

On the Origins and Development of Pakistan's Soccer-Ball Cluster

*David Atkin, Azam Chaudhry, Shamyla Chaudry,
Amit K. Khandelwal, Tariq Raza, and Eric Verhoogen*

Sialkot, Pakistan, is the world center of hand-stitched soccer-ball manufacturing. The existence of the cluster is puzzling and seems to argue against the “home market effect”, since there is little local demand for soccer balls. This paper traces the development of the cluster from its origins in the late 1800s and shows that it was rooted in an initial home market effect due to the presence of British colonists. Subsequent expansion was driven by agglomeration forces and effective industrial policy. The case study underlines the importance of longer-term historical dynamics and the role of industrial policy for understanding a country’s contemporaneous pattern of specialization in the world economy. JEL codes: F1, O1, O2, R1

Sialkot, Pakistan, is the world center of hand-stitched soccer-ball production, home to roughly 130 firms, which produce for all major brands ([Atkin et al. 2015a](#), [2015b](#)). At first blush, the existence of this cluster is puzzling. Pakistanis’ sporting passion is cricket; soccer has always been of marginal interest in the country.¹ One might be tempted to dismiss the existence of a cluster where there is no apparent local demand as an anomaly, curious in itself but not indicative of a deeper pattern. But the phenomenon is not uncommon. For example, Sialkot is also a leading world producer of another not-particularly-Pakistani product: bagpipes ([BBC 2012](#)).

The existence of the soccer-ball cluster seems to argue against a keystone of modern thinking about trade and development: what [Krugman \(1980\)](#) called the “home market effect,” the idea that countries will tend to export goods for which

David Atkin is an assistant professor in the Department of Economics, MIT; Azam Chaudhry (corresponding author) is professor in the Department of Economics, Lahore School of Economics; his e-mail address is azam@lahoreschool.edu.pk; Shamyla Chaudry is an assistant professor in the Department of Economics, Lahore School of Economics; Amit K. Khandelwal is a professor at Columbia Business School, Columbia University; Tariq Raza is a project coordinator at the Lahore School of Economics; Eric Verhoogen is an associate professor at the School of International and Public Affairs and Department of Economics, Columbia University.

1. As one indication, Google Trends indicates that since 2010 web searches for “cricket” have outnumbered searches for the names of all other sports combined by a factor of five in Pakistan.

THE WORLD BANK ECONOMIC REVIEW, VOL. 30, SUPPLEMENT pp. S34–S41 doi:10.1093/wber/lhw015
Advance Access Publication March 29, 2016

© The Author 2016. Published by Oxford University Press on behalf of the International Bank for Reconstruction and Development / THE WORLD BANK. All rights reserved. For permissions, please e-mail: journals.permissions@oup.com.

they have large domestic markets. But a closer examination of the history of the cluster reveals a subtler story. In this short paper, we draw on historical sources and interviews with firms to trace the development of the cluster from its origins in the late nineteenth century. Our main message is that the home market effect appears to have been important in creating the cluster under British rule and that agglomeration effects—as well as some effective industrial policy—led to continued growth of the sector even after the colonists (the main local source of demand) left the subcontinent. In the presence of agglomeration effects, in other words, a lack of contemporary local demand is not in itself an argument against home market effects. The case study underlines the importance of understanding longer-term historical dynamics for understanding the current pattern of specialization in the world economy—and industrial development more generally.

The case of the soccer-ball industry is also consistent with the idea of Artopoulos, Friel, and Hallak (2013) that close exposure to final consumers is a key to manufacturing success in developing countries, at least in the early stages. In several of the Argentinian industries that Artopoulos et al. (2013) study, the exposure occurred because the pioneering entrepreneurs were themselves embedded in the richer-country markets before returning to Argentina. In the soccer-ball case, the British consumers were present locally. But the cases have in common the idea that initial knowledge of end-consumer tastes (which may not be easy to come by) appears to have been key to the success of the respective industries.

I. ORIGINS OF THE CLUSTER

Sialkot is located close to the border between present-day Pakistan and India. The city historically had a large Muslim population. Because it straddled the Ravi and Chenab Rivers, the land was fertile and attracted many traders of agricultural goods and livestock and the city held multiple major cattle fairs each year ([Government of the Punjab 1895](#)). Because of its strategic location and natural resources, the Mughals established a fort in Sialkot at the end of the twelfth century. Later, the British established a large military garrison there in 1852. Drawn by the demands for goods and services generated by a large, well-funded military presence, skilled workers came to the city ([Government of the Punjab 1889](#)). The influx of soccer-playing foreigners, the availability of leather, and the presence of skilled Muslims able and willing to work with leather would all be important for development of the soccer ball cluster.

In the late nineteenth century, production of soccer balls arose as a way for the local artisans to use their skills with leather to cater to the British in colonial India. Iqbal Sandal, member of a well-known family in the industry and author of a self-published history of soccer-ball production in Sialkot, describes the origins of the sector as follows (Sandal, undated). In 1889, a British sergeant approached a Muslim saddle-maker in Sialkot named Fazal Elahi and asked him to repair a ball. Elahi repaired the ball, but the leather of the ball was dried out and the ball quickly needed another repair. Elahi cut open the existing ball and made

a replica following the same pattern from softened leather. The sergeant, happy not to have to wait the typical eight months for a new ball to arrive from England, ordered six more balls for his regiments. The sergeant also introduced Elahi to colleagues in other regiments around Sialkot and elsewhere on the sub-continent. After producing on his own for 15 years, in 1904 Elahi took on Alla Ditta Sandal, the son of a cousin, as an apprentice. Alla Ditta Sandal and his father later established their own firm. Elahi subsequently took in a number of other apprentices, who also subsequently launched new businesses.²

In this early phase, it appears that the crucial factors for the success of the industry were the local demand from British army personnel and knowledge spillovers due to spinoffs by apprentices from the first firms.

II. EXPANSION OF THE CLUSTER

Sialkoti traders began traveling to British garrison towns across India, first repairing and then selling new balls produced in Sialkot ([Government of the Punjab 1921](#)). During World War I, when English factories were producing few balls, Sialkoti firms began exporting to other colonies ([Government of the Punjab 1921](#)). Exports subsequently expanded to a wider range of countries. Khalid Gundra of Taj Mahal, a soccer ball firm founded in 1904, explains how his family's firm grew over time:

Between 1914 and 1918, the demand for footballs was on the rise in Egypt because of the British presence there and the firm's first export was to Egypt in around late 1910s. By the 1930s the firm started to supply sports goods to Australia, Canada, London and South Africa . . . During World War II (1939–1945), word starting spreading internationally about Sialkot's sports industry and exports increased. By the mid 1960's the Sialkot sports goods sector was expanding rapidly since Sialkot was recognized as a destination for supplying quality sports goods (including football) and customer orders exceeded the firm's production capacity.³

This diversification meant that when most of the approximately 155,000 British subjects⁴ left the subcontinent with Independence and Partition in 1947, Sialkoti firms had other sources of demand beyond the local market. Export data for sporting goods starting in 1954–55 shows that already by that time, Pakistan was exporting over 10 million US dollars of sporting goods in 2013 US dollars,⁵

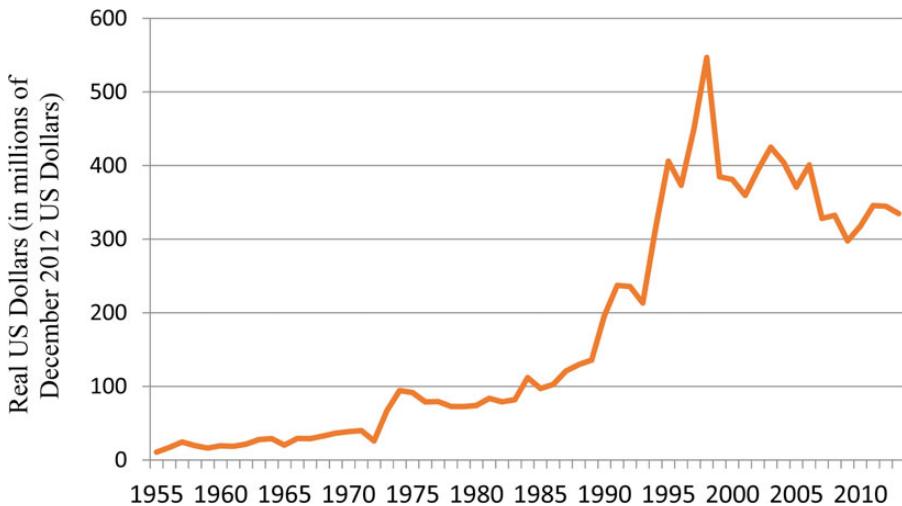
2. Spinoffs of this type appear to have been important among firms producing other sporting goods in Sialkot in the same period. The 1920 British Gazetteer for Sialkot reports: “The two Uberoi brothers . . . started the manufacture of cricket bats with only half a dozen workmen . . . In 1899 the Uberoi brothers separated and took to trade rivalry . . . The first grade workmen able to turn out work equal to the English model . . . are extremely difficult to retain. Many workmen have learnt in [one of the brother's] shops and have gone away to set up their own.” [Mostafa and Klepper \(2011\)](#) note that, more recently, Bangladesh's apparel industry also expanded through spinoffs from the initial firms that entered the industry.

3. Source: Interview of Khalid Gundra by Shamyla Chaudry and Tariq Raza on November 9, 2015.

4. The 1931 Census of India ([Hutton 1933](#)) reports 155,555 British subjects living in India. The 1941 census was deemed unreliable due to the war.

5. Source: Economic Survey of Pakistan (various issue) and State Bank of Pakistan. Export values in rupees are converted to US dollars using prevailing exchange rates and are then deflated by US Urban CPI (Dec. 2012 = 100).

FIGURE 1. Pakistan's Exports of Sporting Goods



Source: Economic Survey of Pakistan (various issues) and State Bank of Pakistan. Export values in rupees are converted to US dollars using exchange rate data from the State Bank of Pakistan and deflated by US Urban CPI (Dec. 2012=100).

the majority of which were soccer balls.⁶ As shown in figure 1, exports grew rapidly in subsequent decades, increasing to over US\$20 million in 1964–65, over US\$90 million in 1974–75, and peaking at US\$547 million in 1997–98. Destination-level export data spanning the entire period are unavailable, but starting in 1972, the UN Comtrade database reports destinations for Pakistan's exports. By 1972, Pakistani sporting goods had already penetrated 98 export markets and reached 135 markets by 1997.⁷ In more recent years, Sialkot has been challenged by East Asian producers, particularly at the low end of the market, but remains the dominant producer of hand-stitched soccer balls.

In the following subsections we consider two forces that appear to have been key to the industry's post–WWII expansion: agglomeration forces and industrial policy.

Agglomeration Forces

As is well known, identifying the determinants of agglomeration econometrically is challenging in the best of circumstances and nearly impossible without detailed

6. The coarseness of product categories in export data during this period prevents us from calculating soccer balls' share of sporting goods exports. However, they can be separately identified in US import data using the 10-digit HS classification system. In 1989, the earliest date for which we observe US imports at this level, Pakistani soccer-balls (HS 9506.62.40.80) accounted for 62 percent of the country's exports of sporting goods (HS 9606) to the US, potentially a lower bound for global exports since the US is not noted for its love of soccer.

7. The relevant SITC code (Revision 1) in the UN Comtrade database is 8944 “Other sporting goods.”

TABLE 1. Survey of Soccer Ball Manufacturers about Growth Factors

Agglomeration Force	Alberta Enterprises	Super Sportif	Haji A Rehman	Atlas Sports	Taj Mahal	Avg	Ranking
Labor Pooling	7	10	10	10	8	9	1
Knowledge Spillovers	7	9	8	10	10	8.8	2
Access to Specialized Inputs	8	10	—	10	7	8.75	3
Access to Subcontractors	8	9	10	8	7	8.4	4
Negotiating with Government as a united sector	8	10	10	1	7	7.2	5
Access to Buyers	7	—	7	7	5	6.5	6
Shared Use of Facilities	3	10	10	8	1	6.4	7

Notes: Each firm was asked to rate the agglomeration force on a scale of 1–10. Then the firm average was used to rank each agglomeration force in order of importance for the development of Sialkot's soccer-ball sector. Dashes represent nonresponse.

data on many locations and industries. In this short paper, our approach is to rely on reports of participants in the industry about the agglomeration forces they themselves believe to be important.

Haji Abdul Rehman, a firm owner, gave an overview of the benefits to his firm from operating in the cluster:

Labor pooling is the most important factor in influencing the working of the firm . . . It would at least take 3 years, provided that everything goes well, to train the novices for the job. . . Also, cooperation among firms is an extremely important benefit . . . The small makers are largely dependent on big firms for the orders. . . Besides this, availability of specialized inputs and services is also a highly crucial outcome of clusters . . . [D]ie-makers and technicians for machine repairs are a call away . . . Finally, the cluster allows firms to keep themselves updated on any new developments. For instance, it takes a lot of effort, money, and time to figure out what type of designs are more preferred by the clients. By just following the designs demanded by famous brands in Sialkot, one can get an idea of global customers' tastes and preferences.⁸

In November 2015 we asked five soccer-ball firms which agglomeration forces they believe were most important to the success of the Sialkot soccer-ball cluster. Table 1 reports their responses and reveals that firms believe labor pooling and knowledge spillovers were most crucial. Also important were access to specialized inputs and the ability to find subcontractors (which can be thought of as a specialized input service). In contrast, firms thought being able to negotiate with the government as a sector and the benefits of buyers coming to the cluster due to it being the global center of hand-stitched soccer balls were less important.

Industrial Policy

Producers also partially credit government industrial policy for the post-war expansion. Gundra of Taj Mahal cites two programs in particular. First, in 1960–61, the government created a specialized industrial area in Sialkot that

8. Source: Interview of Haji Abdul Rehman by Tariq Raza on November 19, 2015.

TABLE 2. Year of Establishment of Soccer Ball Producers

Decade	Year of Establishment
1890s	1
1900s	1
1910s	0
1920s	1
1930s	1
1940s	2
1950s	16
1960s	14
1970s	27
1980s	32
1990s	66
2000s	20
Total	181

Notes: The source of this table is the 2010 Punjab Industries Data. The sample consists of 181 firms that report soccer balls as their primary product, and the table reports the year of establishment by decade.

offered land to firms at 50 percent of the actual land value. Second, between the early 1970s and mid-1990s, the government operated an export rebate scheme. The scheme was designed to spur nontraditional exports (it applied only to manufacturing products) by allowing firms to claim back customs duties, sales tax, and excise duties paid on raw materials that were used as inputs for exports (see [Government of Pakistan 1978](#) for details).

Gundra notes: “The 1980’s was a golden period for the football sector . . . the government offered significant rebates on exports.” Abdul Rehman adds: “The government offered large rebates for exporters in 1970s until the 1990s. It was during this period that foreign clients used to visit and stay in the city for around 2–3 months searching for football manufacturers.” The rapid expansion of exports in the 1980s and 1990s shown in figure 1 is consistent with this perceived success of the export rebate policy, with soccer-ball exports booming in the 1980s and 1990s. The Punjab Industries Data (published by Department of Industries, Government of Punjab) allows us to supplement these figures with firm-level data. According to these data, 181 firms in Sialkot produced soccer balls as their primary product in 2010, and table 2 provides a tabulation of the firms’ year of incorporation. Of the surviving firms in 2010, more than half were established during the 1980s and 1990s when the export subsidy program was in place.

Since the mid-1990s, the Sialkot soccer-ball cluster has been undergoing a gradual contraction (see [Atkin et al. \(2015b\)](#), fig. A.1.) Although it has retained the dominant position in hand-stitched soccer balls, the hand-stitched segment has been losing market share to machine-stitched balls, which tend to be lower-quality and are typically manufactured in China. Despite the recent decline, the

cluster continues to employ tens of thousands of workers and remains an important export industry for Pakistan.

III. CONCLUSION

This short paper has examined the birth and growth of the Sialkot soccer ball cluster. The story that emerges is one of an initial home market effect, in this case due to the presence of British colonists, with later export success driven by the forces of agglomeration coupled with effective industrial policy. While only a single example, we think these three ingredients are likely to play important roles in industrial development more generally.

In addition, the case study is a useful reminder that the current location of industries does not necessarily reflect current economic fundamentals, neither in the classical sense of inherent productivity differences or differences in factor supplies nor in the “new trade theory” sense of the proximity of customers. Even the influential work on “self-discovery” by [Hausmann and Rodrik \(2003\)](#) tends to view the location of industries as responding to fundamentals: a pioneer firm may “discover” that it can be profitable producing a particular good in a particular location, and that may generate a knowledge externality for other firms, but the profitability of firms remains a function of exogenous characteristics of the location. In contrast, this case study suggests that, in the presence of agglomeration forces, once a sector reaches a certain critical mass, the persistence and growth of a sector can become entirely delinked from locational fundamentals. More work is required to examine how general this phenomenon is, but we suspect that it will not be difficult to identify other examples.

REFERENCES

- Artopoulos, A., D. Friel, and J. C. Hallak. 2013. “Export Emergence of Differentiated Goods from Developing Countries: Export Pioneers and Business Practices in Argentina,” *Journal of Development Economics* 105: 19–35.
- Atkin, D., A. Chaudhry, S. Chaudry, A. Khandelwal, and E. Verhoogen. 2015a. “Markup and Cost Dispersion across Firms: Direct Evidence from Producer Surveys in Pakistan,” *American Economic Review* 105 (5): 537–44.
- . 2015b. “Organizational Barriers to Technology Adoption: Evidence from Soccer-Ball Producers in Pakistan,” NBER Working Paper No. 21417.
- BBC News Asia, December 31, 2012. “The Thriving Bagpipe Business of Pakistan,” BBC. Web, <http://www.bbc.com/news/world-asia-20876096>.
- Government of Pakistan. *Economic Survey of Pakistan* (various years), Finance Division, Islamabad.
- . 1978. *Economic Survey of Pakistan 1977–79*, Finance Division, Islamabad.
- Government of the Punjab. 1889. *Punjab Provincial Gazetteer, 1889*, Calcutta Central Press Company Limited.
- . 1895. *Gazetteer of the Sialkot District, 1894–95*, Civil and Military Gazette Press, Lahore.
- . 1921. *Gazetteer of the Sialkot District, 1920*, Punjab Government Printing Press, Lahore.

- Hausmann, R., and D. Rodrik. 2003. "Economic Development as Self-discovery," *Journal of Development Economics* 72 (2): 603–33.
- Hutton, J. 1933. Census of India 1931, volume 1, part 1. Delhi: Manager of Publications.
- Krugman, P. 1980. "Scale Economies, Product Differentiation, and the Pattern of Trade," *American Economic Review* 70 (5): 950–59.
- Mostafa, R., and S. Klepper. 2011. "Industrial Development through Tacit Knowledge Seeding: Evidence from the Bangladesh Garment Industry." *Mimeo Washington University*.
- Sandal, M. I. Undated. *History of Football and Pakistan's Contribution*, Self-published.
- State Bank of Pakistan. 2015. *Historical Exchange Rates*, Statistics and Data Warehouse Department, Karachi. www.sbp.org.pk/ecodata/ibf_arch.xls.