)

[Semiconductor industry](#)

[Institutional entrepreneurship](#)

[Ecosystem](#)

[Co-evolution](#)

# Search

Search by keyword or author



## Navigation

Find a journal

---

Publish with us

---

Track your research