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Edited by Christopher Hanes
and Susan Wolcott

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INTRODUCTION

Research in Economic History is a refereed journal, specializing in economic history, in the form of a book. We publish articles that follow the standard formats of economics journals, but we can also accommodate longer pieces, historical narratives and articles that primarily present newly constructed datasets.

In this volume, Charles reports on his work transcribing and analyzing the handwritten records of Swiss trade statistics between 1885 and 1913. He uses his newly constructed dataset to compute several measures which identify the sources of comparative advantage of the Swiss economy, and compares those measures to similar measures for France. Surprisingly, he finds that the goods exported by the Swiss were similar to those exported by the much larger French economy. However, the Swiss economy showed itself to be more flexible in terms of export industries over the period.

Didenko also reports on a dataset, in this case it is an extension of a dataset previously made available. His goal is to understand the sources of finance for investments in human capital in Russia from the late imperial period through to the modern day. His research supports the arguments of Gerschenkron that the government of late industrializers compensated for the lack of capital and infrastructure by direct investments.

Galofre-Vila's article is an unusual one for our journal. It is a study of the discipline of economic history itself – real-time history of economic thought. He creates a database of articles published in major economic history journals from 1980 to 2018. He performs a network analysis that shows how scholars were interconnected. He reveals changes over the decades in the subjects of economic history research, and the countries and universities in which that research has been carried out.

Geloso and Hinton construct a consumer price index for Canada 1870–1900 which includes goods (clothing and household furnishings) omitted from existing indices. The improved price index implies a much more rapid rate of growth in Canadian real incomes over that period than found by earlier studies. This is an important contribution to Canadian economic history which should change views of the country's development and role in the North Atlantic economy.

Hooks examines an aspect of the development of America's peculiar "dual" banking system, that is the existence of "national" banks, chartered and regulated by a federal authority, operating alongside banks chartered and regulated by state authorities. Oddly, Texas did not allow state banks until 1904, when a proposal for a state bank system was passed by plebiscite. Hooks analyzes the relationship between the votes for the new system in a county with the county's demographic

and economic characteristics and the degree to which the county was already served by national banks. Her analysis helps explain why Texas was so slow to adopt state banking, and why it finally did.

Officer and Williamson construct data on numbers and value of slaves imported to the US over 1790–1860. They estimate the effect of the international slave trade on the US balance of international payments and conclude among other things, that federal and state laws prohibiting the slave trade were effective.

SPECIALIZATIONS IN SWITZERLAND IN THE NINETEENTH CENTURY: EVOLUTION OF TRADE PATTERNS AND GROWTH MODEL

Léo Charles

ABSTRACT

Using an original product level database, this article analyzes the nature and dynamics of Swiss specializations during the "first globalization" (1850–1913). I study the comparative advantages, as well as the evolution of the trade structure, in order to understand economic performance differences between Switzerland and France. Despite differences in terms of market size, some common trends are identified. I also argue that Switzerland's skilled labor force, along with an intelligent choice of economic policy, allowed this country to adapt its specialization structure to global demand and enjoy rapid economic growth.

Keywords: Comparative advantages; margins of trade; economic growth; first globalization; protectionism; international trade

JEL classification: F13; N13; O25

1. INTRODUCTION

The introduction of countries into the process of globalization is a highly strategic issue. During the so-called first globalization (1850–1913), integration strategies were primarily based on increasing exports (Thornton, 1997) and closely linked to

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political strategy in terms of commercial policies. For some countries, the development of exporting industries was based on tariff policy (Chang, 2002; Harris, Keay, & Lewis, 2015; Lains, 2006), while for others, it was based on the negotiation of free trade treaties (Lampe, 2009, 2011; Schularick & Solomou, 2011).

Several theoretical and empirical studies have examined the link between export growth and the increase of gross domestic product (GDP) (Helpman & Krugman, 1985; Konya, 2006). It seems to be generally acknowledged that there is a positive relationship between these variables. Numerous examples from the nineteenth century of export-led growth tend to confirm the role of export growth in economic wealth. This is particularly true for Canada, Argentina, the United States, and Germany (Berghahn, 2005; Irwin, 2002; Kravis, 1972).

Nevertheless, interrogating the mechanisms that drive this relationship remains an interesting endeavor. Numerous studies have highlighted the importance of the specialization set for the economy in order to strengthen the positive link between exports and economic growth (Bensidoun, Gaulier, & Ünal-kesenci, 2001). Among these, Dalum, Laursen, and Verspagen (1999) stress the importance of specialization in activities offering high levels of technological opportunities or areas with high-income elasticities for fostering economic growth. In the same vein, Villa (1993) advises countries to specialize in industries that represent a driving force for the rest of the economy, namely, industries with "positive externalities."

Moreover, based on a simple Krugman model (Krugman, 1980), one can expect that smaller countries would tend to specialize in a narrow range of goods, whereas bigger countries ought to export many products to many destinations. These differences in terms of specializations' variety may explain economic performance differences. This classical view was called into question by Huberman, Meissner, and Oosterlinck (2017) study of Belgium. Following these authors, the study of Switzerland is meaningful as it allows questioning the relevance of the Krugman's theory for the first globalization.

A different theoretical approach is proposed by Melitz (2003) and the extended model of Chaney (2008). According to Melitz (2003), trade costs affect trade via the margins of trade: the extensive margin is negatively related to fixed and variable trade cost. Chaney (2008) emphasizes the role of the degree of substitution between home and foreign goods to explain the change in margins of trade.

This article aims to look more closely at such specialization in Switzerland during the first globalization, when this country showed differences in terms of home and foreign market potential (Liu & Meissner, 2015) and high economic growth rates. On the measure of the Swiss economic growth, it is worth noting that there is a debate between economists who think that the Swiss growth was driven by export industries (Bairoch, 1990; David, 2003) and those who emphasized the role of the domestic sector (Bernegger, 1983, 1990). From 1885, the emergence of key exporting sectors starts to positively influence the Swiss economic growth. As I focus on the period 1885–1913, it is relevant to narrow the study to export flows. Fig. 1 shows the contribution of external trade to Swiss

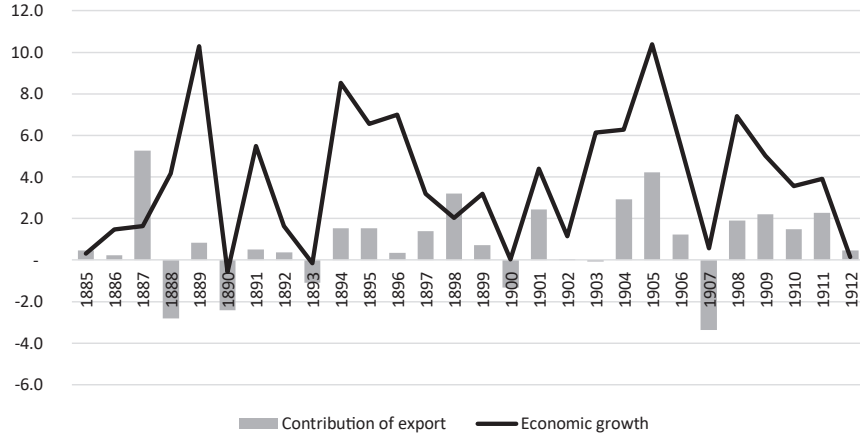

Fig. 1. Contribution of Export to Swiss GDP Growth (%). *Note:* Statistique du commerce de la Suisse avec l'étranger; Stohr (2016). *Source:* Author.

economic growth and underlines the role of exports in Swiss economic development to justify my choice.

Beyond classical arguments to explain Swiss economic performances (for example, domestic market size, institutional quality, and labor costs) (David, 2009a, 2009b; David & Mach, 2007), it is necessary to interrogate the nature of specializations and the dynamics of extensive and intensive margins in order to understand the evolution of export flows and consequently economic performance. In this paper, I employ Lafay's definition of the nature of specialization, that is, the product composition of the country's export flows revealed by comparative advantages (Lafay, 1992). I also use the industrial point of view at the product level. The dynamics of specialization shows the evolution of the concentration in export structure, as well as changes in the comparative advantages structure. Using Lafay indices (LFIs) and their dynamics is a common strategy, fully in line with previous historical research carried out by Federico and Wolf (2011) for Italy and Varian (2016) or Crafts and Thomas (1986) for the United Kingdom. Nevertheless, to reach a more detailed level of analysis, a new database was necessary. Indeed, upon beginning this research, there were no databases yet available for this kind of study, given that I needed to cover the entire period at a product level (a highly disaggregated level). For this reason, I built an original database based on national statistical yearbooks of external trade. The highly disaggregated data collection makes this study original. Considering the nature of my data (export and import flows), the specialization of Switzerland is studied in terms of external trade by national industries and at a product level.

The contribution of this paper is to show that a small country like Switzerland had similar trade patterns as a big country like France, which seems to be opposed to Krugman's view. The second contribution is to go further comparing

Switzerland's specializations pattern to explain economic performance.[1] Indeed, the Swiss economy is said to be a "miracle" in terms of economic growth (David, 2009a).[2] Focusing on Switzerland and using France as a mirror enables an understanding of Swiss performance and, in particular, how a small, landlocked country can achieve export success and overcome its natural disadvantages. This was partly due to the Swiss strategy of strengthening old specializations and at the same time developing new, modern ones.

Studies of Swiss specializations and external trade during the nineteenth century are numerous, but essentially face two kinds of problem. First, these studies are mainly concerned with a short period of a few years or use a great deal of aggregated data. This is the case with Veyrassat (1990), which only analyzes total export flows, and of Bairoch (1996), which includes product decomposition, but only studies four sample years (1840, 1890, 1900, and 1912). The second kind of problem is that, while all these studies are descriptive regarding the composition of export flows, none link specialization to an explication of the country's growth model. Despite the significant numbers of studies on specializations in Switzerland during the nineteenth century, then, these studies often reveal limitations, which may be explained by a relative lack of present perspective regarding historical data. The disaggregation of my new database allows me to go further and analyze Swiss export specializations at the product level and track their dynamics over the entire period 1885–1913.

The paper is organized as follows. Section 2 presents some historical and institutional explanations of the emergence of particular specializations in Switzerland. Section 3 discusses the construction of the database and the different methods used to analyze specialization. Section 4 presents the empirical results.

2. SPECIALIZATION IN SWITZERLAND: AN HISTORICAL AND INSTITUTIONAL OVERVIEW

A country's specialization pattern is not only the consequence of firms or government choices but also some "historical accidents" (Krugman, 1991). To better understand the Swiss economy during the nineteenth century, Table 1 provides some key variables and allows contextualizing a comparison between Switzerland and France.[3]

[1]At this point, we should notice that the relationship between specialization and economic growth involves a two-way causality (Ros, 2002). In this paper, I have chosen to consider the causality from specialization to growth. This choice seems to be relevant considering our results on specialization similarities between Switzerland and France despite economic growth differences.

[2]The following section will review the debate on the Swiss growth trajectory.

[3]The aim of this paper is not strictly to compare Switzerland with France, but to use a "logic of contrast" method. Stressing differences over similarities permits understanding of the existence of different economic paths and reexamining Krugman's hypothesis.

Table 1. Some Indicators for France and Switzerland.

	France	Switzerland
GDP per capita in 1851 (1990 Int. GK$)[a]	1.568	2.293
GDP per capita in 1913 (1990 Int. GK$)[a]	3.485	7.093
Annual average compound growth rate, 1870–1913[a]	1.5	2.1
Per capita levels of industrialization in 1880[b]	28	39
Per capita levels of industrialization in 1913[b]	59	87
Balance of trade in 1913 (Francs in millions)[c]	−1.510	−648
Population in France (1881) and Switzerland (1880) (in thousands)[d]	37.406	2.846
Share of primary sector in GDP (%) in 1851[d e]	37	46
Share of primary sector in GDP (%) in 1913[d e]	32	23
Share of secondary sector in GDP (%) in 1851[d e]	41	28
Share of secondary sector in GDP (%) in 1913[d e]	41	38

Source: [a]Bolt and Zanden (2014). [b]UK in 1900 = 100; Bairoch (1982). [c]Author's database. [d]Mitchell (1978). [e]Historical statistics of Switzerland online.

Table 1 emphasizes the "Swiss miracle" during the first globalization by showing Switzerland with higher economic performance than France in 1913 in terms of GDP per capita, as well as in terms of growth rate. The annual average of 2.1% growth rate over the period 1870–1913 puts Switzerland in second place in the world, behind Argentina (2.5).

Recent literature on the Swiss growth trajectory opened a debate on the measure of Swiss GDP and its level compared with other countries. Some authors argue that Swiss GDP per capita and real wages were among the highest in Europe at the end of the nineteenth century (David, 2009a; Müller, Woitek, & Hiestand, 2012). To the contrary, others suggest that Switzerland was much poorer (Stohr, 2016; Studer, 2008). This debate is important as it opens the question of how to measure GDP with an historical perspective. In this article, I focus more on the GDP progression and less on its absolute level. On this point, the literature agrees that the period following 1880s was marked by strong economic growth in Switzerland regardless of its initial level.

The term "miracle" seems to be well-adapted to other indicators, while it is difficult to explain Swiss economic performances in relation to institutional elements. First, compared with France, Switzerland is a small country in terms of geography, but more acutely in terms of population.

In the second half of the nineteenth century, Switzerland had a population 13 times smaller than France. We can also note that France was the second largest colonial empire during the nineteenth century, while Switzerland had no colonies. These aspects define differences in terms of domestic market size and, in turn, strategies of development. France could easily profit from its domestic

market, while Switzerland needed to export in order to enjoy economic development.

Second, Switzerland is not only a small country but also enclosed in the middle of Europe.[4] Its geographical situation compelled the country to develop commercial routes to its close neighbors. As Büchel and Kyburz (2020) show, the Swiss railway network first connected the main Swiss borders cities in the North of Switzerland. It also fostered import flows from Germany or France as it connected main industrial Swiss cities with German or French borders cities. This strategy to connect Swiss cities between them and, at the same time, with foreign borders cities was established at the beginning of the 1850s and reached its peak during 1880s. In France, even though the railway sector was not nationalized, various private companies worked very closely with the French government. The Freycinet Plan, which was made law on 17 July 1879, aimed to comprehensively develop the railway network within France in order to encourage economic growth (Braudel & Labrousse, 1979). The "Star shape" of the French railway network (from Paris to main cities) supports the idea that the French government wanted to foster regional economic development instead of connecting French cities to foreign borders. These strategies are fully in line with a strategy based on home market potential in France and foreign market potential in Switzerland (Head & Mayer, 2011).

Third, the development of industries in Switzerland was quite particular. Compared with well-established French textile companies in Le Creusot, Lyon, or Paris, Swiss industries prior to 1870 should be considered as proto-industries (Bergier, 1984). This means that the production of silks and clocks was mainly performed by small workshops or cottages in which a few workers gathered. Nevertheless, this approach to production did not prevent Switzerland from modernizing or adapting; indeed, it may partly explain the efficiency of the workforce of the time if it was easier to develop skills and external scale economies within small businesses.

The final particularity, which underlines the relatively small size of Switzerland as compared with France, was its role as a follower in terms of international trade agreements. In 1860, France and the United Kingdom signed a free trade agreement, known as the Cobden–Chevalier Treaty, which endorsed the principle of free trade in Europe with the use of a most favored nation clause (Pahre, 2008). Facing a network of larger countries and motivated to maintain its export sectors, Switzerland also had to negotiate free trade agreements with other European countries. The relative lack of official trade statistics for Switzerland before 1885 suggests that it was not in a position of authority in free trade agreement negotiations. It appears that other European countries imposed their own needs on Switzerland (Humair, 2004).

[4]This particular situation meant that Switzerland had to export in order to survive. This is why Switzerland chose to open itself up to bordering countries, such as France, Germany, and Italy. As an example, Bairoch (1990) shows that these three countries represented 40.4% of the total Swiss export trade in 1910.

This was the starting point for a reflection in Switzerland regarding trade statistics and a protectionist strategy. Indeed, the Swiss government wanted to freely choose its own external trade policy and impose its economic interest on other nations.

As such, the development of progrowth specializations resulted from the combination of institutional and historical characteristics, which I have analyzed in order to contextualize my study of the nature and dynamics of Swiss specializations. In my specific framework, I will develop three explanatory elements that may have influenced the structure of specialization: geographical context, workforce, and commercial policy. These three aspects may explain patterns of specialization and, in turn, economic growth (Herzer & Nowak-Lehmann, 2006; Hesse, 2008).

2.1 Geographical Context: Openness to the World

In terms of geographical context, Switzerland displayed radical differences compared with developed countries. For example, France has benefited from international openness, thanks to its coastal borders. Until 1860, France gave priority to interindustry trade with developing countries, such as the United States and Latin American countries, or its colonies in Africa and Asia. After 1860, French exports to long-distance markets suffered from a lack of penetration, as well as the trade consequences of the American Civil War (Becuwe, Blancheton, Charles, & Clément, 2018). As such, France strategically turned toward nearby markets (Weiller, 1971), and bordering countries became the main recipients of French products. More precisely, some studies point to the importance of Europe as an outlet for French exports, given that Europe absorbed 65% of total French exports in 1850 and more than 75% in 1880 (Asselain, 1984; Weiller, 1971).

For its part, facing the constraints of geographical isolation and the relatively small size of its domestic market, Switzerland sought to strengthen external trade with countries sharing a common border, thereby basing its development on exports. According to Veyrassat (1990), Europe absorbed only 36% of Swiss total exports in 1840. This share rose to an average of 79.6% between 1892 and 1900. This highlights the will of Swiss exporters to conquer the "European market." Accounting for the isolation of the Swiss economy may explain the nature of its specializations and the development of a strategy based on foreign market potential. In fact, as Liu and Meissner (2015) show, Switzerland had the highest foreign market potential in the world in 1900 and in 1910.[5]

[5]One can notice that Bernegger (1983, 1990) emphasized the role of the domestic sector and its contribution to growth. However, the role of exporting sectors seems to be dominant, especially at the end of the nineteenth century (Bairoch, 1990; David, 2003). Even Bernegger recognizes the role of exporting industries after 1885.

2.2 On the Importance of Human Capital

To explain the "Swiss miracle" during the nineteenth century, some studies highlight the role of the Swiss workforce in terms of education (Stohr, 2014b; Studer, 2008). The Swiss workforce was known to be cheap and yet well educated. Since 1880, Switzerland had a negative migration balance. As the Industrial Revolution failed to create enough employment, young Swiss workers were forced to find jobs in neighboring countries. Consequently, industries in Switzerland never suffered from a lack of an available workforce, while its abundance meant that this labor was cheap (Bergier, 1984). Nevertheless, this cheap workforce was not enough to promote Swiss products' competitiveness and overcome natural constraints; in other words, the Swiss economy needed a well-educated workforce. Since the end of the eighteenth century, the influence of Protestantism led to growth in the literacy of the Swiss population. Even if the influence of Protestantism has been overestimated (Stohr, 2014b), it is equally true that this early literacy campaign was employed in order to benefit economic activities, such as industrial production, agriculture, and trade. In particular, Switzerland developed strong links between scientists and manufacturers, as the creation in 1855 of the Swiss Federal Institute of Technology in Zurich showed.

Crafts' study of human capital in the nineteenth century goes some way toward explaining the impact of differences in workforce education between Switzerland and bigger countries (Crafts, 2002). His calculations of literacy rates resort to the ability to sign official documents (mainly marriage certificates). Upon comparing Swiss results with developed countries, it seems that the literacy rate of the Swiss population remained very high throughout the whole of the century. For instance, in 1870, the literacy rate in France is estimated to have been 69%, 80% in Germany, and 76% in the United Kingdom, compared with 85% in Switzerland. In 1913, the literacy rate in Switzerland remained higher than in France (99% vs. 92%), in Germany (97%), or in the United Kingdom (96%). Crafts (2002) further estimates human development indices for 1870 and 1913. Here, again, Switzerland outstrips France (0.463) and Germany (0.390) with an index of 0.447 in 1870 but remains behind the United Kingdom (0.493). In 1913, the Swiss index was 0.643, compared with 0.607 for France, 0.637 in Germany, and 0.717 in the United Kingdom.

2.3 Traditional Protectionism vs Protection of Infant Industries

The "tariff growth" paradox of the 2000s is useful for emphasizing how the implementation of protectionism during the nineteenth century fostered economic growth (Clemens & Williamson, 2004; O'Rourke, 2000). Some studies have resolved this well-known paradox to show that protectionism fosters economic growth when it allows for the modernization of productive structures and targets leading sectors in the rest of the economy (Lehmann & O'Rourke, 2011; Tena Junguito, 2010). In this vein, it is noteworthy that the implementation of protectionism in France and Switzerland during the 1880s involved opposite strategies.