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ABSTRACT

Japanese exports between 1880 and 1910 increased massively in volume, changed composition, and shifted away from leading industrialized countries toward poorer Asian neighbors. The product mix also varied with the level of development of the destination, with new products and specializations more likely to ship to less developed regional economies. Using a new disaggregated data set of the bilateral-product level exports for the universe of Japanese trade partners, we find that changes in various extensive margins (new markets, new goods) account for over 30 percent of export growth over this period. Determinants of initial entry include trade costs and market size. Products started in a small number of markets and accumulated additional destinations building on earlier successes. Subsequent entry was also influenced by product-level characteristics interacting with destination-specific characteristics. We confirm that export growth for "new" products was stronger in LDCs than in advanced economies, but the latter still claimed a larger share of overall trade growth. There is little evidence that Japan exported low quality manufactured goods to new, low-income destinations. Instead, reductions in trade costs helped Japan augment market share. Exit is relatively rare but appears to be determined by market-specific demand-side effects and product-specific factors.

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1. Introduction

Very little is known about whether and how nations increased their number of trade partners and the number of actively exported products during the first wave of globalization. Based largely on the experience of Great Britain, a country that specialized in manufactures and often exchanged these for raw materials, the late nineteenth and early twentieth centuries has been characterized as the *Great Specialization* (Findlay and O'Rourke, 2007). Our paper supplements this view by showing how an emerging economy, Japan, was able to take advantage of the various margins of trade to become an internationally competitive exporter in an increasingly wide range of products. Our analysis also provides fresh insight by exploring the historical dynamics behind the Linder hypothesis which states that quality is a key determinant of the direction of trade (Linder, 1961).

In the period we study, 1880 to 1910, there is little doubt that trade costs for Japanese exporters fell dramatically due not only to new technologies but also to concerted investments in, *inter alia*, improved market intelligence and the expansion of formal and informal empire. Industry-specific agents, firm-based marketing strategies as well as the establishment of diplomatic ties helped inform producers about market opportunities abroad. At the same time as these forces intensified, Japan experienced rapid structural change and productivity growth in the late Meiji period. We are interested in finding out how the so-called margins of trade (i.e., the composition of products and destinations) evolved in this period in response to these changes.

Could changing comparative advantage explain which nations Japan traded with and which products it exported? Japan's comparative advantage after the liberalization of the 1850s was largely based on specific know-how in specialized "old" products (e.g., silk and tea) and its relative abundance of labor. In the decades spanning the turn of the twentieth century, Japan's human capital endowment strengthened significantly and investment in machinery and equipment also increased. These forces suggest that Japan could transform itself from an exporter of raw material and traditional goods to higher valued added "new" manufactured goods. However, our results indicate that comparative advantage is insufficient to explain the pattern of Japanese exports.

We find instead that trade costs, destination market demand conditions, and product specific factors play significant roles in explaining Japanese exports of new goods to new markets in the 19th century. Over our period of analysis, Japan traded with an increasing range of countries, selling both new and old goods overseas. Countries at all levels of development received Japanese goods but "new" products (i.e., products associated with industrial transformation that were not exported in 1880) had greater success in terms of entry and growth in less developed countries, which were often geographically proximate to Japan. The ways in which Japan launched new products and grew the value of its exports are not necessarily consistent with a world where comparative advantage is the only determinant of trade flows but rather where trade costs, quality, and local demand patterns matter.

Trade costs (i.e., those costs associated with selling a domestic product in a foreign country) have been highlighted as important determinants of the range of products exported as well as which destinations can be served (Helpman et al. 2008; Eaton et al 2007). Product and firm-specific characteristics have also been highlighted as in Albornoz et al. (2012). In these models, firms produce a unique variety in the product space and they explore their capacity to export by entering selected markets. Firms then update their knowledge about the ability to compete in specific destinations and in global markets more broadly after initial market outcomes are observed. Hallak (2006) emphasizes quality, suggesting an interaction between income levels in destination markets (high income consumers prefer high quality goods) and product-specific characteristics (high income producers produce high quality goods). We look for evidence for all of these forces in the first wave of globalization.

To study these issues, we hand-collected, digitized, and cleaned official Japanese export data between 1880 to 1910 every five years at the product-partner level. With these new data we can, for the first time, systematically explore these issues at the minimum level of disaggregation that is required. Our data allow us to track trade in products at the SITC 3 digit level for a large number of destinations. We supplement these new data with traditional determinants of bilateral trade that proxy for trade costs such as port-to-port shipping distances, diplomatic representation, shared monetary regimes, and colonial status of the destination.

We are particularly interested in tracking the diversification of the export-product space and diversification of destinations, and then in assessing the determinants of these changes. We also study the exit of products, although our results indicate this had a negligible impact on Japanese trade. Additionally, we explore the determinants of *market entry* at the country-product level. We allow for traditional trade costs, destination demand effects, product specific factors, and the interaction between the last two. The latter three determinants are the most novel in terms of both the contemporary and historical trade literature. Market demand effects include the number of other goods exported in previous years to a destination, growth in sales of other products to that market, market size, and differences in GDP per capita. These forces influence the probability that a new product will successfully be exported to a market because of information spillovers across products or because the market in question has a latent demand for other Japanese goods. Product specific factors include the number of other markets served in the world and growth in sales to other markets. These factors proxy for the ability of the average firm within a product line to succeed on the global market. Furthermore, the interaction between product specific characteristics (whether a product was a new vs. old specialization, unit values, etc.) and the income of the destination market presents a test of Linder's hypothesis.

Our results indicate that roughly 30 percent of growth in exports between 1880 and 1910 came from shipping new goods to new countries, selling new goods to extant trade partners, and introducing already active products to new countries (i.e., growth in the extensive margins). In other words, Japan did not simply extend the sales of existing product lines with its historical trade partners. At the 3-digit level of aggregation, we find that Japan increased the number of products exported over the period from 67 products in 1880 to 116 in 1910. The number of destinations rose from 17 to 31. A number of decompositions of trade growth by country and over different benchmark years break these extensive margin changes down into several sub-sets such as selling active product lines to new countries, selling new product lines to active trade partners, and selling new goods to new trade partners. Moreover, we are able to decompose the growth of trade by level of economic development showing that growth in new goods to LDCs explains more of the expansion of trade than growth of new goods to advanced economies (AEs).

We also study the dynamics of market "entry" at the product level. Japanese goods had very high probabilities of expanding the number of destinations after entry into at least one market. The probability of decreasing the number of markets after first entry never exceeds 20 percent. We use logit regressions for the probability of first market entry and find that market size and traditional trade cost proxies are strong determinants. We also explore entry into other markets after a product's initial launch. Here, market demand characteristics, success of other Japanese products in that market, product success on other world markets as well as product/demand interactions are as important as traditional trade costs.

Our paper is among the first to systematically study these issues for any country in the first wave of globalization. Howe (1996) and Sugiyama (1988) are two modern contributions to the Japanese historiography on directly related issues, but both are much more limited in scope in terms of quantitative analysis and their coverage of data than our study. Huberman et al. (2017) examine similar data for Belgium, but they did not pursue the determinants of market entry at the product level nor do they investigate the interaction between destination market demand conditions and product characteristics. Furthermore, although Huberman et al. (2017) pursue a decomposition of trade onto the extensive and intensive margins, their decomposition of trade growth is not as detailed as ours. That study also focused on manufacturing exports whereas our data encompass the entire product space—new manufactured goods as well as traditional specializations. Our decompositions are closely related to Evenett and Venables (2002), which decomposes the growth of exports into product growth and new country growth between 1970 and 1997 and then examines whether exports to proximate markets are related to local entry. We follow their lead but emphasize forces besides localized spillovers. Besedes and Prusa (2011) decompose the growth of trade at the product-country level like us, but focus on "survival" probabilities. We find exit plays a small role in the case of Japan focusing more on entry. The particular decomposition of the margins of trade that we use follows closely that of Eaton et al. (2007), but instead of using firm-level data, we use product-level data.

2. Early Japanese Industrialization and Exports, 1880-1910

The Japanese economy began to industrialize in the second half of the nineteenth century, following its forced opening to international trade in the 1850s. Despite a modest natural resource endowment, an economy based on subsistence agriculture, and a political revolution culminating in the 1868 Meiji Restoration, over the next half century the economy rapidly increased its manufacturing share and trade volumes to become the region's economic leader and the first non-western industrial economy. By the turn of the century, Japanese manufacturing as a share of total output matched that of the United States, with an increasing emphasis on more capital and resource intensive sectors (Perkins and Tang, 2017). This owed in part to significant investment in domestic infrastructure like the railroad, which increased scale and agglomeration economies (Tang, 2014) and the country's adoption and diffusion of foreign technologies, which matched or exceeded that of leading industrial economies (Tang, 2016).

Trade continued to grow dramatically, starting from near autarky in the mid-19th century and averaging (nominal) growth of over 9 percent per annum in the four decades up to World War One (Japan Statistical Association, 1987). Exports and imports grew in tandem and were mostly balanced over the period, with trade accounting for a quarter of national output by the early 1900s. The composition of that trade, however, changed significantly partially reflecting the changing structure of domestic production. Although largely driven by textiles and related products, exports within this broad sector shifted from raw materials (e.g., silk cocoons) to higher valued-added products like finished fabrics and apparel while the opposite occurred in imports (Perkins and Tang, 2017). The importance of higher value added textiles is highlighted by cotton thread, which in 1910 was the single largest export and represented 42 percent of all exports, with silk fabrics and textiles taking a distant second place with 8.5 percent of exports. Trade in minerals, processed metals, and machinery exhibited a similar transition, with exports of higher valued added goods increasing and imports of the same decreasing in share over time.

Japan lacked tariff autonomy until the first decade of the 20th century because of "unequal" treaties signed with western foreign powers. Import tariffs could afford no protection or shelter from international competition by treaty and in any case averaged below 4 percent through the last decades of the 1800s. Following treaty renegotiation with the United States and European trade partners, tariff rates doubled in the first decade of the 20th century until the war. We would be hard pressed to attribute the observed changes in Japanese trade patterns to trade policy alone given how low tariffs were for most of the period in our analysis.

Unable to protect its nascent domestic manufacturing, Japan might have simply ossified and specialized along the lines of its initial factor-endowment and specialized know-how. A Ricardian comparative advantage or a factor endowment driven theory of trade would predict Japan specializing in raw silk and low-tech labor-intensive manufactures. Such are the stark general predictions of work as diverse in approach as Williamson (2011) and Galor and Mountford (2008).[1]

[1] Williamson (2011, pp.71-72) argues that Japan had a "latent" comparative advantage in cotton goods prior to 1853 and capitalized on it after escape from autarky. Sugiyama (1988) does not isolate cotton goods (neither fabric nor thread) as a traditional export instead focusing on raw silk and tea. In fact, Japan relied on imports of cotton thread

Moreover, while internal institutional and technological dynamics may have mattered for Japan's success in avoiding de-industrialization, Japan's direction of trade reveals more about the micro-economic forces driving Japanese patterns of international specialization. For the most part, however, analysis of Japanese trade has focused on national aggregates or limited numbers of products, which are useful in understanding general trade patterns and potential welfare gains from trade but neglect the detail available in more disaggregated trade statistics. In particular, aggregated series are unable to explain the timing of entry into particular markets, the sequencing of market entry, and the particular goods exported to a particular country.

In terms of trade costs, these would put Japanese producers at a disadvantage to destination/domestic producers and also with European competition in third-party European markets since the distance advantage would go to regional producers, conditional on quality. A love of variety could explain some Japanese exports to high trade cost environments, but not necessarily the dynamics of market entry.

The global trading regime into which Japan integrated should have hampered its ability to export increasingly varied manufactured goods since it was far behind the industrial leaders in labor productivity in industrial/non-traditional goods. In destination markets, both foreign and local competition mattered. Holding trade costs and quality constant, advanced economy competitors in manufactured goods should have had a clear initial advantage in price due to better productivity. Increasing labor productivity in Japan between 1880 and 1910 in the manufactured products characteristic of the first industrial revolution (textiles, metals, and other manufactures) would have allowed Japanese goods to achieve higher market share all else equal.

Even if Japan had improved on its cost/productivity dis-advantage, advanced economies might have been able to provide higher quality goods. Such goods, however, would not necessarily have been favored in low-income economies since their consumers tend to consume low quality goods (Hallak, 2006). Japanese producers might have been able to sidestep their ostensible productivity disadvantage and use quality as an additional margin to gain market share in manufactured goods especially in low-income countries. Hallak (1996) and the recent trade literature suggest that low-income producers, such as Japan was in this period, tend to produce low quality goods as well. This might help explain why exports to low-income markets expanded faster than high income markets. An interesting question is how trade patterns evolve in a dynamic setting where Japan is growing more quickly than poor countries in the region. The Linder hypothesis suggests that (per capita) income differences diminish trade. The comparative statics of the Linder hypothesis as explained in Hallak (1996) suggest that Japan would increase its trade with advanced economies in higher quality (presumably new) goods as the period progressed.

Intriguingly, and somewhat in contradiction to this view, Howe (1996, p. 134) noted that in 1900 "manufactures produced by newly-acquired manufacturing technology proved far more

prior to the 1880s. From the 1880s, Japan rapidly *increased* imports of cotton fabric in which Japan remained "un-competitive" (Sugiyama, 1988 p. 66).

successful in Asian Markets. This was because in these markets either the trade-off between price and quality levels embodied in Japanese goods was attractive to local consumers or Japan had the political power to obtain access to the market, or a combination of both…" This suggests that either quality or trade costs matter. Presumably Japan would be increasingly specialized in selling low quality goods to low income destinations. Howe (1996) supported his argument with data for 1900 only showing that the share of "new" goods exports was much higher in exports for LDCs (mainly in Asia) while "traditional" exports of silk goods, pottery and raw silk had higher shares to advanced economies.

In sum, to become internationally competitive, Japan not only had to invest in improving labor productivity but also to reduce trade costs and to manage the quality margin. With our granular data, we are able to provide further insight as well as a dynamic viewpoint based on theoretically-driven empirical models of trade. In what follows, we track the determinants and evolution of exports during a period of high globalization. These outcomes can also be used as proxies reflecting Japanese industrial advance, revealing underlying changes between and within sectors that would otherwise be unobservable.

3. Data

3.1 Disaggregated Export Data for Japan, 1880-1910

Our paper is the first to digitize the universe of bilateral, product-level data for Japanese exports every five years from 1880 until 1910. The data sources are the official trade returns from Japan's customs bureau, which collected the data annually starting in the 1870s (Ministry of Finance, various years). Until the 1880s, data collection was patchy and incomplete but thereafter data quality improved significantly. The data we use provide the destination, total value, physical units for some products, and a text-based product description. To classify these data, we hand-coded each product with a unique SITC Revision 2 classification. While some products are described at up to the 5 digit level, the majority of the products are classified at the 3 digit level of disaggregation (i.e., over 95 percent in value for each year of data).

Japan exported 116 unique goods at the 3 digit level at some point during our sample years. There were 67 goods in 1880 and 116 products in the product space that had ever been exported by 1910. It should be noted that in any given year some product lines were not active due to their emergence and then exit, so by 1910 only 100 product lines were active. We retain exiting goods in our data because in principle such goods could be re-launched and "zeroes" provide information about the inability to perform in export markets. In terms of destinations, we have up to 76 potential destinations. Japan actively exported at least one product to 17 countries in 1880 and to 31 countries in 1910. We assume the long list of the 45 other countries not enumerated in official Japanese sources as not having received significant exports of Japanese products. For these 45 other countries we collect as much information as possible on trade costs and market size, which we describe below, since these “zeroes” also provide information about when trade costs were prohibitively high.

Table 1 provides the nominal value of trade, number of active destinations, number of active product lines, and number of distinct goods that could be potentially exported. We do not deflate the nominal trade data since many of our comparisons will be within product comparisons and because we can use time dummies in a regression context to sweep away any variation coming from common price trends. Export price indices are available in principle or can be constructed from our data, but since the focus of our paper is on new goods, designing an appropriate export price index to properly account for new goods with these data would be a challenge. In addition, goods without uniform physical quantities are difficult to include in such price indices and these include significant goods in the manufactured goods list. In contrast to Evenett and Venables (2002), who restrict attention to trade values above several thresholds given data errors and one-off exports, we use all available data for our study.

[Table 1 here]

3.2 Bilateral Proxies for Trade Costs and Country Level Data

Besides the disaggregated trade data, we have also assembled a database that encompasses common proxies for trade costs used in the empirical trade literature. The first is maritime shipping distances in nautical miles. We have information for the leading ports in Japan: Nagasaki, Yokohama, and Kobe. Distances are also available for multiple ports for some destination countries (e.g., China). We use the simple average shipping distance across all pairs in our data.[2] We also hand-collected Japanese diplomatic representation abroad and foreign diplomatic representation in Japan from the Almanach de Gotha (various years). We record the presence of consular or diplomatic staff in each country or in Japan by using the yearbook’s detailed biographical list of such staff.

Finally, we include information on whether Japan had a fixed exchange rate with a destination because exchange rate uncertainty and volatility have been cited as important to trade costs in the literature (Estevadeordal et al 2003; Lopez-Cordova and Meissner, 2003; Mitchener and Weidenmier, 2008; Mitchener and Voth, 2011). Data are largely from Meissner (2003) and

[2] Our main source is Whittingham and King (1947). Distances, which are for steamships, changed mildly over time and by source but in insignificant amounts for those ports where we have observations during the period. We supplemented these data with data from the National Geospatial Intelligence Agency (2001) for some ports. Again, modern shipping routes are not significantly different from those in this period. For now we combine data for Asiatic Russia and European Russia into one destination and use the average distance between Japanese ports and two main ports Vladivostok and Odessa. The distance to Asiatic Russia is 662 nautical miles from Nagasaki to Vladivostok while it is 8,671 to Odessa. Disaggregating GDP data is problematic for us in this regard.

Officer (2014). Data on whether a destination had signed an MFN treaty with Japan are from the House of Commons (1908), Ministry of Foreign Affairs, Japan (1918) and the United States Tariff Commission (1922). In terms of market characteristics, we use real GDP and population from the Maddison project (2015). We also supplement some population data not in Maddison from the Gotha yearbook.

4. The Diversification of Japanese Exports

4.1 Summary Measures of Export Diversification

Between 1880 and 1910, Japan moved from serving its near neighbor China and leading rich countries like the US and the larger European economies to smaller and poorer nations in the region of Asia. Figure 1 shows the shares of total exports for Japan in each year of our sample by continent. North America (mainly the US) and Europe lose export share over time moving from nearly 80 percent of total exports in 1880 down to 60 percent by 1910. Asian countries extend their export share from 20 percent in 1880 to nearly 40 percent by 1910, with Chinese dominance within Asia fading.[3] Trade with Oceania (Australia mainly) is small but rising.

[Figure 1 here]

Figure 2 shows export shares for Japan's top 10 export destinations. The US and European market shares clearly decline over time in favor of China and other smaller or poorer destinations in Asia such as British India, Hong Kong, Straits Settlements and Korea. Figure 3 confirms that Japanese exports diversified, albeit at a declining pace, by plotting the Herfindahl index based on the sum of squared destination trade shares for each sample year. Figure 4 plots the number of goods exported to each of the top ten destinations. While the trend is upward for all countries, there is significant variation in the number of product lines shipped across destinations. These raw figures highlight that proximity and size may matter for the extensive product margin. Per capita income seems too variable at any given number of products shipped to be a key explanatory variable driving the extensive margin at least without conditioning on other variables.

[Figures 2 to 4 here]

Manufactures as a share of total Japanese exports were small in 1880 (less than 10 percent) but by 1910 their share had risen almost seven-fold. Figure 5 shows this evolution by aggregating all trade flows into 1 digit SITC categories. Initially, Japan was focused on exporting non-fuel raw

[3] If we include Hong Kong starting in 1890 with the Chinese series, the sum would show a steady increase over time. Unfortunately, we are unable to determine whether the appearance of Hong Kong in 1890 accounts for the apparent trade diversion of exports to China thereafter.

material, principally raw silk and silk waste as well as food and animal products. Manufactures including cotton thread, other cotton products and finished silk goods amongst other manufactured goods clearly dominate Japanese exports by 1910. Figure 6 shows that manufactures dominated in all of Japan's top nine destinations by 1910. In every one of these destinations, manufactures claimed over half or more of total export value by the 20th century. Below we explore this issue further by conditioning on product and destination factors.

[Figures 5 to 6 here]

4.2 The Extensive and Intensive Margin: Decomposing Japanese Export Growth

A large literature in empirical trade since the 1990s has actively investigated the growth of new goods and destinations to explain the growth of global and world trade. The rationale for doing so is that in nearly all models of trade (e.g., Ricardian, factor endowment, and those driven by a love of variety) trade costs matter for the direction of trade. Not only do trade costs determine the amount of each product shipped, but they also determine whether a product or destination is "active". Theoretical models assume that the revenue generated through exports is diminished because ad valorem equivalent trade costs raise the price of a product in a destination market. Fixed costs matter because total revenue must cover these market entry costs in order for firms to be willing to ship to a destination.[4] It should be noted that in standard models based on Krugman (1979) with no fixed market entry costs, there are no "zeroes" in trade flows: all firms export to all destinations. This theoretical observation is strongly at odds with both modern and historical trade data that show a preponderance of zeroes at the firm and product level and a large number of trade partners that do not trade with each other. Throughout our paper, we treat the set of firms in Japan that produce a given product as sufficiently homogeneous in terms of productivity. In this case, we can assume that the results on market entry from models like those of Melitz (2003) or Chaney (2008) apply at the product level.

As mentioned, historical data show the same paradoxes that are found in modern trade data. Countries do not export to all possible destinations. Intra-industry trade is a feature and nations at similar stages of development trade together. Moreover, factor-endowment driven models as well as Ricardian models assume that countries source a good from the cheapest supplier, implying "complete specialization". In reality, countries in the 19th century, as now, source very similar products from multiple destinations. In this way, it is reasonable, especially at our level of disaggregation, to rely on models, and to conceive of trade within the period as consistent with the Armington assumption that identify goods with their origin. In addition, given that we observe multiple suppliers of a particular product in a destination market, it may be the case that quality

[4] See Chaney (2008), Helpman, Melitz and Rubinstein (2008), and Melitz (2003) for examples of theoretical treatment. Eaton and Kortum (2002) provide a similar perspective in a Ricardian model of trade.

may matter such that even ostensibly high price producers (low productivity or high quality) can compete with sellers offering lower prices associated with either high productivity or low quality.

Having established a framework for thinking about what drives the direction of trade, we now proceed to study the growth of Japanese exports to new countries and the growth of trade explained by new product lines in the export portfolio. Following a decomposition of trade growth suggested by Eaton et al. (2007), we decompose the percentage growth of exports (*X*) into goods that continue from previous years, those that enter, and those that exit. Formally we have:

$$\frac{X_{dt}-X_{dt-1}}{X_{dt-1}}=\left(\frac{\sum_{k\in CN_d^{t-1,t}}\left(x_{dt-1}^k\right)}{X_{dt-1}}\right)\left(\frac{\sum_{k\in CN_d^{t-1,t}}\left(x_{dt}^k-x_{dt-1}^k\right)}{\sum_{k\in CN_d^{t-1,t}}\left(x_{dt-1}^k\right)}\right)+$$

$$\frac{EN_d^{t-1,t}\overline{x}_{dt-1}}{X_{dt-1}}+\frac{\sum_{k\in EN_d^{t-1,t}}\left(x_{dt}^k-\overline{x}_{dt-1}\right)}{X_{dt-1}}$$

$$-\frac{EX_d^{t-1,t}\overline{x}_{dt-1}}{X_{dt-1}}+\frac{\sum_{k\in EX_d^{t-1,t}}\left(x_{dt-1}^k-\overline{x}_{dt-1}\right)}{X_{dt-1}}$$

In this decomposition X_{dt} is the total value of exports from Japan to a country d in year *t*, x_{dt-1}^k is the value of exports of product *k* in year *t*. We break the set of goods into three sets such that $CN_d^{t-1,t}$ denotes continuing goods (i.e., the set or number of goods that are exported in year *t*-1 and year *t*); $EN_d^{t-1,t}$ denotes entering goods (the set or number of goods exported in year *t* but not in *t*-1); and $EX_d^{t-1,t}$ comprises exiting goods (the set or number of goods exported in *t*-1 but not in year *t*). The term $\overline{x}_{dt-1}$ is the average value of exports to a destination a given period.

The first two terms on the right side of the equation represent the contribution of growth in exports from continuing goods. The first term is the share of total exports in the previous period of goods that will continue to be exported, while the second term is the percentage growth rate of such goods between observation years. The next four terms allocate trade growth to value arising from new goods and then goods that exit. Per Eaton et al (2007), it is interesting to note that the shares attributable to gross entry and exit depend not only on the number of goods entering or exiting but also to their value relative to average exports. Decompositions of trade in the past have noted that entrants are usually small in value relative to continuing goods. This feature of the data is one reason that short-horizon decompositions find smaller shares for extensive margin growth than the intensive margin. A longer horizon will allow the new, initially low value goods to contribute more to overall trade growth in subsequent years. Table 2 provides a series of these decompositions based on total exports (i.e., d = all destinations in the world) for Japan. In this decomposition the only extensive margin is the new product margin. The upper rows decompose trade at a five-year horizon while the penultimate row shows the decomposition using 1880 as the base year and 1910 as the ending year. A final figure is given for the average of the five-year decompositions.

[Table 2 here]

Using the entire world as the "destination" and taking the average of the five-year observations, it appears that about only 2.6 percent of trade growth can be attributed to new products (i.e., the sum of columns 3 and 4 for 1880-1910). This value increases to about 5.6 percent when we take the decomposition over the entire 30 years. Different countries display different trajectories as well, as seen in Table 3, which decomposes exports for Japan's top 10 trade partners using 1880 and 1910 as the base and terminal years. Here the extensive margin in terms of new goods mattered the most for Germany (48 percent) and Korea (23 percent). For China, the new goods margin accounted for about 6.5 percent and for the US it was only 2 percent.

[Table 3 here]

Table 4 also shows that for five-year periods the intensive margin of continuing goods to continuing countries is on average responsible for 85 to 90 percent of trade growth. The exception is 1890 when Hong Kong and British India appear as new destinations. A robustness check that aggregates Hong Kong to China reveals that the intensive margin is much smaller in this year. The results using growth between 1880 and 1910 suggest that the intensive margin is only responsible for 70 percent of trade growth between these years. The next largest margin (16.7 percent) is continuing goods being shipped to new countries. Adding together the margins comprising totally new countries with continuing goods as well as continuing goods to new destinations already active in receiving other goods accounts for 24.6 percent of growth. New goods to new and continuing countries explain another 5.7 percent of trade growth. The size of these margins and overall results here correspond very closely to the quantitative magnitude of the extensive margin in Evenett and Venables (2002). They find that for all trade flows in their modern sample 78 percent of trade growth was in continuing goods to continuing countries, the share of continuing goods to new partners made up 21 percent of growth, new products accounted for 1.7 percent, and exit was negligible. The fraction of overall trade explained by continuing goods without further breakdown along the country extensive margin in Evenett and Venables (2002) was found to be 98 percent while we found that this value was 94.6 percent in Table 2.

[Table 4 here]

5. Market Entry & Exit

In Section 4 we established that new destinations and new goods play non-trivial roles in explaining the trajectory of Japanese export patterns in the years from 1880 and 1910. We now explore systematically the timing and determinants of market entry. In the 19^{th} century, as now, trade costs are an important key determinant of trade flows (Jacks et al., 2011; Huberman et al., 2017). Trade flows and the particular products shipped were impeded not only by high and selective tariff rates under various treaty provisions, but also by distance that determined transportation costs and information about market opportunities.

Shipping costs at this time accounted for roughly 2 to 5 percent of the value of the good and were generally declining due to improvements in shipping capacity and steamship innovations. Market intelligence depended on the networks of sales agents and the density and reliability of these networks varied greatly by industry and location.[5] In the late 19th century the diplomatic and consular network extended itself significantly, facilitating transactions by cutting red-tape (foreign consuls in the sending country) and reporting back to the home country about market opportunities. Much of the cost of accumulating up-to-date market intelligence could be considered a fixed market entry cost since these costs varied little by the size or value of shipments. These fixed costs help explain why some destinations and products failed to receive Japanese exports. The flip side of the decision to enter a market or to send a good is obviously the capacity of the market to generate revenue and product/industry/firm-specific factors such as productivity which could influence the level of revenue for a given level of fixed costs.

Of course numerous other sources export success can be identified. For example, firms within an industry may be more or less capable in exploiting export opportunities due to internal factors or market-based solutions to marketing. Albornoz et al. (2012) suggest that firms learn about their ability to export to specific markets with experimentation in initial markets. Matching tastes, finding demand complementarities, and marketing costs may be important ingredients to facilitate the expansion of exports. Many other trade costs besides information and trade policy also matter. Trade financing and credit constraints, packaging and preferences on such packaging, theft, insurance and storage costs amongst many others have been cited in the literature and in contemporary treatments of trade relations.

5.1 Expanding the Number of Markets over Time

We explore market entry by studying the dynamic expansion in the number of markets served. We do so by calculating transition matrices for the number of markets served in a base year and then in the following period (i.e., five years later). We study these transitions for the population of products experiencing positive exports in the period.

In our sample, the mean number of destinations when a product is first shipped is 6.4 and the median is 5. Table 5 provides summary statistics for each year. It is notable that the mean, median and maximum number of first markets increases over time and that the average grows faster than the median. Table 6, which presents a transition matrix for destinations between the

[5] Marrison et al. (2007) note the argument in the literature that Japanese marketing was effective and trading houses mattered, but are skeptical and prefer a product-cycle framework.

current year and five years earlier, finds that products progressively expanded their number of destinations. Once a product was shipped to more than six destinations, the probability of a decrease in the number of destinations was quite low. Table 6 also shows that goods that had yet to establish a global foothold by selling in between one to five markets had a non-negligible probability of dropping the number of destinations.

[Tables 5 to 6 here]

The rows in the transition matrix in Table 6 break the initial period number of destinations into 0, 1, 2, 3-5, 6-10, 11-20 and 21 or more destinations. Columns in this table show the number of destinations five years later. The frequencies or shares of goods in each entry can be interpreted as transition probabilities from the initial state to the state in the following period. We see that the cells above the diagonal are large while the cells below the diagonal are small, and increasingly so, as the number of initial markets rises. This suggests that exit from markets was relatively rare especially for goods with large numbers of initial destinations.

Products shipped to one market have a 20 percent chance of exiting. Products shipped to two destinations have an 18 percent chance of exiting or moving down to one market in the next period, and products shipped to three to five destinations have a 16 percent chance of moving to one or two markets in the next period. On the other hand, once a product secured a place in more than six markets, the probability of a decline decreases significantly.

On the upper diagonal, we find evidence for sequencing such that products starting in one market had a probability of over 50 percent of finding new markets in the subsequent period. For the most successful products (i.e., those with 11 or more markets), the probability of staying in the current range or expanding was higher than 90 percent. Super-successful products, i.e., those exported to nearly all active partners, maintained their markets at a rate of 98 percent. All of this is consistent with the idea that Japanese products, in trying to break into international markets, learned something about their export capabilities on global markets that enabled them to ship to new markets. On the other hand, it is impossible to decide whether destination market attributes mattered for product success or whether product specific forces mattered.

5.2 Beach-heads: The Determinants of First Market Entry

We now examine the question of market entry with the help of regression analysis. We explore the determinants of first market entry for the products that became active in any year between 1885 and 1910. Here we model the first entry decision at the country-product level with a pooled logit model. A product-destination observation receives a one if it is in the set of countries where a product launches for the first time and it is the first year this product is active.[6] All other destinations for a particular product receive a zero in the initial year of exports if there are no positive exports to this destination. We use a logit model to estimate the probability, π, that a destination country *d* is in the set of first destinations for product *p* in year *t* as follows:

$$\pi_{pdt}^{FM} = F(\tau_{dt}'\beta_0 + X_{dt}'\beta_1 + \delta_t).$$

We break down the determinants of first market entry into two main categories. The first category of determinants, τ, is trade costs with a vector of coefficients, β_0. We include product invariant proxies for trade costs such as distance, MFN treaty status, pegged exchange rate with the destination, diplomatic representation of the destination in Japan and that of Japan abroad, and whether the destination was the colony of another country. Such variables, as already stated, determine the amount of revenue generated in a destination market and some proxy for the fixed costs of market entry.

The second category, *X*, with associated coefficients, β_1, could be described as destination-market or demand factors. We include two variables related to size. These are the log of the sum of pair-GDP and similarity in size of total GDP of the destination and Japan (given as the log of the product of the share of GDP relative to total GDP of the dyad). We control for the log of the absolute difference in GDP per capita to capture whether Japan was more likely to enter into markets where the demand structure varied from that in Japan (a positive partial effect would be expected in this case) or whether Japan traded mainly with countries at a similar level of development (negative partial effect). This variable allows us to examine the issue of product quality. The Linder hypothesis would predict that richer countries would specialize in high quality goods and rich country consumers would have higher demand for such goods. Countries at similar levels of development would then have more trade, ceteris paribus. As discussed in Hallak (2006), a negative coefficient on income differences would be consistent with the Linder hypothesis suggesting that Japan was increasingly exporting higher quality goods to high income destinations as economic growth proceeded. If we assume that high income countries are always more likely to consume higher quality goods, a negative coefficient on income differences could be consistent with the observation in Howe (1996) that Japan followed a strategy of exporting low quality goods to low income markets even as it embarked onto a path of modern economic growth.

Additional covariates include the number of other products shipped to this destination in the previous period and the average growth rate of the value of other products between the current

[6] Given our data set up the product may have been launched at any time between the current year and four years prior. Less likely, but still possible, is the fact that some goods might have entered and then exited in between sample years. Given low overall exit rates, we think this is not a problem.

year and five years ago to this destination. Finally, we include a set of region fixed effects with Asia being the omitted category.

[Table 7 here]

As shown in Table 7, trade costs do not seem to be consistent predictors of first market entry. The only proxy that is statistically significant across all specifications is distance.[7] A doubling of distance is associated with a decline in the probability of being in the set of first markets of between 7 and 15 percent. Thus, it appears that market demand and product-specific determinants are more important predictors of where the firms supplying a product decide to enter for the first time.

In terms of market demand, size is a consistently statistically significant determinant. We include first the log of destination GDP (column 1) and then the log of the sum of destination and Japanese GDP (columns 2-4) when we include similarity in size and the difference in GDP per capita. A doubling of the total size of pairwise GDP raises the probability of first entry by between 7 and 15 percent. Neither similarity in size nor GDP per capita differences is a significant determinant. This is interesting because rather than trying to match preferences it appears that Japanese products first tested themselves in the largest markets. This could be for many reasons. Perhaps larger markets could support a higher volume of sales for a fixed entry cost. Alternatively, it could be that the fixed costs of entry were lower in these markets.

The success of other products also seems to exercise some control over the first market decision. Destinations that already revealed a capacity to purchase a higher number of goods and where sales of other products were strong seem to enhance the incentive to launch a new product there. These forces are important even after controlling for period fixed effects, which we do throughout, and the overall size of the market.

5.3 Expanding into Secondary Markets

After launching a product in an initial set of countries, Japan's products became active in other markets. There are many potential reasons why products could start out in some markets and then activate in others. Trade costs and their impact on trade may change over time. Market intelligence may come to light over time. In addition, if firms learn to export and experiment in a small number of selected initial markets, they may decide to delay entry in other markets until they have learned something about their own potential to export. Finally, of course, product demand and supply changes may alter the calculus of market entry.

[7] Average partial effects are reported for all logit models we present.

We study market entry at the country-product-year level in a discrete time hazard model. We assign a 1 to each country-product-year observation if the product has already previously entered into at least one market in the world in the previous period and entered that particular destination in a given year. The county-good pair drops from our sample after this year. Once a product is active in at least one destination country, each country-product observation where no positive sales have been previously recorded becomes 'at risk'. We assign these observations a 0. We estimate the probability of entry, π_{pdt}^{SM}, for product *p,* in destination country *d*, in year *t*, using logit models as follows:

$$\pi_{pdt}^{SM} = F\left(\tau_{dt}'\beta_0 + X_{dt}'\beta_1 + X_{pt}'\beta_2 + \delta_t\right).$$

For the market entry decision, we include a vector of trade cost controls, a vector of destination controls and a third category of determinants, X_{pt}, that are time-varying and product specific. We include the change in the logarithm of a product's sales to all other markets between the current year and five years ago. If a product is growing strongly in general then it might be expected to have success in the next market. We also include the number of destinations for the product in the previous period where the number of destinations is collected into the same bins used in the transition matrix of Table 6 (i.e., 2, 3-5, 6-10, 11-21 and more than 21 markets). Finally we include a full set of region and year fixed effects. Asia is the omitted category for the regional fixed effects.

Table 8 reports our results. Product specific factors are clearly consistent determinants across all columns. Growth in the previous five years to other markets is positive and significant. A doubling in the growth of sales is associated with a roughly 2 percent increase in the likelihood of entry. The mean rise in sales in our sample is 0.59 log points with a median of 0.52, a 75th percentile of 1.18 and a 95th percentile of 2.8. The sample likelihood of entry is 0.076.

[Table 8 here]

The number of markets served in the previous period by a product is a positive determinant as well. The average partial effect is larger in magnitude as the number of markets increases. For products serving two markets, the likelihood of entry is 2 percent higher than for one market. For products serving 11 to 21 markets or more than 21 markets, the increase is very sizeable in economic terms, raising the probability by 0.09 and 0.13 respectively.

In terms of market demand, size does not seem to matter as it is usually statistically insignificant or even negative (column 5). Instead, similarity in size is always significant as are differences in GDP per capita. Recall that Table 7 demonstrated that size and not similarity was a significant determinant of first markets. These results suggest that after initial experimentation in large markets, Japanese products gravitated to countries where demand was most favorable. It would appear that firms first learned something about their potential to export in large markets and then attempted to proceed to markets where demand conditions were most favorable.

We also find that new products were more likely to enter markets where other products had greater success. The partial effect of the number of goods sold in the market five years ago is positive and significant but not very large. Average growth rates of the value of other products is significant in column 6. However, with the average mean growth rate at 0.46, the impact is not all that large and only raises the probability by about 1 percent.

Evenett and Venables (2002) study the geography of market entry, highlighting the possibility that product entry is more likely in markets that are geographically proximate to other extant markets with active exports. Columns 7 and 8 perform similar tests to theirs and find mixed evidence of such a dynamic. While the probability of entry is higher when the nearest active market is closer, having positive exports to a neighbor (a country with a shared border) does not seem to matter. We also tested another metric of proximity, this time in the product space. We created a new variable equal to the value-weighted average of the SITC codes of active exports to a market. We then took the log of the absolute value of the difference between the SITC code for a product not yet entered and this weighted average. The goal here is to test for demand complementarities in the sense that products related in the product space are more likely to enter when similar exports are already being exported to a given market. We found that this variable is not statistically significant and had a very small marginal effect.

Trade costs are also generally more statistically significant than for first market entry. Distance, MFN treaty status, having a foreign diplomatic representative in Japan, and being the colony of another country are all significant. Distance is only weakly significant and is not significant at conventional levels (Column 5) when we control for the number of other products already in the market. It is surprising to see that if a destination is the colony of another country a product is more likely to enter. We take the average partial effect with a grain of salt since its size is so large. This is likely because of some collinearity with the region fixed effects and diplomatic representation. Large nations with empires were also more likely to have diplomatic representation in Japan.

5.4 Entry Strategy, Quality, and Destination Demand

Japan is likely to have faced a tremendous competitive challenges in destination markets in the export of "new" industrial goods. First, such "differentiated" goods rely on networks and market information (Rauch, 1999). Japan had only recently emerged from autarky while European manufacturers had been inter-mingling and transacting for decades in global markets. Empire, formal and informal helped as well. Howe (1996) and Sugiyama (1988) also highlight secondary issues in distribution such as European insurers who denied insurance to Japanese freight carriers—a problem only overcome in the 1890s with the establishment of the Tokyo Marine Insurance company (Howe, 1996, p.165). Trade costs had to be whittled down in order to be competitive even though in Asian markets Japan claimed an advantage due to physical proximity when compared to European producers.

Secondly, Japanese productivity would likely have been lower in advanced manufactured products, suggesting higher priced products at constant quality. As Howe (1996) suggests, another strategy would have been to sell lower quality to LDCs by offering lower quality/lower priced goods. Offering a snapshot in 1900 based on secondary sources, Howe (1996) showed that a handful of "new" goods had higher shares of total exports to LDCs than AEs while "older" goods (e.g., tea, raw silk) had higher shares to AEs. Howe (1996) argued that Empire mattered as did the "trade-off between price and quality levels".

In Table 9 we offer a dynamic test of Howe's observation which is related to Linder's hypothesis as well. Here we run Poisson PML regressions of the following form:

$$x_{pdt} = \exp\left[\beta_1\left(\text{Advanced}_d \times \text{NewGood}_p\right) + \mu_{pt} + \nu_{dt}\right] + \varepsilon_{pdt}$$

where *x* is the total value of exports for product *p* to destination d in year *t*, "Advanced" indicates whether an economy has a high GDP per capita or is an industrial leader, "New Good" is any good that did not have positive exports in the initial year of our sample, 1880, μ_{pt} denotes product by time fixed effects, ν_{dt} denotes destination by time fixed effects, and ε_{pdt} is an error term.[8] We adapt this model by using GDP per capita instead of the advanced indicator and allowing for non-time varying intercept terms etc. The regression allows a difference-in-differences interpretation of the coefficient β_1 which tests whether Japan was less successful in sending new goods to advanced countries than to LDCs after the introduction of these products relative to "old" products. The null hypothesis is that growth in exports of "new" goods is not determined by the level of development of the destination market. Under the alternative hypothesis, where $\beta_1 < 0$, the growth of exports in "new" goods is slower in AEs substantiating the idea that product-specific factors interacted with demand-side factors. This would be consistent with the idea that Japan's growth in exports in these years can be viewed as a process whereby low-quality goods were exported to low-income markets.

[Table 9 here]

Column 1 in Table 9 shows that the coefficient on the interaction term for AE and "new" goods is negative and statistically significant. Column 2 replaces the advanced indicator with the (log) level of GDP per capita. Again, the interaction term is negative and highly significant. Column 3 includes destination and product fixed effects that are interacted with year indicators.

[8] The "advanced" economies include: USA, France, UK, Germany, Italy, Australia, Holland, Belgium, Sweden and Norway, Denmark and Luxembourg.

Column 4 uses only the initial and end year of the sample (1880 and 1910). Both columns show point estimates of -1.75 that are highly significant. Column 5 looks at market entry instead. Using OLS we find that new products are significantly less likely to enter into AEs than into LDCs. All of our specifications in Table 9 include destination and product fixed effects, essentially controlling respectively for trade costs/destination specific demand or supply shocks (possibly time-varying) as well as productivity/unit value shocks in Japan at the product level. What remains is a test of how much market demand interacts with product-specific factors including quality.

In Table 10, we return to the decompositions explored above, but now we break the different margins down by advanced economy (AE) or LDC status of the destination. We find that the new goods margin explains more of the growth of overall exports with LDC destinations than for AEs. The percentage of trade growth explained by new goods to LDC destinations is 4.54 percent, which is over four times the percentage explained in AEs (1.10 percent). Overall growth in trade in this period is explained nearly evenly by AEs and LDCs (bottom 2 rows). Nevertheless, trade with LDCs grew significantly faster, triple the rate in fact. Trade with LDCs was 38 times larger in value terms in 1910 compared to 1880 whereas exports to AEs increased 12-fold between 1910 and 1880. Since exports to LDCs were smaller in value in both 1880 and 1910 than to advanced economies, the share of overall growth explained by LDCs is smaller. Nonetheless, these decompositions support the idea that, on the margin, new goods enjoyed easier access in LDCs in the period. This is especially remarkable given Japan's lack of tariff autonomy at the time and European dominance in Asian trade before World War One.

[Table 10 here]

We also return to our exploration of market entry regressions in Table 11 to show that market entry was also determined by the interaction of destination market GDP per capita and new good status. The probability of entry for a new good in an AE is lower, as shown in columns 1 and 2, and the average marginal effect of the difference in GDP per capita variable remains positive and significant. In column 3, we drop the income difference variable and replace it with GDP per capita and its interaction with “New” good status. Here we find similar outcomes to those above: new products are less likely to enter richer countries. The negative marginal effect appears to strengthen as GDP per capita rises. This evidence is consistent with the observation in Howe (1996) about the types of goods Japan exported but it sheds little light on the issue of quality.

[Table 11 here]

5.5 Quality and Japanese Exports: Evidence from British India

Howe (1996) suggests that Japanese success in new markets could have been a combination of tailoring the quality of various products to market demand and reducing trade costs. The modern trade literature suggests that quality is directly related to GDP per capita (Hallak, 2006) and that richer countries demand higher quality goods. If we assume that quality is directly related to the unit value of a product then we can explore Japanese quality during our sample as it began the process of modern economic growth. We would expect Japan to export increasingly high quality goods to high income countries.

On the face of it, Japanese trade patterns do not fit the simple story since new markets were forged in low income areas. Entry was more likely in countries where the gap in GDP per capita was larger. If the Linder hypothesis holds, then Japan should have raised its export shares to the advanced countries to whom it was largely converging and it should have been doing so by producing higher quality over time.

We have already seen in Table 11 that a majority of the growth in trade is explained by growth with advanced countries despite the fact that LDCs took up an increasingly larger share of exports over time. Could this fact be related to the Linder hypothesis that suggests that richer countries demand higher quality? First we assume that unit values are a proxy for quality. Table 12 runs regressions of the following form

$$\ln\left(\text{Unit Value}_{pdt}\right) = \beta_1 \ln(\text{GDP per capita}_{dt}) + \beta_2 \ln(\text{distance}_d) + u_{pt} + \varepsilon_{pdt}$$

where the dependent variable is the log of the unit value. For our independent variables, we include either an advanced economy indicator or the log of GDP per capita of the destination market, either the log of shipping route distance from Japan or country fixed effects, a set of product by year fixed effects u_{pt}, and an error term ε_{pdt}. Product by year indicators control for differences across products in the levels of the unit values as well as product specific supply shocks or global demand shocks to the particular Japanese product.

[Table 12 here]

Our results in Table 12, columns 1 through 4, show that GDP per capita or advanced status indicator are positively associated with the unit values. In column 2, when we control for one major determinant of trade costs, distance, the coefficient on the advanced indicator is reduced from 0.13 to 0.06, suggesting that part of the reason richer countries have higher unit values is that they are more distant in our sample. Interestingly the distance coefficient is positive in this specification. This is, in fact, a standard result when some fraction of trade costs is "specific", implying economies of scale in shipping (cf. Table 6 in Bernard et al., 2007). Richer countries import higher unit value goods from Japan but this is largely because of the nature of trade costs.

When we control for many unobservable trade costs (and destination specific demand factors) with country fixed effects, GDP per capita is no longer significant (column 5). In columns 6 through 8 we control for the problem of changing composition of goods by running these regressions only for goods which are shipped in all 7 time periods and have at least one advanced economy and one LDC destination. Findings in this matched sample are qualitatively the same as those in the preceding columns. In other words, we cannot rule out that trade costs are a determinant of unit values and any apparent quality differentials are merely reflections of the nature of trade costs.[9]

Using unit values as a proxy for quality may be problematic when investigating product quality. The modern empirical trade literature uses average prices at the highly disaggregated HS10 level data to explore quality. A product (associated with a firm in modern data and a country in our case) is said to have higher quality if, after controlling for price, it has higher market share (e.g., Fan et al., 2014). We study this issue by looking at Indian imports from seven sources in four broad product categories between 1890 and 1913. The seven sources include Belgium, China, France, Great Britain, Hong Kong, Italy, and Japan, which are the principal competitors in the Indian market. The products are "cotton twist and yarn", "cotton piece goods white (bleached)", "cotton piece goods, colored, printed or dyed", and "silk piece goods".

With these data we run regressions in Table 13 of the quantity of each good imported by India controlling for country fixed effects, product fixed effects, year fixed effects, and the log of the unit value. An interaction between a time trend and Japan allows us to examine quality by asking whether Japan had higher market share after controlling for product unit values. Column 1 shows that even after controlling for price Japan has a positive time trend in Indian market share. This time trend is also apparent in column 2 where each year is interacted for the observations when imports are from Japan. This flexible time trend is positive, suggesting higher market share over time and potentially higher quality.

[Table 13 here]

We can interpret these results in a few different ways: that Japanese exports to India increased in quality, as measured in Fan et al. (2014); that Japanese trade costs with India fell over time; or a combination of the two. One further distinguishing test is possible. If Japan were in fact exporting higher quality to India, it is logical and likely that its relative price (i.e., unit value) would be increasing faster than those of its competitors. Columns 3 and 4 show the opposite is true. The time trend for Japanese unit values, even after controlling for a range of fixed effects is negative. We believe that this is consistent with results in Table 12 and with the idea that Japan increased its market share as result of a decline in trade costs, especially the types of fixed trade costs that depend on product volume or weight and so are specific and not necessarily ad valorem.

5.6 Market Exit

[9] We ran gravity regressions in our full sample that interacted the unit value of a good with the GDP per capita of the destination similar in spirit to the regressions in Hallak (2006). We included country by year fixed effects and the logarithm of distance as additional controls. In a pooled sample, the interaction term of unit values and GDP per capita is not statistically significant.

Launching Japanese products on global markets and market entry was a fairly common event in our period but market exits were relatively rare. In our sample there are 269 cases of 'permanent exit' compared to 1,703 entrances and 394 first market observations.[10] Permanent exit is defined for a good when exports of a product-country pair in the previous period were non-zero but are zero in the current year and every following year for that product-country pair. We restrict attention to the period 1880 to 1905 since we have no information post-1910. There are 393 more observations where a product temporarily ceases to be sold in a market. We restrict attention to the cases of permanent exit from a market since temporary exits may reflect transitory factors, which are of less interest in explaining the long-run transformation of Japanese exports.

Table 14 explores the determinants of exit in a logit model where the dependent variable is one in the year when a product-country pair experiences a permanent exit. Once again we control for trade costs, market demand, and product specific factors. Since there are so few exits, many indicators/fixed effects are unable to be precisely estimated or need to be dropped completely. This is the case for the region fixed effects and the indicators for exports to 2 markets or greater than 21 markets. Since a product has a zero value in the year it exits, we cannot include growth of exports of this product between the current year and the previous period. Instead we include the level of exports in the previous period to a market by a product.

[Table 14 here]

We find that rising distance is associated with a higher likelihood of exit. This phenomenon is consistent with the idea that trade shares with European partners declined over time in favor of near neighbors in Asia. The only other trade cost proxies that are statistically significant are MFN treaty status and the fixed exchange rate indicator. The average partial effect of MFN treaty status is negative and (implausibly) large in economic terms. The adoption of the gold standard by Japan in 1897 is predicted to have lowered the probability of exiting from leading trade partner markets by about 0.30 percentage points, mitigating the distance effect.

Market- and product-specific factors are consistently statistically significant. Differences in GDP per capita drive down the likelihood of exit suggesting that Japanese trade was shifting to markets that were not growing as fast as Japan in the period. Again, this is consistent with the proposition that Japanese exports became more focused on less developed countries and moved away from serving high income markets over time. One possibility here is that Ricardian comparative advantages, which presumably narrowed versus leading countries over time as Japanese incomes converged, drove Japan to export to less advanced nations.

While market size and similarity in size played strong roles in explaining first entry and entry into secondary markets, they seem to play no significant role for exit. This is consistent with a view that fixed costs matter. In large markets entry is dependent upon covering those fixed costs but for exit a similar logic does not apply since it is free. We also find that exit is less likely when

[10] For reference there are 6,699 non-zero export observations in our data set.

the number of goods sold in a market rises. Moving from selling 10 to 50 goods to a market would decrease the probability of exit by nearly 40 percent. At the same time, average growth of all other products is not a significant determinant.

Product specific factors are also to be important. We find that when the growth of exports to the rest of the world of this product is high, a product is less likely to exit a country. Large levels of exports to the country in the previous period are also associated with lower exit probabilities. It is interesting to note that the number of markets in which the product has sales does not seem to matter. None of the indicators for number of markets is individually statistically significant. While expanding the number of markets seems to be a key determinant of entry, exit does not depend on the number of markets as much as strong growth of sales along the intensive margin. Once again, this is consistent with the notion that fixed costs are important for entry. At the same time, expansion of the intensive margin seems to depend on the past, at least insofar as past success is correlated with product-level unobservables.

6 Conclusions

Between its dramatic liberalization in the 1850s and the first decades of the 20th century, Japan traversed a path of unparalleled economic convergence to leading industrial economies in the west. Japan's opening promoted international trade but it also enhanced interaction with the rest of the world, allowing institutional and technological exchange. Could these processes be the sole lens through which to study Japanese exports in the period?

During the decades that ensued, Japan experienced significant gains from trade. Rather than persist in exporting the same goods as it did in 1870 or 1880, Japan diversified its portfolio of exports and moved up the value added chain. In particular, Japan progressively moved from being an exporter of raw materials in which it had a comparative advantage to being an exporter of cotton thread, cotton textiles, and more elaborate manufactured goods. This was true in other fields as well over time as Japan became an industrial economy by the early 20th century.

Japan also initially exported its traditional goods to rich countries and a handful of near neighbors. Between 1880 and 1910 its focus shifted strongly to less developed economies in the Asian region and away from the so-called advanced economies. The country also increased the absolute number of markets to which it could and did sell its goods. While it is undoubtedly the case that Japan's comparative advantage changed over time, this alone is not sufficient to explain Japan's exports. Instead trade costs and market demand patterns also mattered.

These changes in destinations and products exported tell us much about the Japanese economic experience of the late 19th century. Japan's rapid entry into new markets was roughly comparable to what LDCs achieved in the second wave of globalization according to Evenett and

Venables (2002). The intensive margin explains a slightly higher share of export growth than in Belgium, the only other country for which comparable data are available in this period (Huberman et al., 2017). While about 70 percent of Japan's growth in exports is attributable to selling the same goods to the same partners, a significant fraction--30 percent--was based on opening up new markets and selling new goods. Japan was not simply catching up to the leaders and capturing market share in the leading nations with a factor cost advantage.

In this paper, we explored whether trade costs, market specific forces and product specific factors mattered for entry and exit of Japanese products into a large set of countries and derived some stylized facts. First, market entry depended largely on market size and proximity. It appears that better information about markets and market size could help overcome the fixed costs of exporting and were good places to test the potential of exporting to other markets. Once established, products fanned out into other markets building on past success and catering or matching local tastes. As Japan's economy converged to the leaders, it became more likely to enter and to stay active in relatively poor markets. The growth of exports in new products appears to have been the outcome of declining trade costs more than matching quality to the destination. In other words, our evidence does not conform with the idea that export growth in Japan focused on providing low-cost/low quality goods in low-income countries.

All of these results are established using a new disaggregated trade dataset of which we are the first to analyze. While they are suggestive of patterns seen in other countries in the period and in modern times, there are some differences. First, Japan lacked tariff autonomy and so was constrained in terms of trade policy. This contrasts with the experiences of countries in recent decades, those of the leading countries of the 19th century, and Latin America in general where trade policies were usually made based on autonomous decisions that reflected local social and political preferences.

Japan was also constrained in the period by its relative remoteness compared to the average European economy and its relatively small domestic market compared to the USA. Still, Japan had some early advantages due to its factor endowments and being located relatively near to two large (but poor) markets like China and India. Relative to European and American producers, Japan was able to more easily capitalize on the size of these neighbors to learn how to export higher value-added goods. Further historical work using similar data sets in other countries is on the cusp of being developed and studied. Such research will allow us to make finer and more careful comparisons between Japan and the rest of the world as well as improve our understanding of how both developed and developing markets integrated over time.

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Table 1 Summary of Japanese Exports, 1880-1910

Year	Total Exports (yen)	Percentage Growth	Number of Distinct Goods	Number of Goods with Positive Exports	Number of Destinations with Positive Exports
1880	26,644,301	---	67	67	17
1885	34,216,514	28	82	80	19
1890	52,042,965	52	86	85	24
1895	128,902,768	148	89	87	25
1900	188,410,639	46	101	86	29
1905	303,591,398	61	109	86	30
1910	434,655,789	43	116	100	31

Notes: By 1910 there are 116 distinct goods at the SITC R2 3 digit level that appear in the sample. There are 76 potential destinations. The difference between goods with positive exports and distinct goods is that some goods come into sample then exit.

Table 2 Decomposition of Exports to All Destinations, 1880-1910

Year	% Growth	(1) Continuers' Share	x	(2) Growth by continuers	+	(3) Added Number of goods	+	(4) Exports of entering goods relative to average	-	(5) Goods Exiting	-	(6) Exports of exiters relative to average	
1885	28.42	99.62		26.68		22.39		-20.17		2.99		-2.61	
			93.52			**78.78**		**-70.97**		**10.50**		**-9.17**	100.00
1890	52.10	98.27		52.67		6.25		-5.91		0.00		0.00	
			99.36			**12.00**		**-11.35**		**0.00**		**0.00**	100.00
1895	147.69	99.78		147.55		3.53		-3.07		1.18		-1.18	
			99.69			**2.39**		**-2.08**		**0.80**		**-0.80**	100.00
1900	46.16	99.81		43.45		13.79		-10.99		14.94		-14.93	
			93.95			**29.88**		**-23.81**		**32.37**		**-32.35**	100.00
1905	61.13	98.08		59.29		10.47		-6.94		10.47		-9.92	
			95.13			**17.12**		**-11.35**		**17.12**		**-16.22**	100.00
1910	43.17	97.81		43.55		17.44		-16.83		1.16		-1.12	
			98.67			**40.40**		**-38.97**		**2.69**		**-2.60**	100.00
1880-1910	1531.33	95.85		1511.90		61.19		25.15		11.94		-7.79	
			94.63			**4.00**		**1.64**		**0.78**		**-0.51**	100.00
Annual Average	63.11	98.90		62.20		12.31		-10.65		5.12		-4.96	
			97.63			**19.51**		**-16.88**		**8.12**		**-7.86**	100.00

Notes: This table decomposes the growth of nominal trade from period *t*- 1 to period *t* into three main components. Each component has two parts. Terms (1) and (2) show the components accounted for by products which are exported in both *t* and *t*-1. Terms (4) and (5) account for the change in trade coming from products exported in *t* but not exported in *t*-1. Terms (5) and (6) do account for the change from goods that are exported in period *t* -1 but not in period *t*. Figures in bold below each years results are the percentage (x 100) of the total percentage growth accounted for by each term of in the case of terms (1) and (2) of the product of those terms.

Table 3 Decomposition of Exports to Top Ten Trade Partners, 1880-1910

Country	Average of 5-year changes	% Growth Exports	=	(1) Continuers' Share	(2) Growth by continuers	(1) x (2)	+	(3) Added Number of goods	+	(4) Exports of entering goods relative to average	-	(5) Goods Exiting	+	(6) Exports of exiters relative to average
China	(1880-1910)	**90.52**		96.78	87.39	**84.57**		17.87		-11.02		8.48		-7.56
USA	(1880-1910)	**59.33**		98.17	59.27	**58.18**		22.76		-19.37		11.70		-11.59
France	(1880-1910)	**51.42**		99.26	51.23	**50.85**		35.32		-34.28		16.90		-16.79
UK	(1880-1910)	**51.53**		96.54	50.20	**48.46**		27.10		-21.46		12.40		-10.22
Hong Kong	(1890-1910)	**44.65**		99.49	44.06	**43.83**		14.96		-14.09		8.76		-8.41
British India	(1890-1910)	**214.98**		96.92	208.80	**202.36**		25.71		-16.64		10.14		-9.61
Italy	(1880-1910)	**304.43**		99.17	307.91	**305.34**		38.70		-36.17		19.94		-19.51
Korea	(1885-1910)	**175.77**		79.51	170.96	**135.93**		16.32		-4.29		8.24		-6.37
Germany	(1880-1910)	**307.40**		88.06	183.68	**161.75**		49.05		95.04		12.70		-12.01
Australia	(1880-1910)	**81.62**		96.81	77.71	**75.23**		44.78		-38.43		10.64		-10.52

Notes: This table shows the average values for the decompositon of the growth of nominal trade for the five year periods beginning with the indicated years above. The decomposition separates the growth of trade from *t* - 1 to period *t* into three main components. Each component has two parts. Terms (1) and (2) show the components accounted for by products which are exported in both t and t-1. Terms (4) and (5) account for the change in trade coming from products exported in t but not exported in t-1. Terms (5) and (6) do account for the change from goods that are exported in period *t* -1 but not in period *t*.

Table 4 Detailed Decomposition for All Destinations, 1880-1910

	1885	1890	1895	1900	1905	1910	1880-1910
Percent of Growth due to							
Cont. goods, cont. ctrs.	83.88	24.71	98.58	91.21	90.18	91.56	70.02
Cont. goods, new destination	7.29	13.71	1.08	1.74	1.26	7.05	7.93
Cont. goods, all-new ctrs.	2.35	60.94	0.03	0.93	3.69	0.05	16.68
New Goods, cont. ctrs.	7.46	0.56	0.31	6.08	5.74	1.43	3.65
New Goods, all-new ctrs.	0.35	0.08	0.00	0.05	0.03	0.00	1.99
Exiting Goods	-1.33	0.00	0.00	-0.02	-0.90	-0.09	-0.27
Total explained	100	100	100	100	100	100	100

Notes: This table shows the percentage contribution of each 'margin' for a decompositon of the growth of nominal trade to all destinations for the five year periods beginning with the indicated years above. The decomposition separates the growth of trade from t- 1 to period t into six components.

Table 5 Summary Statistics for First Market Entry, 1880-1910

Year	Avg. # first markets	Median	Min	Max	N
1885	3.9	4	1	8	15
1890	3.7	3	1	10	4
1895	3.8	4	1	10	3
1900	6.7	5	1	27	12
1905	8	6	1	28	8
1910	8.2	6	1	28	7
All years	6.4	5	1	28	49

This table tracks the number of first markets for Japan. A first market for a product is a market in which a product has positive exports in the first year it appears in the official trade data.

Table 6 Transition Matrix for Number of Destinations

		# Destinations in t							
		0	1	2	3-5	6-10	11-20	21+	Pr(exporting to D destinations in t-1)
	0	76.74	0	2.33	6.98	9.3	4.65	0	8.05
# Destinations	1	20	26.67	10	30	10	3.33	0	5.62
in t-1	2	11.11	7.41	18.52	44.44	18.52	0	0	5.06
	3-5	11.22	0	5.1	33.67	45.92	4.08	0	18.35
	6-10	2.13	0	0.71	9.22	48.94	38.3	0.71	26.40
	11-20	2.13	0	0	0.71	4.26	67.38	25.53	26.40
	21+	0	0	0	0	0	1.85	98.15	10.11

Notes: This table is a transition matrix by category of number of destinations served. Frequencies of products transitioning from a given number of destinations given in the rows to those categories in the columns are calculated from all products ever exported. The probability or share of goods exporting to the categories in the rows is given on the far right.

Table 7 Logit Model for First Market Entry

	(1)	(2)	(3)	(4)
ln (distance)	-0.15***	-0.13***	-0.07***	-0.12*
	[0.03]	[0.03]	[0.03]	[0.07]
MFN treaty	0.03	0.03	0.02	0.06
	[0.03]	[0.03]	[0.04]	[0.04]
Pegged Exchange Rate	0.03	0.03	-0.03	-0.03
	[0.03]	[0.03]	[0.03]	[0.03]
Diplomat in Japan *t*	-0.01	0.02	0.09	0.31***
	[0.08]	[0.07]	[0.06]	[0.02]
Diplomat in Destination *t*	0.13***	0.14***	0.01	0.01
	[0.03]	[0.03]	[0.04]	[0.04]
Colony of another Country	0.01	0.06	0.10	0.52***
	[0.08]	[0.09]	[0.09]	[0.02]
ln (GDP)	0.07***			
	[0.01]			
ln (Y + Y)		0.15***	0.06**	0.07**
		[0.02]	[0.03]	[0.03]
ln (GDP similarity)		0.00	-0.009	-0.01
		[0.02]	[0.02]	[0.03]
ln (GDP per cap. Diff.)		-0.00	0.00	0.00
		[0.01]	[0.01]	[0.01]
Lagged Number Goods Exported to Destination			0.004***	0.004***
			[0.001]	[0.001]
Lagged Average Growth of Other Products			0.04***	0.05***
			[0.01]	[0.01]
Africa				0.66***
				[0.05]
Europe				0.05
				[0.08]
N. America				-0.02
				[0.04]
S. America				0.04
				[0.09]
Oceania				-0.04
				[0.04]
Number of Observations	1,315	1,315	1,315	1,315
Time Dummies	Yes	Yes	Yes	Yes

Method of estimation: logit MLE. Dependent variable is "first destination(s)" for a good in the first year it is traded. Average partial effects are reported. Robust standard errors clustered at the country-good level in brackets. Year dummies are included but not reported. ***p<0.01, **p<0.05, *p<0.1

Table 8 Logit Model for Market Entry

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln (distance)				-0.23***	-0.15***	-0.22***	-0.22***	-0.22***
				[0.02]	[0.03]	[0.02]	[0.02]	[0.02]
MFN treaty				0.13***	0.12***	0.12***	0.12***	0.12***
				[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Pegged Exchange Rate				0.02**	0.02*	0.02**	0.01	0.02**
				[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Diplomat in Japan *t*				0.11***	0.14***	0.11***	0.11***	0.11***
				[0.03]	[0.02]	[0.03]	[0.03]	[0.03]
Diplomat in Destination *t*				0.03***	-0.01	0.02	0.01	0.02
				[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Colony of another Country				0.13***	0.13***	0.13***	0.13***	0.13***
				[0.03]	[0.03]	[0.03]	[0.03]	[0.03]
ln (Y + Y)			0.10***	0.08***	0.03***	0.09***	0.11***	0.09***
			[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
ln (GDP similarity)			0.06***	0.03***	0.02***	0.03***	0.04***	0.03***
			[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
ln (GDP per cap. Diff.)			0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
			[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Lagged change ln(Exports to all markets)	0.01***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Lagged Number Goods Exported to Destination					0.002***		0.02***	0.02***
					[0.0003]		[0.00]	[0.00]
Lagged Average Growth of Other Products						0.02***		
						[0.00]		
ln (distance to closest market) t-1							-0.04***	
							[0.00]	
1 if neighbor has pos. exports t-1								-0.01
								[0.01]
2 markets *t* - 1		0.02**	0.02**	0.02***	0.02***	0.02***	0.02**	0.02***
		[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
3-5 markets *t* - 1		0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***
		[0.01]	[0.00]	[0.00]	[0.00]	[0.00]	[0.01]	[0.00]
6-10 markets *t* - 1		0.06***	0.07***	0.07***	0.07***	0.07***	0.05***	0.07***
		[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
11-21 markets *t* - 1		0.12***	0.15***	0.17***	0.18***	0.17***	0.13***	0.17***
		[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
>21 markets *t* - 1		0.24***	0.31***	0.38***	0.41***	0.37***	0.31***	0.37***
		[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]
Africa	-0.00	-0.02	0.17***	0.59***	0.54***	0.57***	0.59***	0.57***
	[0.04]	[0.04]	[0.04]	[0.04]	[0.05]	[0.04]	[0.04]	[0.04]
Europe	-0.14***	-0.16***	-0.08***	0.09***	0.03	0.09***	0.07***	0.09***
	[0.01]	[0.01]	[0.01]	[0.02]	[0.03]	[0.02]	[0.02]	[0.02]
N. America	-0.06***	-0.07***	-0.00	-0.00	-0.03*	0.00	0.01	0.00
	[0.02]	[0.02]	[0.02]	[0.01]	[0.02]	[0.01]	[0.01]	[0.01]
S. America	-0.20***	-0.22***	-0.12***	0.09***	0.03	0.10***	0.18***	0.10***
	[0.01]	[0.01]	[0.01]	[0.03]	[0.04]	[0.03]	[0.03]	[0.03]
Oceania	-0.15***	-0.17***	-0.05**	-0.01	-0.03**	-0.01	0.02**	-0.01
	[0.02]	[0.02]	[0.02]	[0.01]	[0.02]	[0.01]	[0.01]	[0.01]
Number of Observations	9,239	9,239	9,239	9,239	9,239	9,239	9,239	9,239
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Method of estimation: logit MLE. Dependent variable indicates that this is the first year for a good in a country. Robust standard errors clustered at the country-good level in brackets. Year dummies are included but not reported. Average partial effects of each variable are displayed.
***p<0.01, **p<0.05, *p<0.1

Table 9 Destination Demand and Export Growth in "New" Goods

	(1) Value - all years	(2) Value - all years	(3) Value - all years	(4) Value - 1880 & 1910	(5) Export Status - all years
Advanced x New good	-1.64***	---	-1.75***	-1.75***	-0.16***
	[0.29]		[0.30]	[0.27]	[0.03]
ln (GDP per capita) x New Good	---	-0.83***	---	---	---
		[0.12]			
ln (population)	-0.69	---	---	---	---
	[0.76]				
ln (GDP per capita)	---	-0.16	---	---	---
		[0.57]			
Number of observations	46,473	17,424	48,392	13,730	48,392
Product fixed effects	yes	yes	no	no	no
Destination/pair fixed effects	yes	yes	no	no	no
Year fixed effects	yes	no	no	no	no
Product x year fixed effects	no	no	yes	yes	yes
(Destination/pair) x year fixed effects	no	no	yes	yes	yes
Method of estimation	PPML	PPML	PPML	PPML	OLS

Dependent variable in columns 1-4 is total value of exports from Japan to a set of 76 destinations in a product. Method of estimation is Poisson PML. Dependent variable in column 5 is 1 if a country has positive exports in a good and 0 if no exports are recorded. Method of estimation is OLS. A "New" good is a product that was not exported in 1880. Fixed effects are included where indicated but not reported. Robust standard errors clustered by destination in brackets. *** p<0.01, **p<0.05, *p<0.1

Table 10 Margins of Trade and export Growth: Advanced and Less Developed Countries

		1885	1890	1895	1900	1905	1910	1880-1910
Percent of Total Export Growth due to	Ctry. Type							
Cont. goods, cont. ctrs.	AE	54.90	38.10	72.78	2.54	46.35	67.03	48.48
	LDC	29.76	-13.45	25.83	88.50	44.93	24.54	21.56
Cont. goods, new destination	AE	6.75	13.61	0.44	0.57	0.35	6.39	5.59
	LDC	0.54	0.11	0.63	1.20	0.91	0.66	2.34
Cont. goods, all-new ctrs.	AE	0.02	0.00	0.00	0.00	0.00	0.00	0.06
	LDC	2.34	60.99	0.03	0.95	3.69	0.05	16.61
New Goods, cont. ctrs.	AE	1.83	0.17	0.00	1.33	0.80	0.47	1.10
	LDC	5.63	0.39	0.31	4.86	4.94	0.95	2.55
New Goods, all-new ctrs.	AE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	LDC	0.35	0.08	0.00	0.06	0.03	0.00	1.99
Exiting Goods	AE	-0.78	0.00	-0.02	0.00	-0.16	0.00	-0.25
	LDC	-1.33	0.00	0.00	-0.02	-1.84	-0.09	-0.05
All. Continuing goods margins	AE	61.67	51.71	73.22	3.12	46.70	73.41	54.14
	LDC	32.64	47.65	26.49	90.66	49.53	25.25	40.52
All new goods margins	AE	1.83	0.17	0.00	1.33	0.80	0.47	1.10
	LDC	5.98	0.47	0.31	4.92	4.97	0.95	4.54
All margins	AE	62.71	51.88	73.19	4.44	47.34	73.89	54.99
	LDC	37.29	48.12	26.81	95.56	52.66	26.11	45.01
Grand Total		**100**	**100**	**100**	**100**	**100**	**100**	**100**

Notes: This table shows the percentage contribution of each 'margin' for a decompositon of the growth of nominal trade to all destinations for the five year periods ending with the indicated years above or for the long period 1880 to 1910 in the final column. The decomposition separates the growth of trade from t - 1 to period t (periods are five years) into six components for two types of countries. The "advanced" economies denoted by "AE" include: USA, UK, France, Italy, Germany, Australia, Holland, Belgium, Sweden & Norway, Denmark, and Luxembourg. All other countries are LDC. Continuing goods are goods exported in both periods to any country. New goods are goods not exported in the prevous period to any country. A new destination is a country that receives positive exports in the previous period but not from the the set of continuing goods. All-new countries receive no imports in the previous period.

Table 11 Logit Model for Market Entry: Destination Demand Conditions

	(1)	(2)	(3)
ln (distance)	-0.24***	-0.15***	-0.21***
	[0.02]	[0.01]	[0.02]
MFN treaty	0.13***	0.08***	0.12***
	[0.01]	[0.01]	[0.01]
Pegged Exchange Rate	0.02*	0.01*	0.01
	[0.01]	[0.01]	[0.01]
Diplomat in Japan *t*	0.11***	0.02*	0.11***
	[0.03]	[0.01]	[0.03]
Diplomat in Destination *t*	-0.00	-0.01	0.02**
	[0.01]	[0.01]	[0.01]
Colony of another Country	0.14***	-0.01	0.14***
	[0.03]	[0.02]	[0.03]
ln (Y + Y)	0.07***	0.08***	0.09***
	[0.01]	[0.01]	[0.01]
ln (GDP similarity)	0.03***	0.02***	0.03***
	[0.01]	[0.01]	[0.01]
ln (GDP per cap. Diff.)	0.02***	0.01***	---
	[0.00]	[0.00]	
Lagged change ln(Exports to all markets)	0.02***	0.02***	0.02***
	[0.00]	[0.00]	[0.00]
Lagged Average Growth of Other Products	0.02***	0.02***	0.02***
	[0.00]	[0.00]	[0.00]
Advanced Economy	0.08***	0.06***	---
	[0.01]	[0.01]	
"New" good	0.01	0.01	---
	[0.01]	[0.01]	
Advanced Economy x "New" good	-0.04***	-0.05***	---
	[0.01]	[0.01]	
ln (GDP per cap.) destination	---	---	0.06***
			[0.01]
ln (GDP per cap.) destination x "New" Good	---	---	-0.03***
			[0.01]
2 markets *t* - 1	0.02***	0.02***	0.02***
	[0.01]	[0.01]	[0.01]
3-5 markets *t* - 1	0.03***	0.03***	0.03***
	[0.00]	[0.00]	[0.00]
6-10 markets *t* - 1	0.07***	0.07***	0.07***
	[0.01]	[0.01]	[0.01]
11-21 markets *t* - 1	0.17***	0.17***	0.17***
	[0.01]	[0.01]	[0.01]
>21 markets *t* - 1	0.38***	0.35***	0.37***
	[0.02]	[0.02]	[0.02]
Africa	0.59***	---	0.67***
	[0.04]		[0.03]
Europe	0.09***	---	0.06**
	[0.02]		[0.03]
N. America	0.01	---	-0.03**
	[0.01]		[0.01]
S. America	0.12***	---	0.09***
	[0.03]		[0.03]
Oceania	-0.02*	---	-0.04***
	[0.01]		[0.01]
Number of Observations	9,239	9,239	9,239
Time Dummies	Yes	Yes	Yes

Method of estimation: logit MLE. Dependent variable indicates that this is the first year for a good in a country. Robust standard errors clustered at the country-good level in brackets. Year dummies are included but not reported. Average partial effects of each variable are displayed. ***p<0.01, **p<0.05, *p<0.1

Table 12 GDP per capita of Destination markets and Unit Values of Exports

						Balanced/Matched sample		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
advanced indicator	0.13***	0.06*	---	---	---	0.23***	0.17*	---
	[0.03]	[0.03]				[0.04]	[0.08]	
ln (GDP per capita)	---	---	0.08***	0.05**	0.09	---	---	-0.29
			[0.02]	[0.02]	[0.20]			[0.42]
ln (distance)	---	0.06**	---	0.07**	---	---	0.05	---
		[0.02]		[0.03]			[0.06]	
number of observations	9,544	9,544	5,896	5,896	5,896	248	248	248
R-squared	0.94	0.94	0.94	0.94	0.94	0.96	0.96	0.97
country fixed effects	no	no	no	no	yes	no	no	yes
product x year effects	yes	yes	yes	yes	yes	yes	yes	yes

Method of estimation: OLS. Dependent variable is the log of the unit value for a product. Robust standard errors clustered at the country-good level in brackets. The balanced sample is a sample of products which are continuously exported throughout the sample and which are exported to at least one advanced country and one LDC. ***p<0.01, **p<0.05, *p<0.1

Table 13 Indian Imports from Japan and Six Competing Nations in Selected Goods

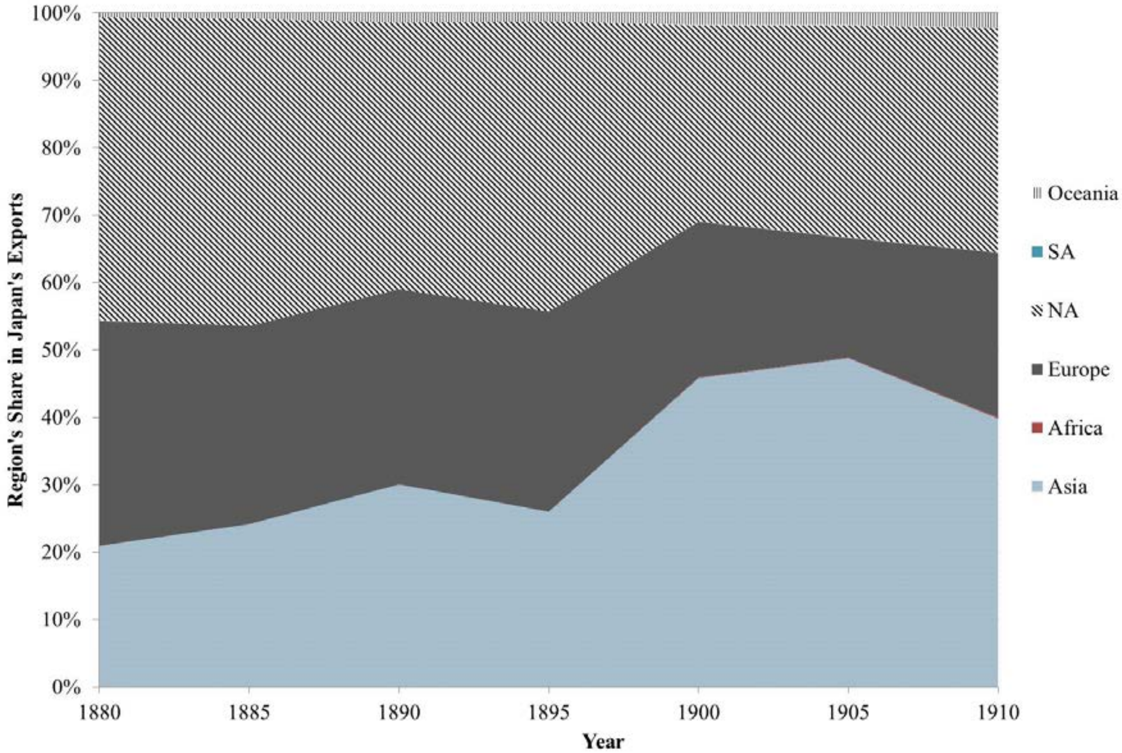
	Quantity Imported		ln (unit value)	
	(1)	(2)	(3)	(4)
Japan x linear trend	0.24***	---	-0.02***	---
	[0.05]		[0.00]	
Japan x 1891	---	2.91***	---	-0.20***
		[0.49]		[0.00]
Japan x 1892	---	3.74***	---	-0.10
		[0.25]		[0.07]
Japan x 1893	---	3.20***	---	0.15*
		[0.21]		[0.07]
Japan x 1894	---	4.37***	---	-0.36***
		[0.75]		[0.00]
Japan x 1897	---	4.52***	---	0.02
		[0.54]		[0.07]
Japan x 1898	---	3.44***	---	-0.62***
		[0.63]		[0.05]
Japan x 1903	---	5.85***	---	-0.37***
		[0.90]		[0.07]
Japan x 1904	---	5.77***	---	-0.47***
		[0.91]		[0.07]
Japan x 1905	---	6.06***	---	-0.30***
		[0.89]		[0.07]
Japan x 1906	---	6.49***	---	-0.36***
		[0.88]		[0.07]
Japan x 1907	---	5.25***	---	-0.18*
		[0.66]		[0.07]
ln (unit value)	-1.29	-1.27	---	---
	[0.67]	[0.76]		
number of observations	191	191	191	191
R-squared	0.88	0.89	0.87	0.94
year fixed effects	yes	yes	yes	yes
exporter fixed effects	yes	yes	yes	yes
product fixed effects	yes	yes	yes	yes

Table 14 Logit Model for Market Exit

	(1)	(2)	(3)	(4)
ln (distance)	0.46**	0.33**	0.33**	0.33**
	[0.18]	[0.16]	[0.16]	[0.16]
MFN treaty	-1.25**	-0.96**	-1.07***	-0.92**
	[0.51]	[0.43]	[0.41]	[0.46]
Pegged Exchange Rate	-0.47***	-0.33**	-0.25	-0.32**
	[0.16]	[0.16]	[0.17]	[0.16]
Diplomat in Japan *t*	-0.11	-0.03	-0.25	-0.02
	[0.21]	[0.18]	[0.17]	[0.19]
Diplomat in Destination *t*	0.34	0.17	0.34	0.17
	[0.46]	[0.38]	[0.38]	[0.38]
Colony of another Country	-0.10	-0.06	0.23*	-0.07
	[0.08]	[0.07]	[0.13]	[0.07]
ln (Y + Y)	-0.17	-0.07	-0.13	-0.08
	[0.21]	[0.21]	[0.22]	[0.21]
ln (GDP similarity)	0.01	0.02	0.01	0.02
	[0.03]	[0.03]	[0.03]	[0.03]
ln (GDP per cap. Diff.)	-0.08***	-0.09***	-0.09***	-0.09***
	[0.03]	[0.03]	[0.03]	[0.03]
change ln(Exports of product to all markets)	-0.08***	-0.09***	-0.09***	-0.09***
	[0.03]	[0.03]	[0.03]	[0.03]
ln (value of exports of product to country) *t*- 1	---	-0.04***	-0.04***	-0.04***
		[0.01]	[0.01]	[0.01]
Number of products sold to country *t* - 1	---	---	-0.01**	---
			[0.00]	
Avg. change ln (exports of all products to country) *t* - 1	---	---	---	-0.01
				[0.06]
3-5 markets *t* - 1	0.03	0.13	0.10	0.13
	[0.18]	[0.15]	[0.16]	[0.15]
6-10 markets *t* - 1	-0.09	0.04	0.00	0.04
	[0.18]	[0.14]	[0.16]	[0.14]
11-21 markets *t* - 1	-0.21	-0.07	-0.12	-0.07
	[0.18]	[0.14]	[0.16]	[0.14]
Number of Observations	174	174	174	174
Time Dummies	Yes	Yes	Yes	Yes

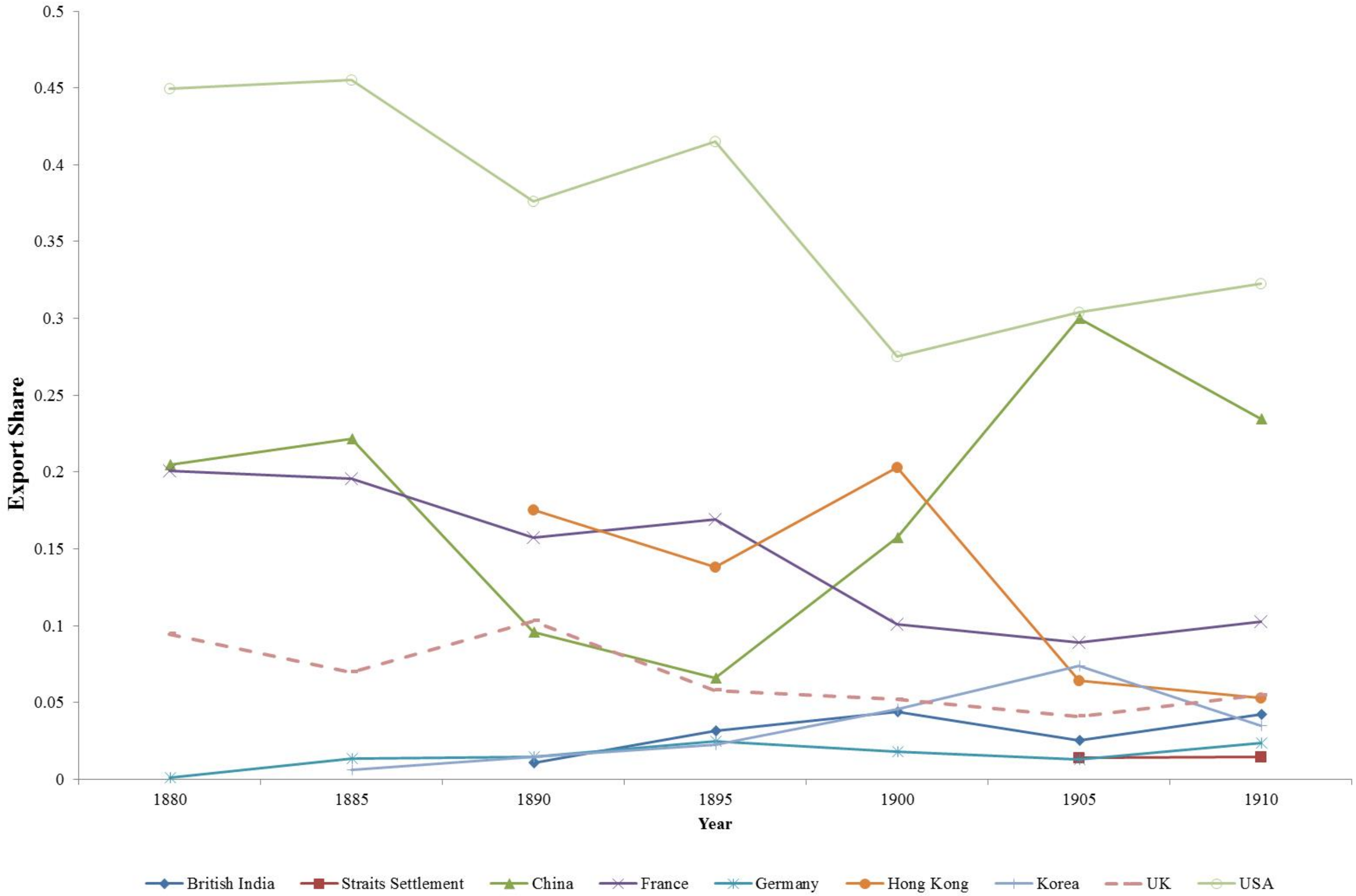
Method of estimation: logit MLE. Dependent variable indicates that this is the first year a good which was previously exported to a country was equal to zero. Robust standard errors clustered at the country-good level in brackets. Year dummies are included but not reported. Average partial effects are reported in this table. ***p<0.01, **p<0.05, *p<0.1

Figure 1 Share of Six Regions in Japan's Exports, 1880-1910



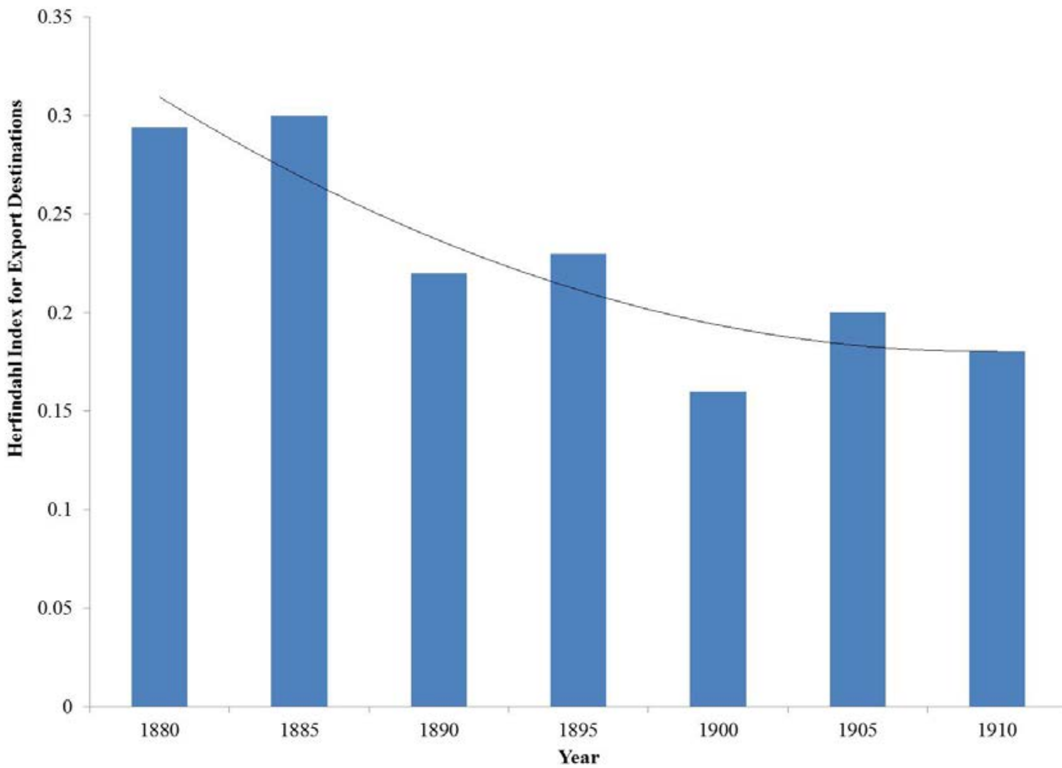
Notes: Figure shows the export share for six regions for Japanese exports.

Figure 2 Export Shares for Top Ten Trade Partners of Japan, 1880-1910



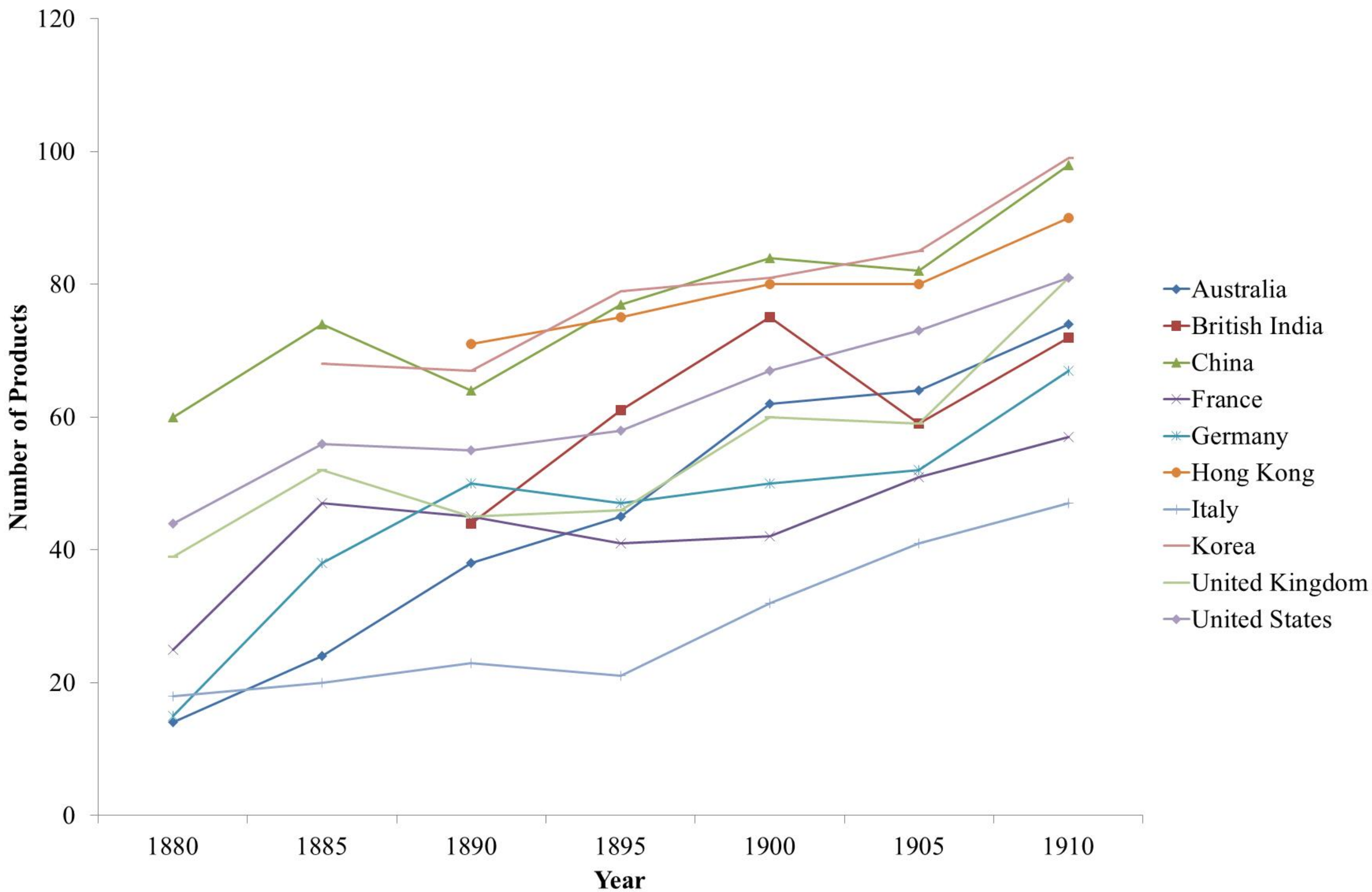
Notes: Lines represent the share of total exports claimed by the top ten destinations for Japan.

Figure 3 Herfindahl Index for Destinations, 1880-1910



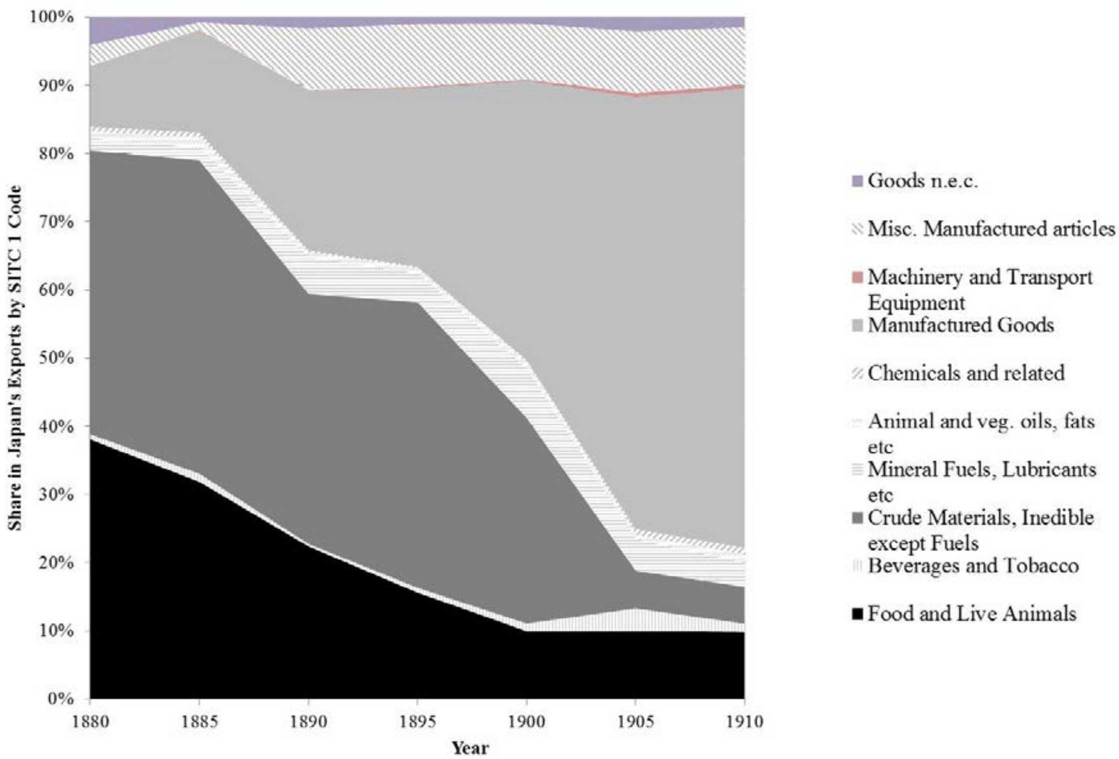
Notes: This figure uses the share of total exports to each destination to calculate a simple Herfindahl index of export destination concentration.

Figure 4 Number of Active Product Lines Exported to Top Ten Destinations, 1880-1910



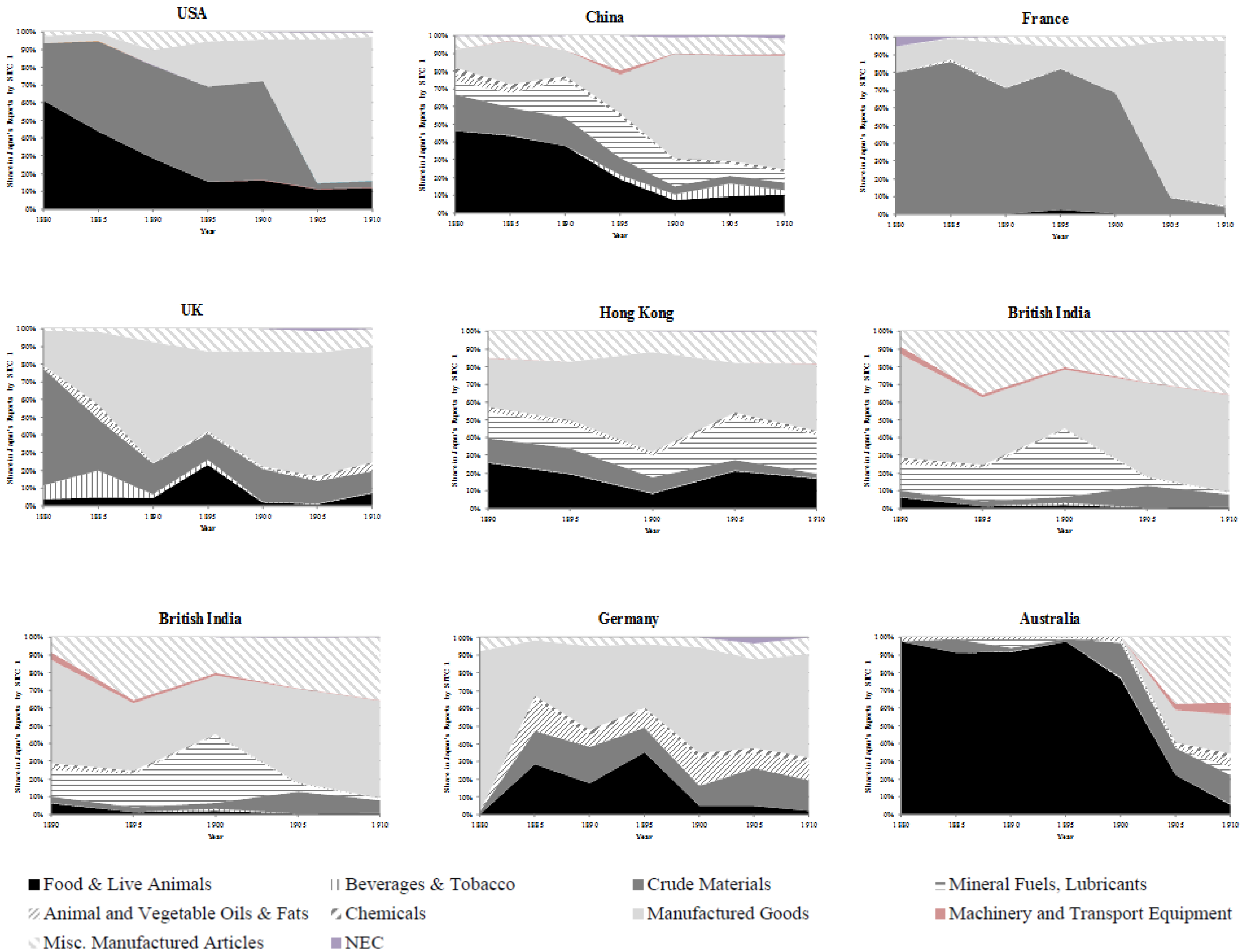
Notes: Figure displays the number of products at the 3 digit SITC Rev. 2 level exported to each of Japan's top ten destinations.

Figure 5 Share of Exports by SITC 1 Digit Category



Notes: Figure calculates export shares based on SITC Rev. 2 at the one digit level of aggregation.

Figure 6 Share of Exports by SITC 1-Digit Category for Top Nine Destinations



Notes: Figure shows the share of total exports in each 1 digit SITC (Rev. 2) category for top nine destinations.