COMPARATIVE ANALYSIS OF SWITZERLAND AND JAPAN COMPETITIVE ADVANTAGES

ПОРІВНЯЛЬНИЙ АНАЛІЗ КОНКУРЕНТНИХ ПЕРЕВАГ ШВЕЙЦАРІЇ ТА ЯПОНІЇ

Summary. This article presents a comparative analysis of the competitive advantages of Switzerland and Japan, two globally recognized economic leaders. The main goal of this study is to identify and compare the main factors driving the economies of these countries, in particular, to consider such macroeconomic indicators as GDP dynamics, unemployment rate, inflation rate, foreign debt, trade balance, market capitalization, and R&D intensity. Low inflation rate, high GDP per capita and a strong emphasis on high quality services especially in the pharmaceutical industry are some of the economic advantages that differentiate Switzerland from other countries. On the other hand, Japan is outstanding for its technological experience; it has made substantial investments in infrastructure, research and development, and its manufacturing industry is expanding fast with particularly the automotive and electronics sectors leading. Two countries have strong economies, but a comparative analysis shows that they possess competitive advantages. Switzerland has a stable economy with high standards of living whereas Japan’s economy is dynamic and has a strong innovation environment.

Keywords: macroeconomic indicators, competitiveness, financial sector, economic comparative analysis, innovations.

Problem statement. At the current stage of development, increasing competitiveness has become the main focus of economic policy. Creating competitive advantages has become a strategic task for governments at all levels of the hierarchy, from products (goods and services), enterprises, industries, regions and the country as a whole. However, the competitiveness of the country itself is of particular importance in this context. The relevance of the study is due to the fact that in modern conditions, among the dominant factors and patterns of economic development, a special place is occupied by the creation of competitive advantages, which, among other things, is influenced by the country's participation in international integrations and the convergence of economic indicators of their members.

Competition among countries in the economic field is a dynamic force that shapes the global landscape, impacting trade, innovation and
economic policies. This phenomenon has been explored by notable economists who explain how complex economic rivalries between nations are. In his work, Paul Krugman, a renowned economist examines trade competition, with attention to profit maximization as nations go into exchange of goods and services [1]. Essentially, he emphasizes on the concept of comparative advantage where countries specialize on what they are best at producing so as to facilitate cooperation through international trading. With regard to international trade context, Michael Porter’s research on competitiveness shows how countries can achieve competitive advantage [2]. His concept identifies key drivers of economic competition between countries such as innovation, quality and efficiency. Joseph Stiglitz’s work on globalisation and its consequences highlights the complex relationship between competition and inequality [3]. This is because it argues that, while competition can spur economic growth, it could also increase poverty if not properly managed through inclusive policies. Jagdish Bhagwati’s work [4] provides insights into how protectionism and free trade influences the competition between countries. His analysis investigates the balance between national industries and global markets, to show how policies can either enable or fetter competitive forces. Economists like Dani Rodrik [5] stress the problems of globalization and especially rising competition. Rodrik's study spans from having to integrate economies with preserving national institutions as well as laws. Similarly, Richard Baldwin’s research [6] looks at global value chains’ impact on country-to-country competitiveness. The authors demonstrate how these chains are positioned by different nations to give them a competitive edge. Anna Krueger’s book [7] discusses organizations that international stimulate competition among countries. It explains why a level playing field and fair rules are necessary for sound economic rivalry in the world. Hence, competition among nations in economics is multifaceted covering trade, innovation, politics and international dimensions. Within the economic literature, the prevailing methods for evaluating a country's competitiveness on an international scale are those advocated by the Institute for Management Development (IMD) and the World Economic Forum (WEF). The Global Competitiveness Report, published by the WEF, enumerates twelve categories of competitiveness [8]. These categories, such as institutions, infrastructure, ICT adoption, macroeconomic stability, health, skills, product market, labour market, financial system, market size, business dynamics and innovation, constitute the key components of the Global Competitiveness Index that is used to gauge and compare the competitiveness of different economies. The reports issued by the WEF regarding country competitiveness have served as crucial benchmarks for both political leaders and business executives over numerous years. These reports facilitate the identification of national economic strengths and weaknesses while also assessing the efficacy of economic policies and institutional reforms. According to experts from the WEF, competitiveness encompasses various institutions, policies and factors that influence a country's productivity and ultimately determine its level of prosperity.

**Analysis of recent research and publications.**

When examining a country's competitive advantages in a comprehensive manner, one typically consults multiple sources such as government reports, academic studies and assessments from international economic organizations. Notably, two prominent sources of such information are the World Economic Forum (WEF), which annually publishes a comprehensive Global Competitiveness Report containing detailed profiles on many countries including Switzerland [8], and the Institute for Management Development (IMD) [9], another esteemed institution providing annual rankings and thorough analyses on country competitiveness. Both these institutions are based in Switzerland themselves; thus their analyses often pay significant attention to Switzerland's competitive positioning.

Switzerland has garnered international attention over the past two decades due to its exceptional economic performance as evaluated by renowned economists and authoritative reports. According to a 2020 study conducted by the World Economic Forum (WEF), Switzerland's sustained competitiveness can be attributed to its robust innovation ecosystem, which consistently positions the country as a leader in areas such as technological readiness and business sophistication [10]. Additionally, economist James M. Poterba's research [11] at the National Bureau of Economic Research (NBER) highlights Switzerland's favorable tax policies as a driving force behind its economic excellence, attracting foreign investment and fostering a conducive business environment. This sentiment is echoed by Paul Krugman, who notes in his column for The New York Times that Switzerland's prudent fiscal policies have contributed to its resilience amidst global economic fluctuations [12]. Furthermore, a report from the International Monetary Fund (IMF) underscores that Switzerland's well-developed financial sector plays a pivotal role in
its sustainable economic growth and stability [13]. An analysis by the Economist Intelligence Unit emphasizes Switzerland's commitment to education and research, which has propelled the country to impressive heights in terms of productivity and innovation [14]. Thus, Switzerland's economic strengths over the past two decades can be credited to its innovative prowess, favorable tax policies, prudent fiscal management, strong financial sector, and investments in education and research.

Over the past 20 years, Japan has also been subject to extensive analysis by prominent economists and authoritative reports shedding light on its notable economic progress. Specifically, data from the World Bank highlights Japan's steady growth and resilience despite challenges such as an aging population and periods of economic stagnation [15]. Economist Paul Krugman points out in his articles for The New York Times that Japan's innovative technological achievements and ability to maintain competitiveness in global markets are key factors contributing to its economic advantages [16]. Similarly, Nobel laureate Joseph Stiglitz highlights Japan's commitment to education and research as crucial factors enhancing its capacity for innovation and productivity in his work "The Price of Inequality" [17]. Furthermore, reports from the Asian Development Bank emphasize that strategic investments in infrastructure including high-speed rail networks and green technologies are instrumental in stimulating Japan's economic growth [18]. Economist Masahisa Fujita, in his research on the urban and regional economy, underscores how Japan's well-crafted urban policies have contributed to its economic sustainability and efficiency [19]. Thus, Japan's economic advantages over the past two decades can be attributed to its technological excellence, emphasis on education and research, strategic investments in infrastructure, and well-designed urban policies.

The purpose of the study is to identify and compare the primary drivers behind Switzerland's and Japan's economic development.

An outline of the main results and their justification. In terms of specific rankings, Switzerland ranked 2nd in the Economic Complexity Index (ECI 1.94) and 17th in total exports ($371 billion) in 2021. On the other hand, Japan secured the top spot in the Economic Complexity Index (ECI 2.06) and ranked 4th in total exports ($731 billion) during the same period [20].

Both Switzerland and Japan received a score of 82.3 and were ranked among the top 6 most competitive countries out of 141 countries included in the 2019 Global Competitiveness Report by the World Economic Forum, which highlights their economic strength and resilience (Fig. 1).

When examining the pillars of competitiveness, it is evident that both Switzerland and Japan prioritize healthcare with a similar degree of emphasis: Switzerland at 10.11% and Japan at 10.13%. This underscores the universal importance placed on healthcare in developed economies. Macroeconomic stability is another priority for both countries; Switzerland allocates 10.12%, slightly higher than Japan's allocation of 9.61%. This indicates that both nations value maintaining a stable economic environment, though Switzerland may place slightly more emphasis on this aspect. In terms of infrastructure, there is almost an equal distribution between Switzerland (9.44%) and Japan (9.44%), highlighting a mutual understanding.

![Figure 1. Comparison of Switzerland and Japan scores in twelve pillars](source: data from [20])
regarding its fundamental role in supporting economic activity. However, when it comes to ICT adoption, there is a divergence between the two countries, with Japan allocating 8.73% compared to Switzerland's 7.96%. This discrepancy of 0.77 percentage points underscores Japan's greater focus on technology and digital infrastructure. In terms of institutions, Switzerland allocates 7.85% while Japan allocates 7.26%, indicating a difference of 0.59 percentage points and suggesting that Switzerland places slightly more emphasis on governance and institutional quality. While both Switzerland and Japan emphasize similar aspects such as healthcare, there are slight variations in their allocations, with Japan marginally ahead by 0.02 percentage points, potentially reflecting its demographic challenges associated with an aging population. The higher allocation of ICT adoption in Japan (8.73%) compared to Switzerland (7.96%) may reflect Japan's strategy of maintaining a technological edge, which is crucial for economic development. Switzerland's balanced distribution across major sectors demonstrates its diversified economic approach, reducing vulnerability to downturns in specific industries. The emphasis on macroeconomic stability in Switzerland (10.12%) is slightly higher than in Japan (9.61%), which suggests a relatively greater focus on fiscal and monetary stability by Switzerland. Both countries recognize the importance of infrastructure, allocating 9.44% each, as it plays a critical role in boosting productivity and attracting foreign investment. The slight difference in institutions may reflect Switzerland's renowned banking system and the need for efficient management compared to Japan's more industrialized and technologically advanced economy. In summary, the charts presented here highlight nuanced differences in economic strategies between Switzerland and Japan; while both countries prioritize similar sectors, the slight variations in allocation are reflective of their unique economic landscapes and challenges they face.

In order to provide a comprehensive and thorough examination and comparison of different countries, we delve into their key macroeconomic and competitive indicators spanning a period of twenty-two years. These key indicators encompass significant factors such as the gross domestic product (GDP), which serves as a reflection of a nation's overall economic output. Additionally, inflation rates play a pivotal role in measuring the rapidity at which prices escalate, subsequently eroding the purchasing power of currency. Another critical indicator is the unemployment rate, which indicates the proportion of individuals within the labor force who are unemployed but actively seeking employment opportunities. By meticulously studying and analyzing the trends embedded within these essential indicators, it becomes plausible to assess a country's economic growth rate and its capacity to withstand global economic crises. Supplementary factors such as the balance of payments can offer further insight into a country's economy by illuminating both its income and areas that require attention.

Upon scrutinizing and evaluating these pertinent indicators, distinctive disparities emerge between Switzerland and Japan. Although Japan boasts a larger GDP in absolute terms, its growth rate appears to have stagnated in recent years. On the contrary, Switzerland exhibits a smaller GDP; however, it has consistently showcased robust and unwavering growth over the same time frame (Fig. 2). Overall, the data suggests that Japan possesses a larger yet potentially slower growing economy, while Switzerland showcases a smaller yet more stable economy. These divergences underscore the unique economic strengths and challenges encountered by each respective country.

Elucidating the reasons behind these observed GDP growth patterns in Switzerland and Japan necessitates adopting an all-encompassing approach that takes into account both economic as well as non-economic factors. Regarded for its formidable financial services sector comprising banking and insurance institutions, Switzerland benefits significantly from these entities' contributions to its GDP. Political stability intertwined with an unyielding legal structure renders Switzerland an appealing hub for both inbound and outbound investments. The high level of investment allocated towards research and development, coupled with an unwavering focus on the production of high-quality goods and services such as pharmaceuticals, further bolsters stable GDP growth. Switzerland forges robust trade relationships with other economically resilient nations, thereby sustaining steady growth rates. Possessing a highly diversified economy that avoids excessive reliance on any one sector, Switzerland demonstrates heightened resilience against economic downturns. Conversely, Japan serves as a manufacturing powerhouse, particularly in industries encompassing automotive and electronics, which substantially contribute to its GDP. Nevertheless, Japan's aging population has precipitated a decline in its labor force, potentially affecting GDP growth. Although Japan thrives as a technological innovation leader, other countries have caught up, leading to heightened global competition. Fiscal and monetary policies, inclusive of various
stimulus packages implemented to stimulate the economy, have yielded mixed results. As an export-oriented economy, Japan remains sensitive to shifts in global economic conditions.

Graphical representations of the unemployment rates in Switzerland and Japan spanning from 2000 to 2022 disclose distinctive dynamics within their respective labor markets (Fig. 3). The unemployment rate in Switzerland generally registers higher figures accompanied by pronounced fluctuations, signifying a more dynamic yet conceivably less stable labor market environment. In stark contrast, Japan's unemployment rate appears lower and more stable, indicative of greater job security albeit potentially posing challenges for a dynamic labor market.

The chart accentuates Switzerland's persistently higher unemployment rate throughout several years – a noteworthy concern. Overall, while Switzerland may present more opportunities for career transitions or changes, Japan seemingly provides a more secure employment landscape.

The highest unemployment rate was registered in 2016. This can be attributed to the prevailing economic uncertainty gripping Europe at that time spurred by events such as Brexit alongside other geopolitical factors. Notably, Switzerland recorded its lowest score in 2022 – this decline likely stems from strategies aimed at achieving economic recovery post-pandemic.

Japan recorded its highest score in 2002, coinciding with the "Lost Decade" period characterized by prolonged economic stagnation in the country. Conversely, Japan's lowest ranking occurred in 2018. A combination of job creation-focused economic policies and the potential effects of a shrinking labor force due to an aging population contribute to this decline.

The inflation rate graph (Fig. 4) demonstrates that Switzerland experiences greater fluctuations in inflation when compared to Japan, which exhibits a more stable inflation rate. Switzerland's variable inflation potentially reflects a more adaptable monetary policy and external economic pressures. On the other hand, Japan maintains a stable albeit low inflationary environment primarily attributable to protracted deflationary influences.

The chart underscores Switzerland's tendency to incur higher inflation rates over time. Overall, the Swiss economy appears sensitive to developments pertaining to inflation, while Japan has enjoyed a more consistent albeit low-inflation environment.

In 2022, Switzerland experienced a resurgence characterized by an upsurge in exports potentially driven by global economic recovery and increased demand for Swiss goods. Conversely, Switzerland reached its lowest point in 2015, likely attributed to the Swiss National Bank's decision to disassociate the Swiss franc from the euro – thereby triggering deflationary forces.

Japan registered its highest rate in 2014 due to an increase in consumption tax from 5% to 8%, subsequently leading to temporary inflationary surges. In contrast, Japan witnessed its lowest rate...
in 2009 during the global financial crisis where deflationary pressures proved particularly intense. Switzerland's external debt as a percentage of GDP consistently surpasses that of Japan throughout the observation period (Fig. 5). This discrepancy may arise from Switzerland operating as a prominent global financial hub that naturally attracts substantial external capital. Conversely, Japan exhibits significantly lower levels of external debt thanks to substantial domestic savings and lesser reliance on external financing.

The graph accentuates the stark distinction between these two nations; Switzerland frequently exceeds an external debt-to-GDP ratio of 200%.
Overall, extensive external debt does not necessarily disadvantage Switzerland due to its unique economic structure.

Switzerland reached its highest level in 2003, potentially attributed to prevailing global economic conditions during the early 2000s that enabled Switzerland to bolster its external borrowing capacity. Conversely, Switzerland's lowest score was recorded in 2018 — a consequence arising from a combination of economic expansion and reduced reliance on external debt. Japan achieved its highest score in 2020 likely influenced by the economic repercussions of the COVID-19 pandemic. On the other hand, Japan recorded its lowest score in 2000, coinciding with the "Lost Decade" period where Japan potentially curbed external borrowing amid economic stagnation.

Switzerland consistently maintains a positive trade balance with exports surpassing imports (Fig. 6). This stems from the nation's robust manufacturing and pharmaceutical sectors. Conversely, Japan experiences fluctuations within its trade balance, oscillating between surplus and deficit periods.

These fluctuations can be attributed to Japan's reliance on imports for raw materials and energy. Overall, Switzerland's steady and positive trade balance signifies a more export-oriented economy, while Japan's volatile trade balance reflects intricate dynamics pertaining to its trading patterns.

In 2021, Switzerland reached its peak level possibly due to increased exports propelled by global economic recovery and heightened demand for Swiss goods. In contrast, Switzerland witnessed its lowest point in 2001 as a consequence of the early 2000s economic downturn that impacted its export capacity. Japan achieved its highest score in 2004 during a phase characterized by robust economic growth. The presence of human-like writing can be attributed to the substantial volume of exports, particularly in the technology and automotive industries. Diverging from this trend, Japan experienced its lowest score in 2022, which could be ascribed to various factors such as global economic conditions, disruptions in the supply chain, or an increase in imports.

Switzerland's market capitalization as a percentage of GDP has demonstrated relative stability over time, with some minor fluctuations (as depicted in Fig. 7). However, there was a significant decline around 2008, which is likely attributable to the global financial crisis. On the other hand, Japan's market capitalization exhibited greater volatility compared to Switzerland. Although it also experienced a drop around 2008, it recovered at a quicker pace.

Both Switzerland and Japan possess substantial market capitalization relative to their GDPs, signifying the strength of their financial markets. Switzerland's market capitalization has shown more consistency over the years, suggesting a more predictable investment climate. Conversely, Japan's market capitalization has displayed greater volatility, indicating a more dynamic yet potentially riskier
market. Both countries encountered a decrease in market capitalization around 2008 due to the global financial crisis. The fact that Japan rebounded faster after 2008 indicates a greater resilience in its financial market. The pie chart illustrates that Japan consistently maintains a higher level of market capitalization as a percentage of GDP compared to Switzerland. Overall, both nations boast robust financial markets; however, they offer investors diverse risk and reward profiles.

In terms of research and development (R&D) researchers per million population, Switzerland has
maintained relative stability with slight growth over time. Conversely, Japan surpasses Switzerland by a significant margin in terms of R&D researchers per million people, indicating a stronger research ecosystem. Switzerland exhibits modest but consistent growth in the number of researchers per million people, indicating sustained investment in R&D (Fig. 8). The substantial number of researchers in Japan can be attributed to its robust technology and manufacturing sector. Overall, while both countries prioritize R&D, Japan fosters a more active research community, suggesting a dynamic environment for innovation.

Switzerland reached its peak in terms of the number of researchers per million people in 2019, indicating an increasing focus on R&D. The lowest point for Switzerland coincided with the global financial crisis in 2008, which may have impacted R&D investment. Conversely, Japan achieved its highest point as recently as 2020, highlighting an ongoing commitment to R&D. Although Japan experienced its lowest point in 2002, it still maintained a relatively high number of researchers compared to Switzerland's lowest point. In summary, both countries maintain a substantial number of R&D researchers per million population; however, Japan consistently outperforms Switzerland in this regard, indicative of a stronger research ecosystem.

**Conclusions and suggestions.** In conclusion, both Switzerland and Japan possess economic prowess; however, they each demonstrate distinct strengths and competitive advantages. Switzerland exhibits remarkably stable inflation rates averaging around 0.5% over the years, rendering it an attractive destination for long-term investments. With a GDP per capita of approximately $82,789 in 2022, Switzerland showcases a high standard of living. On the other hand, Japan boasts an average of 5,454.68 R&D researchers per million people in 2020, establishing itself as a global leader in technological advancements and innovation. In terms of market capitalization as a percentage of GDP for listed national companies, Switzerland recorded 146.5% in 2019 – indicating a stable yet less dynamic financial market – while Japan recorded 120.3% during the same year. Japan's financial markets rebounded more swiftly since the fallout from the crisis in 2008, presenting potentially higher returns for investors.

In terms of research ecosystems, Switzerland had 5,551.97 R&D researchers per million people in 2019, indicative of a robust albeit smaller-scale research environment when compared to Japan. The high number of patent applications in Japan, peaking at 391,039 in 2018, testifies to its strong innovation landscape. Switzerland's export portfolio primarily comprises pharmaceuticals, accounting for 38% of exports in 2019, while Japan boasts more diversified export sectors. With an average unemployment rate of 3.5% and an inflation rate of 0.5%, Switzerland maintains an efficiently managed economy.

Overall, Switzerland offers stability with a high GDP per capita of USD 82,789 in 2022, whereas Japan presents dynamism with a peak of

![Figure 8. Dynamics of Switzerland and Japan researchers in R&D during 2000–2022, per million people](source: data from [21])
391,039 patent applications in 2018. Investors and policymakers can employ this data – backed by quantitative evidence – to make well-informed decisions as each country presents unique opportunities and risks. Henceforth, although both countries possess economic strength, their competitive advantages lie within different sectors and aspects of economic activity, offering a broad range of prospects for investment and collaboration supported by specific quantitative indicators.

References:
9. International Institute for Management Development. Available at: https://www.imd.org/