

Exchange Rate and Regional Divergences: The Swiss Case

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CORPATAUX J., CREVOISIER O. and THIERSTEIN A. (2002) Exchange rate and regional divergences: the Swiss case, *Reg. Studies* 36, 611–626. From 1975 to 1995, the Swiss franc appreciated in a near constant manner compared with the currencies of all of the country's commercial partners. This paper will seek to demonstrate that the various regions in Switzerland evolve differently when faced with a continuously appreciating currency. The paper is not in the nature of an econometric study and will not seek to quantify the gains and losses of each region, but it will view their structural evolution via the effect of the exchange rates. Faced with the appreciation of the Swiss franc and based on their productive specialities, some regions suffer badly from this, whilst others cope with it and even thrive on it. It is thus possible to openly question the consequences of the Swiss National Bank's monetary policy: has domestic industry been sacrificed in favour of financial activities? Is the continuous rise of the Swiss franc increasing regional disparities in Switzerland? The paper first discusses the theories that establish a link between the exchange rate and the evolution of regional production systems. All these theories draw conclusions that can vary radically. Furthermore, they are usually based on the assumption of homogenous national territories. The second part contains a description of the methodology applied, which is based on the concept of regional production systems (RPSs). The impact of the exchange rate on RPSs is explained by means of three criteria: sectorial specialization and basic source of income within RPSs; the presence or absence of large firms; and the innovative capacity of the RPSs. The third part of the paper illustrates five examples of RPSs, each of which has evolved in a radically different way over the relevant period. Lastly, a link is established between the regional divergences and the evolution of the exchange rate in the whole of Switzerland from 1975 to 1995. The conclusion draws a parallel between the evolution in Switzerland and the tensions that could arise between the regions and the nations constituting the Euro zone.

Exchange rate Optimal monetary zone Regional production systems Industrial regions Tourist regions
Financial centres Euroland

CORPATAUX J., CREVOISIER O. et THIERSTEIN A. (2002) Taux de change et divergences regionales: l'exemple Suisse, *Reg. Studies* 36, 611–626. Entre 1975 et 1995, le franc suisse s'est apprécié de manière presque continue face aux monnaies de l'ensemble des partenaires commerciaux du pays. Cet article cherchera à mettre en évidence l'évolution différenciée que connaissent les régions de Suisse face à une monnaie en appréciation continue. Cet article ne relève pas d'une étude économétrique et ne cherche pas à quantifier les gains ou les pertes de chaque région, mais saisit en revanche leur évolution structurelle à travers l'effet du taux de change. Face à l'appréciation du franc suisse et en fonction de leurs spécialisations productives, certaines régions souffrent considérablement, alors que d'autres s'en accommodent, voire en bénéficient clairement. Cette article démontre ainsi que la politique monétaire n'est pas neutre d'un point de vue sectoriel et régional. On peut, dès lors, ouvertement s'interroger sur les conséquences de la politique monétaire menée par la Banque Nationale Suisse: l'industrie nationale n'aurait-elle pas été sacrifiée au profit des activités financières? L'appréciation continue du franc n'est-elle pas en train de transformer la Suisse en machine à fabriquer de la divergence

CORPATAUX J., CREVOISIER O. und THIERSTEIN A. (2002) Wechselkurs und regionale Disparitäten: die Schweiz als Fallbeispiel *Reg. Studies* 36, 611–626. Zwischen 1975 und 1995 hat sich der Aussenwert des Schweizer Frankens, verglichen mit den Währungen der Schweizer Handelspartner, beinahe konstant erhöht. Dieser Beitrag versucht zu zeigen, dass sich die Regionen der Schweiz angesichts der sich kontinuierlich aufwertenden Schweizer Währung unterschiedlich entwickeln. Der Artikel zeigt in erster Linie, wie die strukturelle Regionalentwicklung beeinflusst wird von Wechselkursen. Es geht dabei aber nicht um eine ökonomisch ausgelegte Quantifizierung von Gewinnen und Verlusten der Regionen. Aufgrund der spezifischen Wirtschaftsstruktur spüren einige Regionen die Aufwertung des Frankens sehr deutlich, während andere sich mit diesem Druck gut arrangieren und wiederum dritte gar davon profitieren können. Geht man von dieser Feststellung aus, so muss die Politik der Schweizer Nationalbank auf den Prüfstand gestellt werden: wurde im Nachhinein betrachtet die einheimische Industrie zugunsten des Finanzsektors geopfert? Bewirkt die ständige Aufwertung des Schweizer Frankens nicht eine Vergrößerung der regionalen Disparitäten? Der

territoriale? Cet article examine tout d'abord les théories qui mettent en relation le taux de change et l'évolution des systèmes de production. Ces différentes théories aboutissent à des conclusions qui peuvent être radicalement différentes. De plus, elles supposent généralement des espaces nationaux homogènes. Ensuite, dans la seconde partie, nous précisons la méthodologie utilisée pour mettre en évidence des systèmes de production régionaux (SPR) en Suisse. L'impact du taux de change sur les SPR sera examiné à travers trois critères: la spécialisation sectorielle et la provenance du revenu de base du SPR, la présence ou l'absence de grandes entreprises et enfin la capacité d'innovation du SPR. La troisième partie présente cinq exemples de SPR qui ont connu des évolutions radicalement différentes durant la période considérée. Enfin, on met en relation les divergences régionales et l'évolution du taux de change au niveau de la Suisse entre 1975 et 1995. La conclusion tire un parallèle entre l'évolution suisse et de possibles tensions futures entre les régions et les nations qui constituent la zone Euro.

Taux de change Zone monétaire optimale
Systèmes de production régionaux
Régions industrielles Régions touristiques
Places financières Euroland

INTRODUCTION

The integration of regions or nations within a common monetary zone does not only raise *nominal* issues of public policy convergence. It also, and above all, raises the issue of the *real* convergence of production systems with differing structures that have evolved differently in the past. The main problem arising from such integration lies in the fact that the exchange rate cannot be used as an instrument for co-ordinating economic entities. What are the resulting *long term* consequences for the various *regional production systems (RPSs)* united within a monetary zone? To our knowledge, no study to date has attempted to elucidate these phenomena.

We were fortunate to have a sufficiently specialized field available that could be studied over a period of 20 years. Indeed, from 1975 to 1995, the Swiss franc appreciated in a near constant manner compared with the currencies of all of the country's commercial partners (Fig. 1). At the same time, the international flow of goods and capital also increased continuously. The Swiss economy, open to the exterior and involved in trade globalization from a very early stage, was also marked by a far-reaching change in regional dynamics: the difficulties experienced by the industrial and tourist regions that constituted the main exports at the beginning of this period, and the substantial growth of the international financial centres. The parallel development of these two movements – the appreciation of the franc and regional change – appeared striking. As

Beitrag präsentiert zuerst Theorien, die eine Verbindung herstellen können zwischen dem Wechselkurs und der Entwicklung von regionalen Produktionssystemen. Diese Theorien kommen jedoch zu sehr stark auseinander liegenden Folgerungen. Zudem gehen diese Überlegungen in der Regel von einem homogenen nationalen Territorium aus. Im zweiten Teil des Artikels wird die angewandte Analysemethode erläutert, die auf dem Konzept der regionalen Produktionssysteme (RPS) aufbaut. Die Auswirkungen des Wechselkurses auf die RPS werden durch drei Kriterien erklärt: sektorale Spezialisierung und das Exportbasis-Einkommen von RPS; das Vorhandensein oder Fehlen von Grossunternehmen; die Innovationsfähigkeit von RPS. Der dritte Teil des Beitrages illustriert für die Untersuchungsperiode die sehr unterschiedlichen Entwicklungspfade von fünf RPS. Schliesslich wird für die Schweiz als ganzes und die Periode von 1975 bis 1995 ein Zusammenhang zwischen der Entwicklung des Wechselkurses einerseits und von regionalen Disparitäten andererseits hergestellt. Die Schlussfolgerung zieht eine Parallele zwischen dem 'realen Fallbeispiel' Schweiz und den möglichen Spannungen, die sich in Zukunft zwischen Regionen und Mitgliedstaaten der Europäischen Währungsunion ergeben können.

Wechselkurs Optimaler Währungsraum
Regionales Produktionssystem Industrieregionen
Tourismusrégionen Finanzplatz
Europäische Währungsunion

a result, certain considerations were voiced on the choice between an industrial and a financial economy (BAIROCH, 1990; CASSIS, 1990) and some political debate also took place. However, parallel development was never the subject of a research study.

To understand the effects of the integration of various regional economies within the same monetary zone, we have emphasised *the different ways that Swiss regions evolved under the influence of a continuously appreciating currency*. We do not try to quantify the gain or loss incurred by each region, *but we attempt to understand*

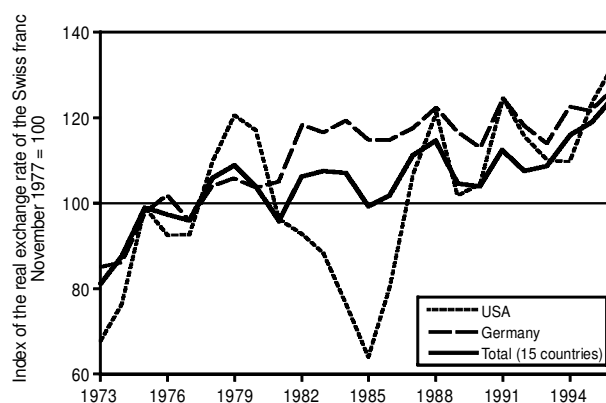


Fig. 1. Evolution of the real exchange rate index of the Swiss franc, 1973-95

Source: Swiss National Bank.

their structural evolution as affected by the exchange rate. Depending on their productive specialization, some regions suffered quite severely from the appreciation of the Swiss franc, whereas others coped with it or at times even derived benefit from it. Thus, *monetary policy is not neutral from a sectoral and regional point of view.*

This paper first discusses the theories that establish a link between the exchange rate and the evolution of production systems. All these theories draw conclusions that can vary radically. Furthermore, they are usually based on the assumption of homogenous national territories. In the second part of our paper we specify the methodology applied when describing the RPSs in Switzerland. The impact of the exchange rate on RPSs was studied according to three criteria: sectoral specialization and the basic income source of the RPSs; the presence or absence of large firms; and the innovative capacity of the RPSs. The third part of the paper illustrates five examples of RPSs, each of which has evolved in a radically different way in the relevant period. Lastly, a link is established between the regional divergences and the evolution of the exchange rate in the whole of Switzerland from 1975 to 1995. The conclusion draws a parallel between the evolution in Switzerland and the tensions that could arise between the regions and the nations constituting the Euro zone. Up to now, very little work has been carried out with a view to understanding the *actual* and *regional* effects of the Euro. Comparing similar processes that occurred in other areas is one way of understanding the possible effects of this in the long run (MARTIN, 2001). To a certain extent, the continuous rise of the Swiss franc can easily be compared with abolishing exchange rate adjustments for countries of the Eurozone with relatively weak currencies.

EXCHANGE RATE, COMPETITIVENESS AND REGIONS: DO THEORETICAL LINKS EXIST?

'The theories on how exchange rates affect economic activity can be classified into four groups' (CORPATAUX *et al.*, 2001):

- The first group comprises the classical devaluation/revaluation paradigm, which studies the repercussions of a fall/rise in the external value of a currency as a function of the price and volume effects on the domestic and foreign markets. Devaluation, for example, permits the 'mopping up' of a trade deficit, since by reducing the price of exported products in the foreign currency, exports are stimulated, and by raising the price of products purchased abroad, importing is dissuaded. Revaluation is the symmetric operation of devaluation. It reduces the trade surplus by increasing the price of exported goods and by reducing that of imported goods (FLOUZAT, 1995). Consequently, there is no arrow of time in these

theories, no irreversible structural adjustment. Adjustment takes place irrespectively in any direction. From t_0 , a devaluation leads a national economy to a different state in t_1 and a subsequent revaluation brings it back to ... t_0 ! In other words, there is no innovation, no emergence or disappearing of activities. Moreover, this paradigm considers national territories as being homogenous.

- The second paradigm includes much more recent theories that focus on the virtues of a strong currency, and in particular those devoted to the 'strong franc'.¹ According to the latter, the chain of causality is different: a variation in the exchange rate engenders medium and long term changes in the strategy of firms. In fact, firms that anticipate devaluation are neither impelled to compress their costs nor to innovate, for devaluation gives them a sufficient benefit in terms of costs. In the opposite case, firms that are exposed to the pressure of a revaluation have strong motivations. This being so, any variation in the exchange rate, regardless of direction or amplitude, is not merely endured: it becomes a structural feature of the country's economy. The result is the emergence of 'virtuous circles' or 'vicious circles' that will overturn the effects described by the traditional devaluation/revaluation theories. Thus, it would appear that currency appreciation in the medium term, helps specialize the national economy in production areas that are not very price-sensitive; this should make it possible to simultaneously profit from the benefits of exporting without having to suffer from imported inflation. The way we see the issue, these approaches indicate that the exchange rate has an impact on the evolution of production structures. They do not, however, take into account the condition of these structures at the beginning of the whole process. Moreover, they still consider national territory as being homogenous.
- The third paradigm, that of structural competitiveness, considers that imposing a strong currency on an economy for it to become competitive is insufficient. According to AGLIETTA, 1987, exchange rate policies on their own are ineffectual if they do not take into account the specificities of the modes of organization: 'The same exchange rate movements, applied to countries with different structures, can produce asymmetric results'. Thus, France differs from other large industrialized countries inasmuch as it has too few, and frequently too weak, centres of competitiveness.² In contrast, the quality of the productive specializations in Germany apparently makes a completely different dynamism possible. In the first case, an appreciation of the currency triggers off a vicious circle, whilst a virtuous dynamism appears in the second. This being so, according to Aglietta, it is the existence of many centres of competitiveness within an economy that makes it possible to permanently shake off the

external constraint. Lastly, such virtuous circles are the direct consequence of establishing an equilibrium between global dynamism and the evolution of economic structures (AGLIETTA and BAULAND, 1994). Thus, according to this argument, the structures at the beginning of the process are the determining factor. National territory is considered to be homogenous.

- There is, in fact, only one theory that explicitly links regions and exchange rate: Mundell's theory of the optimal monetary zone (MUNDELL, 1961). Such a zone would have to group together regions that react symmetrically to an external shock, failing which substantial adjustment costs would be incurred by the less favoured regions. The underlying idea can be summarized as follows: in a monetary union, the more asymmetric the structures or behaviour of the union's economies, the higher the economic costs become. These differences in economic structures, which continue to exist between regions wishing to create a monetary union, will be at the root of adjustment costs in the case of external shocks. Mundell concludes, from a theoretical point of view, that it would be necessary to create homogenous monetary zones. Of course, even theoretically, it is not obvious to understand what 'homogenous' means (MARTIN, 2001). From the empirical point of view, it is simply a matter of accepting the fact that less favoured regions often, and for long periods of time, have to contend with such adjustment costs, albeit with the slight drawback that they rarely achieve adjustment. By following this same line of reasoning, KRUGMAN, 1991, 1993, includes the increasing returns to explain that the creation of a monetary union leads to greater asymmetries between regional economies. As we see this issue, the theory of optimal monetary zones based on the asymmetry of physical space in the event of exchange rate variations is based on the idea of adjustment costs incurred by the less favoured regions, whereas the structural impact, and in particular on the specialization of sectors with low or high price elasticity, is ignored.

Thus, the various theories reach very different conclusions. Furthermore, none of them takes into account the asymmetries at the beginning of the process, the impact on production structures or the differences between regions.

REGIONAL PRODUCTION SYSTEMS (RPSs) AND EXCHANGE RATE

These theories are therefore ill-suited to our concerns and arrive at conclusions that are frequently contradictory. Whilst bearing them in mind, our research is above all empirical. To understand the structural effect of exchange rates on the regions, we therefore chose

to use two closely interrelated operational concepts: the *regional production system (RPS)* and the *regional base income*.

Definition and method of identification of RPSs

The RPS is a more general concept than that of 'industrial districts' (AMIN and ROBBINS, 1990; BECATTINI, 1992; PYKE and SENGENBERGER, 1992), the 'technopoles' (BENKO, 1991), the 'global cities' (SASSEN, 1991) or the 'innovative milieus' (MAILLAT and PERRIN, 1992; MAILLAT *et al.*, 1993; BRAMANTI *et al.*, 1997). We will consider the latter as *special cases of RPSs*.

A *regional production system (RPS)* is defined as a *geographical area of productive specialization(s)* including a certain number of *regional players* (small or larger firms, institutions, public authorities). These players interact with one another in accordance with certain *relationships* of technical complementarities (trade input/output relations, relations between training and education systems/research and firms), relationships of competition and/or co-operation. An RPS harbours and generates *specific resources* (in particular know-how of all kinds), which form the basis of its competitiveness. It also has a more or less pronounced *autonomy* with respect to its own evolution (CREVOISIER *et al.*, 2001).

Thus, the *spatial boundaries of an RPS* comprise a certain number of elements: specialization of activities compared with the other national territories; specific relationships between regional players that also define a particular area; the presence of specific resources that give the region a specific edge over its neighbours; and finally, in a more general way, the autonomous ability of adjustment and innovation, involving a certain number of players in a dynamic interaction that distinguishes this territory from the surrounding ones.

The economy of some regions may be composed nearly exclusively of its RPS. In other regions, on the contrary, the RPS and its specialized branches are only a tiny part of the economy, because the region is more diversified or it has a larger number of induced activities. The *autonomy* of an RPS is also pronounced to varying degrees, ranging from a dependent RPS consisting mainly of subsidiaries of large firms with few local ties to truly innovative milieus (MAILLAT and PERRIN, 1992; MAILLAT *et al.*, 1993; BRAMANTI *et al.*, 1997).

Like other authors (GUÉGAN and ROUSIER, 1989; ISAKSEN, 1996; ASHEIM and ISAKSEN, 1997), the basic unit we used consisted of spatial entities based on commuting movements (MS regions). This spatial delimitation makes both geographical and functional sense.

In a first step, we regrouped these MS regions on the basis mainly of localization quotients based on sectoral employment (see Appendix) in order to establish coherent RPSs (GUÉGAN and ROUSIER, 1989;

THIERSTEIN *et al.*, 1995). In a second step, we used a certain number of more qualitative data. Indeed, an exclusively statistical study does not help reveal the complementarities that exist between the various activities within a region, regardless of whether these complementarities are to be found in purchasing/selling relations, in the technology employed and the related know-how or whether they are of a different nature. So, in order to better grasp the innovation capacity of the various RPSs, we resorted to two sources of information: interviews with regional experts and existing regional monographs.

Definition and method of identification of the regional basic income

This issue should allow us to specify the general basic income generated by the various RPSs we identified. The export base theory (HOYT, 1939; GOUGUET, 1981) assumes that the economic growth of a city or of a region depends on its *basic income*, i.e. the income it derives from selling its products and services beyond the region, whether to the remainder of the country or as exports. Thus, such revenue induces jobs in the region. The first study of this theory was very limited and was criticized severely. Nonetheless, its basic principle (the link between the basic revenue and the development of the region) still serves to inspire numerous research studies in the field of regional economics. From this point of view the role played by RPSs is essential in ensuring the competitiveness of the various

nations and in supplying a large part of exports to the latter (STORPER, 1992). In the light of the above, we determine the basic income generated by the various RPSs as follows:

- in terms of exports of industrial goods
- in terms of hotel overnight stays in tourism
- in a more indirect manner, with regard to the remaining activities (banking, insurance, etc.) since the regional statistics are deficient in this respect and do not provide us with the data required by this study.

Summary outline of an RPS

Using this method, we were able to identify 11 regional production systems in Switzerland. To describe each one, data tables, text and summary diagrams were established. The data tables are not reproduced due to lack of space. The summary diagrams include the following elements (Fig. 2): productive specializations, main relations between these productive specializations, presence of specific resources, basic income by origin (Swiss or foreign) and type of exposure (positive, negative or neutral – see below).

Variables that explain the impact of the exchange rate on RPSs

Drawing on the various theories of exchange rates and the above-mentioned studies on regional production

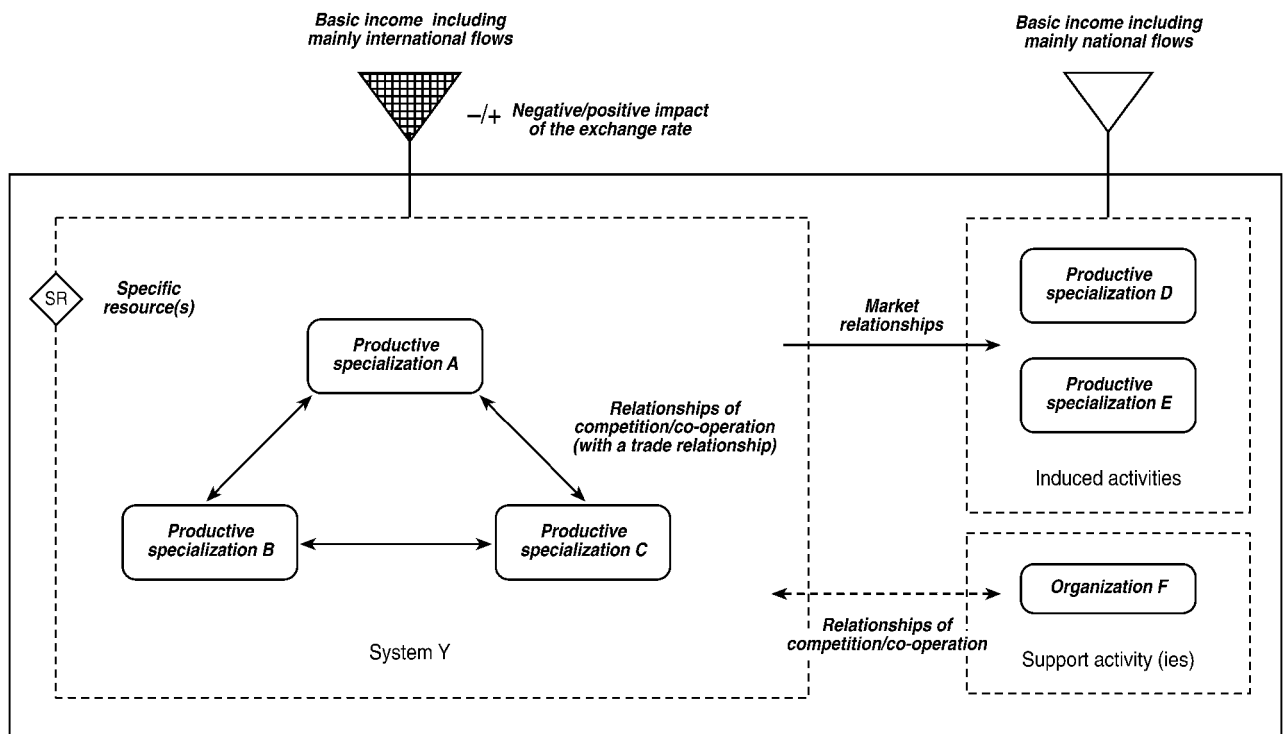


Fig. 2. Caption of the diagrams

systems, we were able to define three variables in order to assess the regional impact of exchange rates. The objective is to establish the link between the evolution of the activities of the export base (or productive specialization) in the presence of currency appreciation (for example, the contraction of these activities, their expansion, up-market specialization, conversion to new activities, etc.) and the features of the RPSs both in terms of their structures and of their innovation capacity.

Sectoral specializations. Not all economic sectors react to appreciation in a currency's external value in the same way. Thus, it is possible to make a distinction between three sectors in order to account for the difference in exposure to an increase in the external value of a currency:

- *Sectors with positive exposure:* financial activities and import trade benefit from the appreciation in the external value of the currency. The reasons for which an international financial sector is influenced positively by the value of the national currency is discussed elsewhere (CREVOISIER *et al.*, 2001).
- *Sectors with negative exposure:* currency appreciation usually has a negative influence on the export industry and the activities linked to tourism.
- *Sheltered and invulnerable sectors:* some activities are simply not, or barely, exposed to international competition (administration, health sector, etc.) and are therefore not affected by the appreciation in the external value of the currency. Other activities are exposed to international competition, but are not, or hardly, affected by exchange rates. This is the case in particular for headquarters of large firms and international organizations. Large firms base their location decisions in particular on factors such as quality of life, whereas the decisions of international organizations are motivated by political factors.

Depending on their specialization(s), therefore, regions are exposed in very different ways to the evolution of the exchange rate.

The presence of large firms. Standard theory tells us that the increase in the external value of a currency drives firms to invest abroad. In actual fact, only large firms have the financial and organizational resources to pursue a strategy of expansion and relocation at the international level. Regions dominated by large firms will thus experience a different evolution than those in which SMEs predominate.

Endogenous innovating capacity of RPSs. We have seen that the exchange rate impact depends on the structure of the RPS at the beginning of the increase. Nevertheless, two regions with the same structures at the beginning of such a movement will not necessarily respond in the same way. The very large number of studies conducted in the last 20 years on innovative milieus,

technopoles and industrial districts has shown that regions have varying capacities for adjustment and innovation. According to these studies, these capacities are to be found in the conjunction of three elements: decision-making autonomy; existence of relations of competition/co-operation between the regional actors; and the capacity to generate specific resources. The above-mentioned theories lead us to believe that isolated firms would not have the capacity to innovate and to adapt to exchange rate pressure in the long term. Firms located in favourable environments can mobilize external resources and adapt in spite of being 'anchored' in a given region.

Thus, the structures of an RPS, its sectoral composition and the predominance of large firms or of SMEs do not entirely determine the way in which a region will develop. The innovating capacity also influences the structural evolution of the RPS.

REGIONAL IMPACTS OF EXCHANGE RATES IN SWITZERLAND

In this section, we will portray different types of RPSs. We selected these because we felt they were special from the point of view of their economic structure on the one hand, and on the other because each one evolved very differently with regard to the appreciation of the Swiss franc. For extensive details on different Swiss production systems, see CREVOISIER *et al.*, 2001.

The metropolitan system of Zurich

The broad features of the RPS. Nowadays, Zurich consists of a vast metropolitan region that is Switzerland's main service centre, in particular in terms of firm-related services. There is a high concentration of corporate headquarters and of activities controlling national flows here. It is also a major international financial centre with an impressive range of services rendered to firms in this sector. It has become a true metropolis within the meaning of a regional production system, which generates the capacities controlling flows within a globalized economy (see Fig. 3).

The *higher tertiary system* includes the financial centre and the import-export activities:

- Financial (banks and financial institutions, insurance companies) and consultancy activities form the core of the financial centre. This core sells its services to the headquarters of large Swiss firms and to foreign multinational groups, present in very large numbers. There are many relationships between these areas of activities.
- Besides this first group of activities, there are also import and export activities to be found in Zurich (transport forwarders, trade intermediaries, wholesale traders). Amongst these businesses, we find the headquarters of large commodity trading companies and

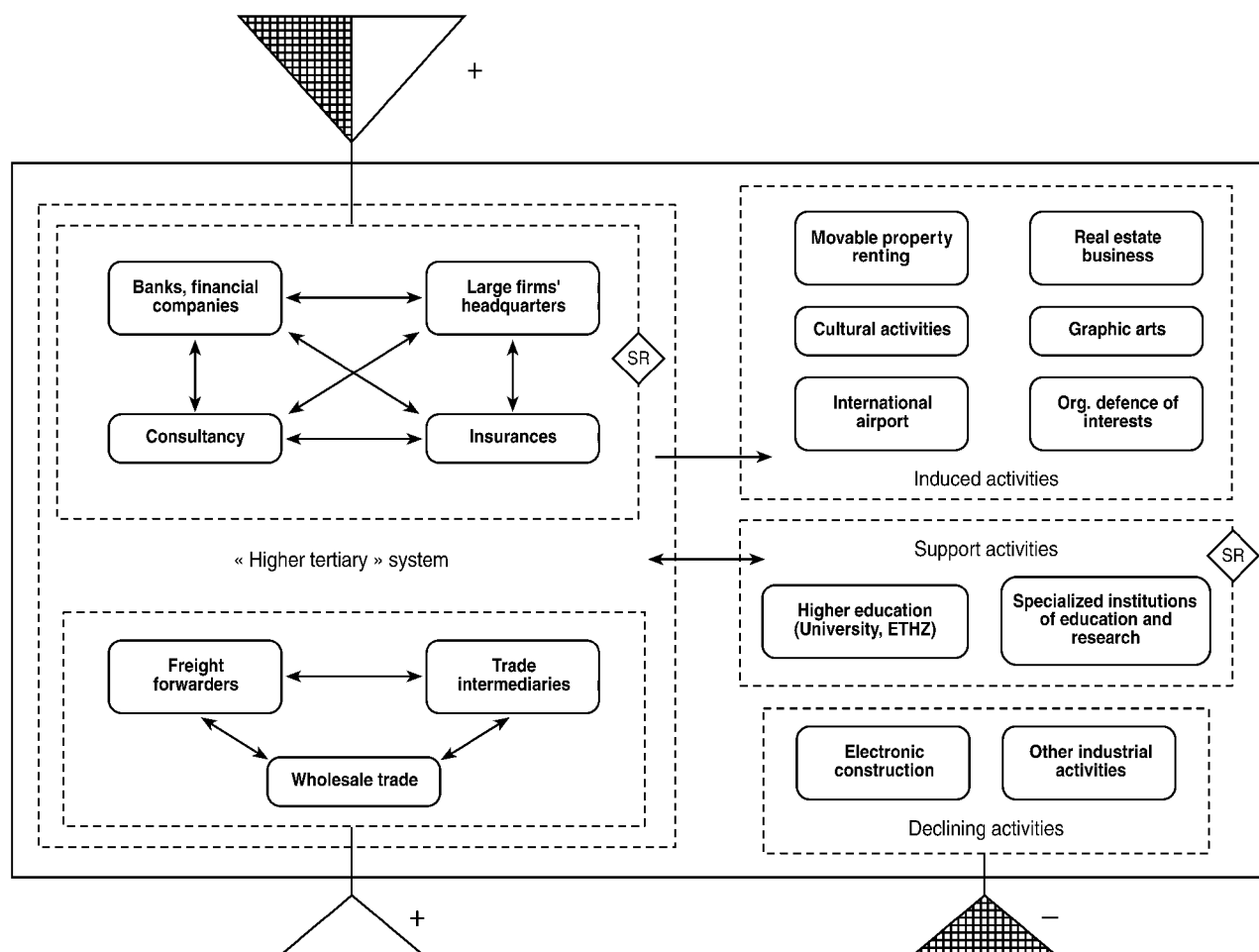


Fig. 3. The metropolitan system of Zurich

wholesalers, located mainly in Zug with only a very modest number of employees on site. The physical commodities (raw materials, etc.) themselves do not usually even transit through Switzerland.

- The third group of activities consists of the induced and supporting activities. We should mention, for example, the large number of real estate and property services and other infrastructures. Moreover, Zurich hosts the country's most prestigious educational, training and research institutions, the University of Zurich and the Swiss Federal Institute of Technology (ETH), the specialized educational institutes in the metropolitan region of Zurich plus various technical and vocational colleges. Lastly, with Zurich-Kloten airport, the transport network offers rapid physical communication at a national and international level.

The electric and electronic engineering sectors, which long constituted a traditional speciality of the region, lost 17% of its jobs whilst the other industrial activities declined by 32%.

The impact of the exchange rate. The system in Zurich is characterized both by the function it performs as a

hub in Switzerland controlling a substantial share of domestic flows and by its international outlook:

- The Zurich financial centre greatly benefited from the appreciation of the Swiss franc. Firstly, as was the case of the other financial centres in Switzerland, the strong Swiss franc worked in favour of financial activities and in particular asset management. Secondly, the large banks and insurance companies made the best of the strong franc in order to consolidate their move towards globalization and to buy up numerous foreign companies.
- The sub-system, which unites the transport and trade intermediaries and the wholesale trade, is more specialized in the importing business: SwF 24 billion in imports versus only SwF 12 billion exports. Largely speaking, therefore, the rise of the Swiss franc was mainly to the advantage of the Zurich import-export sector.
- The induced and supporting activities were not affected by the evolution of the Swiss franc and benefited mainly from the expenditure in the higher tertiary system.

- The entire export-oriented industrial sector experienced a loss in jobs. Furthermore, firms involved were relocated to the outskirts of the urban centre. The rising real estate prices resulting from the expansion of the financial centre and the related services also played a central role in this development.

In the period under consideration, the economy of Zurich underwent major structural changes resulting in the quasi-disappearance of industry and a stupendous growth in services. Moreover, a study revealed that only half of those still employed in industry actually work in production: the other half are employed in administration and organization (HITZ *et al.*, 1996). Nonetheless, because of the very strong cohesion between the higher tertiary sector and the induced and supporting activities, the entire region was able to develop very prosperously in the period under consideration. Thus, the rise in the Swiss franc worked more in favour of Zurich than against it, and with respect to both its international and national activities.

The metropolitan system of Geneva

The broad features of the RPS. Geneva's production system is geared to international services. It is characterized by the existence of three main sets of activities (see Fig. 4):

- The financial and banking centre and international commerce centre. Banks are specialized in asset management, an area in which Switzerland manages 35% of the world's cross-border assets,³ but also in the financing of international trade and commerce (BEGUELIN and ROTH, 1992). This is mainly trade in raw materials and commodities, an activity in which Geneva is a world leader.
- The second set of activities arises from the presence of 150 international organizations, which employed nearly 27,000 people in 1994 (UBS, 1995). Here too, revenue originates nearly exclusively abroad.
- The third set groups the activities that support or back up the first two sets of activities. Thus, 35% of the hotel trade serves business travel and another 35% the international organizations; 51% of the international airport's customers are business travellers. Most of the jewellery and watchmaking production, aimed at the top range of the market, is exported directly, whilst the remainder is sold directly to wealthy tourists.

For its part, industry in Geneva has declined steadily since the beginning of the 1970s. The retail trade has also suffered from the proximity of the French border.

The impact of the exchange rate. The metropolitan system of Geneva is characterized by its considerable

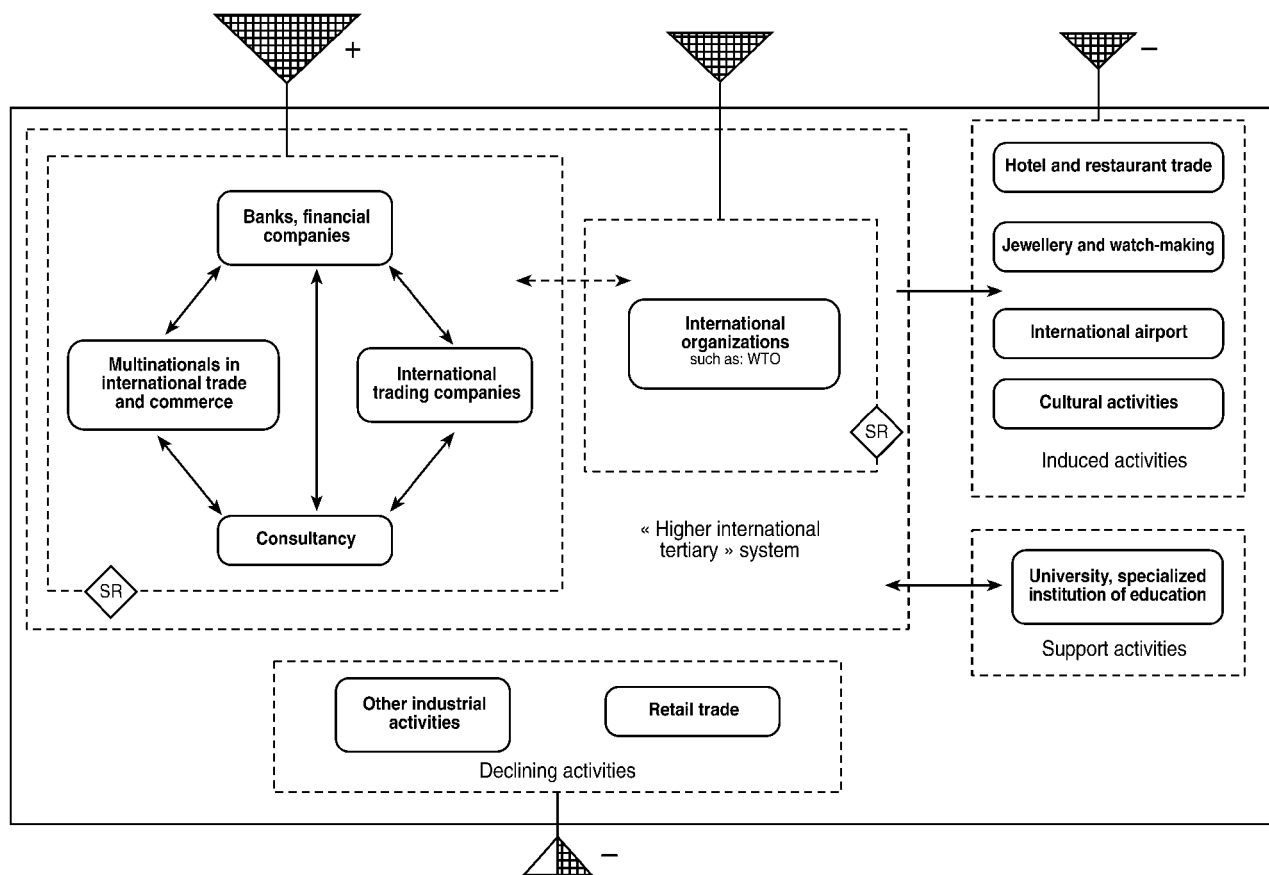


Fig. 4. The metropolitan system of Geneva

international focus. It is thus exposed to the Swiss franc's appreciation:

- Thanks to its international tradition and its specialization in asset management, the Geneva banking community has been able to benefit from a continually appreciating currency. This is borne out by the number of foreign banks set up in Geneva over the last 20 years: this increased from 48 in 1980 to 108 in 1995.
- The activities geared to international trade and commerce are not affected by the evolution of the Swiss franc: these companies' transactions are expressed in dollars.
- The international organizations do not really suffer from a rising Swiss franc since the sources of finance are governmental and are frequently determined by international agreements. In the long term, dollar-based salaries and the disadvantages arising from unfavourable exchange rates may incite the administrators of these international organizations to reconsider their location. Furthermore, the border impact has been quite considerable: in 1994, 47.7% of international civil servants were resident in France compared with 34.2% in 1981.
- The industrial sector (except for the watchmaking industry) has suffered particularly badly from the Swiss franc's appreciation. Jobs have decreased from about 30,000 in 1975 to less than 18,000 in 1995 (-39%). Watchmaking and jewellery were also able

to draw on their tradition of producing luxury goods, and have thus been sheltered from the rising Swiss franc. The sector accounted for more than 60% of the canton's goods exports in 1995.

- Generally speaking, the activities in the hotel and restaurant trade are highly sensitive to currency fluctuations. As the above-mentioned statistics confirm, however, these activities are linked very closely to the international activities in Geneva. Even with the handicap of the franc's evolution, they continue unabated thanks to business travel and to the international organizations.

In conclusion, in the period from 1975 to 1995, international organizations in Geneva did not suffer from the high Swiss franc and international services benefited from this. Except for the watchmaking industry, other industrial activities moved out of the region.

The mountain tourism system and the industrial system of Valais

The broad features of the RPS. The economy of the Canton of Valais is characterized by the presence of two independent groups of activities (see Fig. 5):

- *Mountain tourism.* After the euphoria of the 1980s, the tourist sector has barely returned to a growth dynamic, and various elements hamper its recovery: fiercer international competition; unfavourable

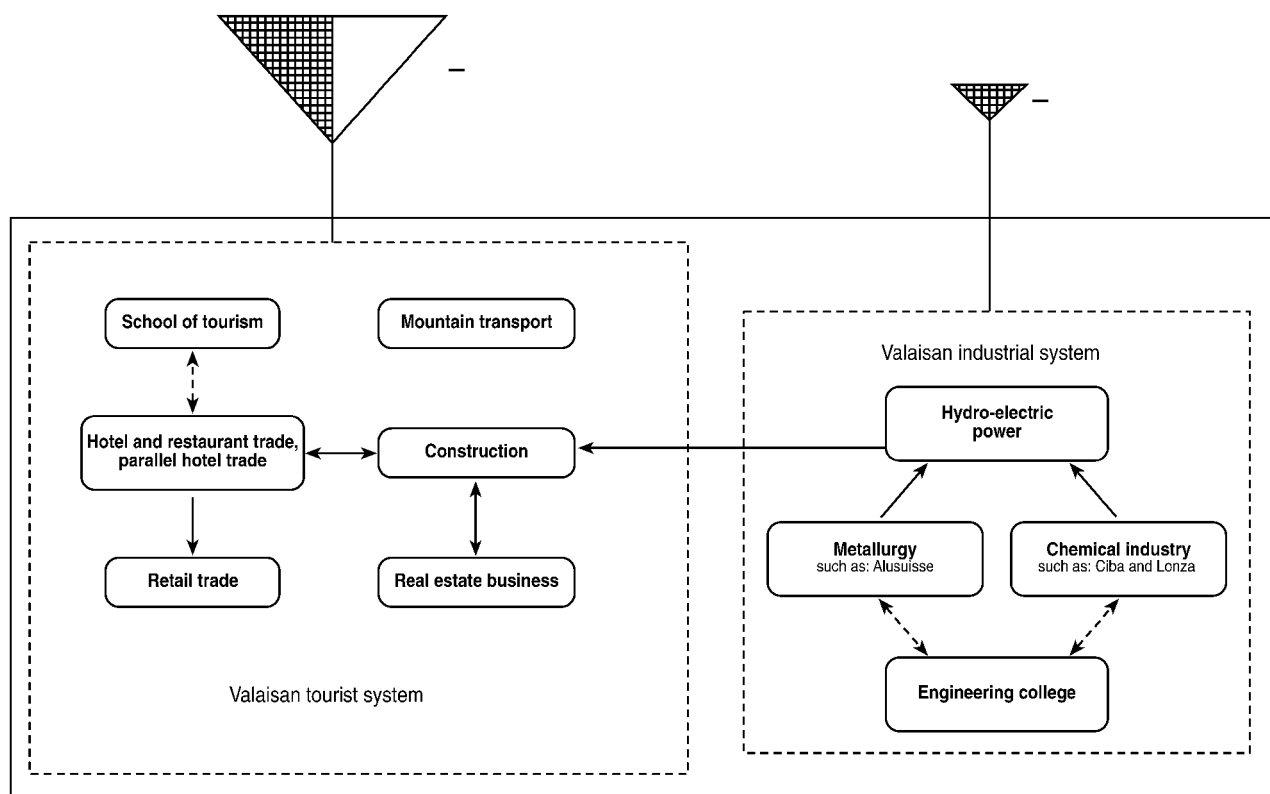


Fig. 5. *The mountain tourism system and the industrial system of Valais*

exchange rate; introduction of VAT; etc. Direct revenue (expenditure of tourists) from tourism in the Valais at the end of the 1980s was estimated to be about SwF 1.5 billion and SwF 3 billion including spin-off effects. According to the Valais Tourism Union, not only does one inhabitant out of three in the Valais earn his/her living thanks to tourism, but half of the Canton's population depends economically or indirectly on tourism (DAYER, 1992). The overnight hotel stays are split almost equally between Swiss clients on the one hand (45% of overnight stays in 1995) and foreign customers on the other (55%). The Valais thus accounts for nearly 13% of all overnight stays recorded in Switzerland.

- *Chemical and metallurgical industries.* The industrial sector is marked heavily by the presence of large firms. The Valais has never had a genuine industrial tradition, which may explain the dependence of its industrial fabric. At the end of the 19th century, and at the beginning of 20th century, the first large firms were set up in the Valais (Lonza in 1897, Ciba in 1904, Aluisse in 1905) because of the proximity to sources of hydroelectric power. Today, these three above-mentioned multinationals employ nearly half of the industrial labour force of the region.

The impact of the exchange rate. The economy in the Valais is marked by its open-minded approach to the exterior, while its specialized activities are not favoured by the Swiss franc. Tourism is suffering from the Swiss franc's appreciation. Both foreign and Swiss customers increasingly prefer other destinations. The spin-off activities such as construction, real estate business or the retail trade have also been seriously affected by this phenomenon. JAEGER *et al.*, 1996, established that for the period 1980–93, an appreciation of the Swiss franc by 1% in real terms led to a fall of 0.4% to 2.3% (depending on the country of origin) in nights spent in Switzerland by foreign tourists. Moreover, and unlike the industrial sector, the players in the tourism sector can hardly relocate their production and they are irremediably constrained by their geographical location. This being so, they frequently choose to hire underpaid foreign labour at the expense of service quality, even while attempting to develop strategies of co-operation.

The industrial system of the Valais, for its part, is characterized by the predominance of three large firms whose decision-making centres are located outside the Canton. The added value of these plants is rather low. To date, these activities have not been relocated because of heavy investments already made in the region. It was less costly to push the plants towards more value-added products than just to close them down. Thus, decreased costs explain the survival of these activities.

In conclusion, tourism in the Valais attempted to resist foreign competition by shifting from hotels to cheaper accommodation in the form of rented apartments and by hiring cheap foreign labour. The latter

feature explains the good level of employment in the region. Nevertheless, since 1992, the pressure has been too high and this fragmented, cost-oriented sector of tourism has experienced difficulty in finding synergies and a certain coherence, although some initiatives (co-operation between various resorts, for example) are beginning to emerge. The industrial fabric, marked by an absence of autonomy and tradition, is not really rooted in the Valais. The Canton's entire economy is suffering from the Swiss franc's appreciation, and the quasi-absent co-operation between the local players hinders endogenous development processes.

The Bernese administrative system

The broad features of the RPS. The conurbation of Bern is characterized by the preponderance of tertiary activities connected with the public sector (see Fig. 6). Bern is the administrative centre of Switzerland and also serves a large Canton. It is the seat of the Federal Government and of the various departments of the Federal Administration, as well as of three large state-owned enterprises: the Swiss Federal Railways (CFF), the Postal Administration and Swisscom (telecommunications). Some public services (in the area of health and higher education) also have a very strong presence. The Bernese conurbation plays the role of a centre and acts as a catchment area for flows from all over the country. This production system is dominated by large organizations geared to the national economy.

The impact of the exchange rate. As a Federal and Cantonal centre, Bern is sheltered from currency fluctuations. A protected public sector predominates and the commercial services of the private sector here are destined chiefly for clients in the domestic market. The Bernese conurbation accounts for a little less than 6% of the country's employment, but for only 1.6% of the country's total goods exports.

To conclude, Bern has seen a substantial growth in employment whilst at the same time being sheltered from the impact of exchange rates.

The industrial production system in the Swiss Jura

The broad features of the RPS. The economy of the Jura region is characterized by strong specialization in four complementary industrial branches: machine tools and automation; micro-technology; metallurgy; jewellery and watchmaking. This system is fundamentally an exporting one (about 15% of total Swiss exports in 1995 for a little less than 8% of the country's employment). This economy also distinguishes itself by the predominance of sophisticated technological industrial activities and an abnormally low level of services rendered to firms. The presence of two large firms in the tobacco industry should also be mentioned (see Fig. 7).

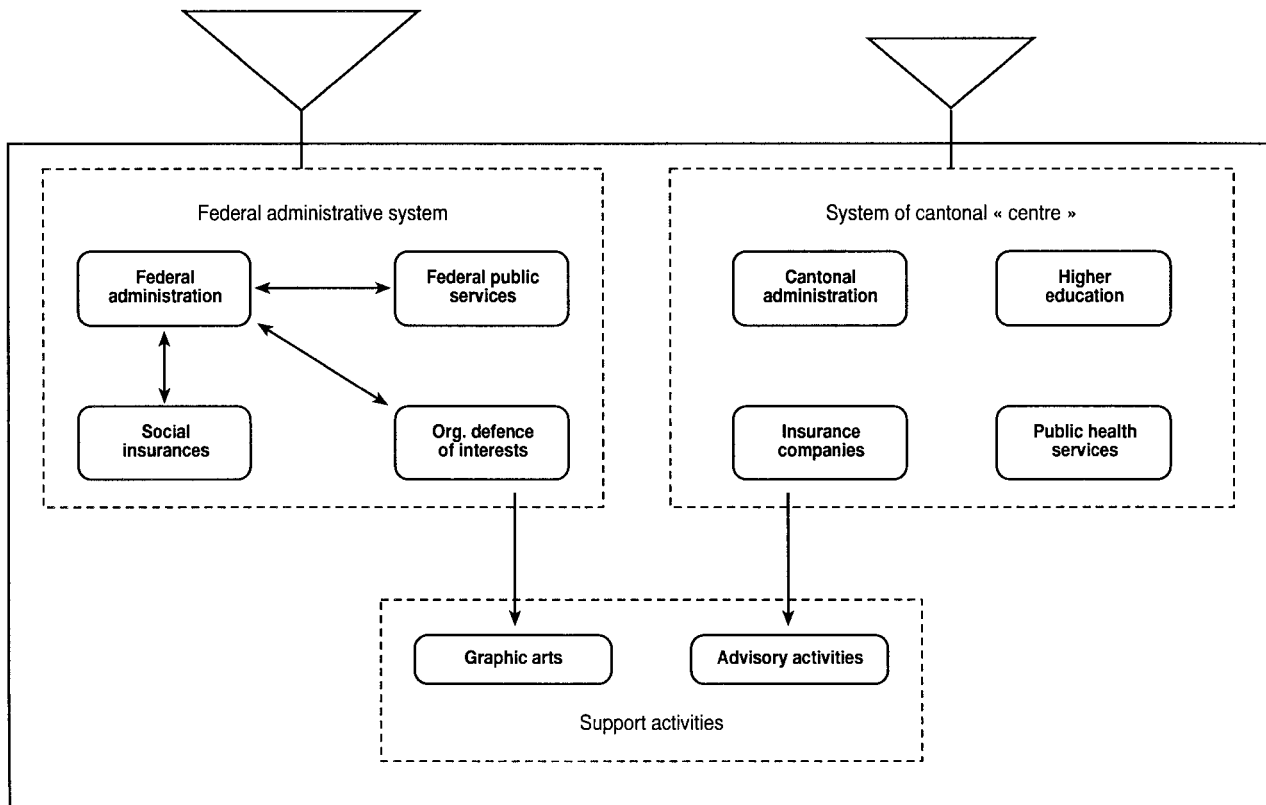


Fig. 6. The Bernese administrative system

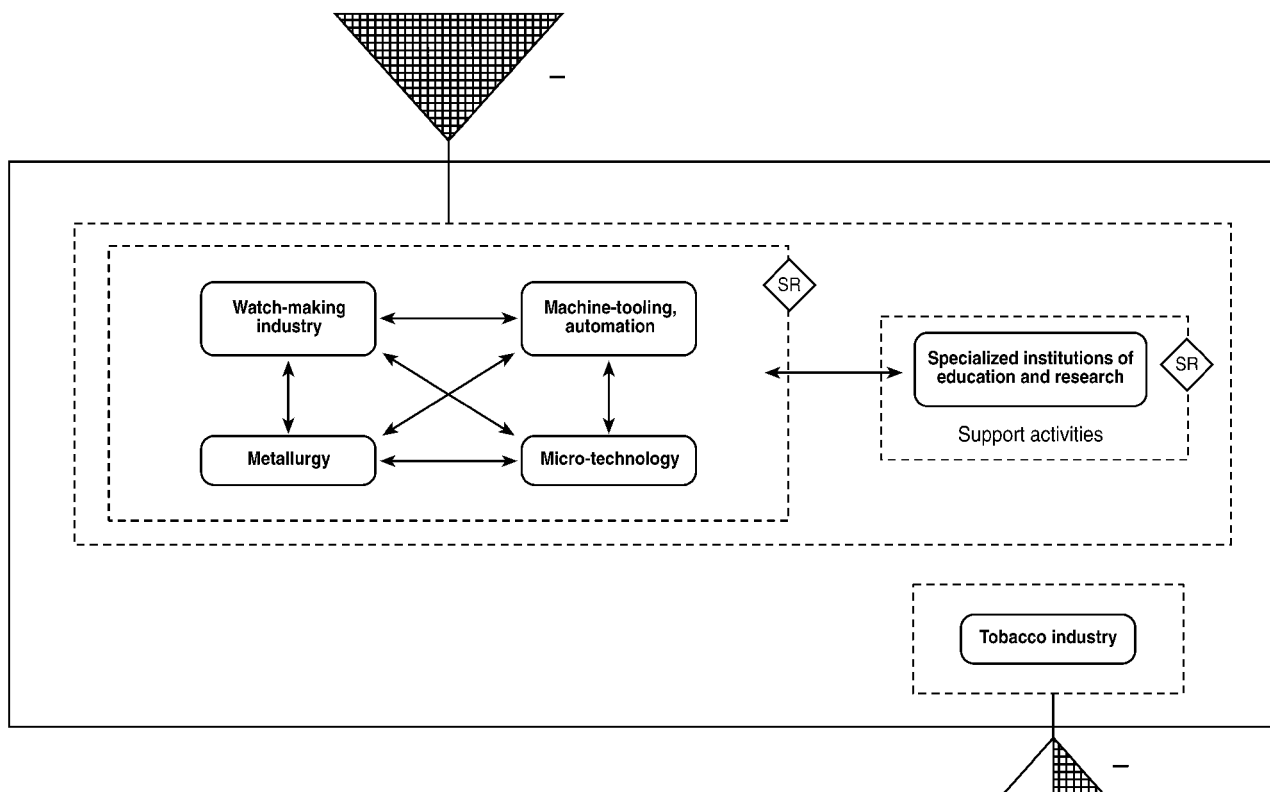


Fig. 7. The industrial production system in the Swiss Jura

The impact of the exchange rate. The industrial system of the Swiss Jura is geared heavily to exporting and thus is particularly exposed to the evolution of the Swiss franc:

- *The machine-tool/automation sector* declined because of the high Swiss franc and the absence of a collective regional innovation capacity. The machine tool sector was subjected to accelerated restructuring (loss of jobs, relocation of subcontracting, take-over of firms by foreign groups). At the same time, each firm embarked upon a race to achieve non-price related advantages. Because they acted individually and not by creating collective resources at the regional level, this led to an uncontrolled upward spiral affecting extremely restricted markets with increasingly sophisticated products. The costly development of these could no longer be amortized by sufficiently large production series (GROSJEAN, 1998).
- *The watchmaking industry.* Because of the level of the Swiss franc, the watch industry specialized in high value added products (top-of-the range or fashion sensitive markets). Thus, even though the share of Swiss watch-making production in the world's volume output has shrunk drastically in the past decades, the share in terms of value has grown unabated. Until the beginning of the 1990s, corporate strategy was devoted mainly to the development of new products. After this phase of innovation (new products, design and marketing), however, the firms concentrated on streamlining production or even on relocating part of it. The concentration of large groups further intensified this phenomenon as they themselves were investing in production in certain parts of Asia. Thus, some sub-contractors in the region of the Jura were forced to close down while others diversified into the field of mini-electronic components, the automobile industry, etc.
- *The micro-technical industry.* The firms in this high-tech sector have developed new products and sell them abroad. Nevertheless, due to the high level of the franc, they have not managed to grow and they specialize in niche products.
- In *metallurgy*, especially in high-precision milling, the appreciation of the Swiss franc is an additional obstacle to exports, but also in an indirect manner because the principals (customers) obtain supplies abroad or relocate. The result is more stringent requirements and eroded margins in certain markets. Thus, the firms were obliged to diversify their outlets.

In conclusion, under the pressure of a high Swiss franc the export industry of the Jura managed to shift to high value-added, non-price related competition wherever regional innovation capacities appeared, and declined sharply in other cases (for example in the machine industry). In any event, and even in the world's leading watchmaking industry, employment fell heavily as a

result of huge productivity increases (from 48,000 jobs in 1975 to about 23,000 in 1995!).

EXCHANGE RATE AND REGIONAL DIFFERENCES IN SWITZERLAND BETWEEN 1975 AND 1995

How has the Swiss economy and more particularly the country's various RPSs developed over the period during which the Swiss franc appreciated? Depending on their exchange rate exposure, one can subdivide the RPSs into five groups: metropolitan; industrial; tourist; sheltered; and composite. Generally speaking, it is above all the urban regions that appear to have positive or sheltered exposure, whilst the regions in the Alps and the Jura have negative exposure. The Basel region and the Ticino have positive and negative exposure simultaneously because these regions' RPSs are composite given that some of their characteristic basic activities benefit from the Swiss franc's appreciation whilst others suffer from it (Fig. 8, Table 1).

Table 1. Evolution of employment in the various RPSs,¹ 1975–95

RPSs identified in Switzerland	No. of jobs in 1975	No. of jobs in 1995	Variation (%)
Metropolitan system of Geneva	53,584	81,781	53
Urban system (Lausanne area)	40,444	64,261	59
Tourist system (Côte, Riviera, Alps)	6,480	7,978	23
<i>Systems in the Lausanne region</i>	<i>46,924</i>	<i>72,239</i>	<i>54</i>
Industrial system in the Swiss Jura	100,453	70,206	-30
Valaisan tourist system	35,436	44,650	26
Valaisan industrial system	11,922	11,834	-1
<i>Valaisan systems</i>	<i>47,358</i>	<i>56,484</i>	<i>19</i>
Bernese administrative system	54,029	85,822	59
Tourist system in the Bernese Oberland	16,125	18,878	17
Basel metropolitan industrial system	67,636	76,539	13
Tourist system in the Ticino	32,108	34,229	7
Tertiary system in the Ticino	6,466	9,073	40
Industrial system in the Ticino	8,449	4,762	-44
<i>Systems in the Ticino</i>	<i>47,023</i>	<i>48,064</i>	<i>2</i>
Metropolitan system in Zurich	189,561	263,948	39
Industrial system in Eastern Switzerland	106,889	88,958	-17
Tourist system in Graubünden	36,105	41,849	16

Note: 1. The total of employment does not correspond to the total regional employment, but only to the total of all the sectors included in the regional production systems.

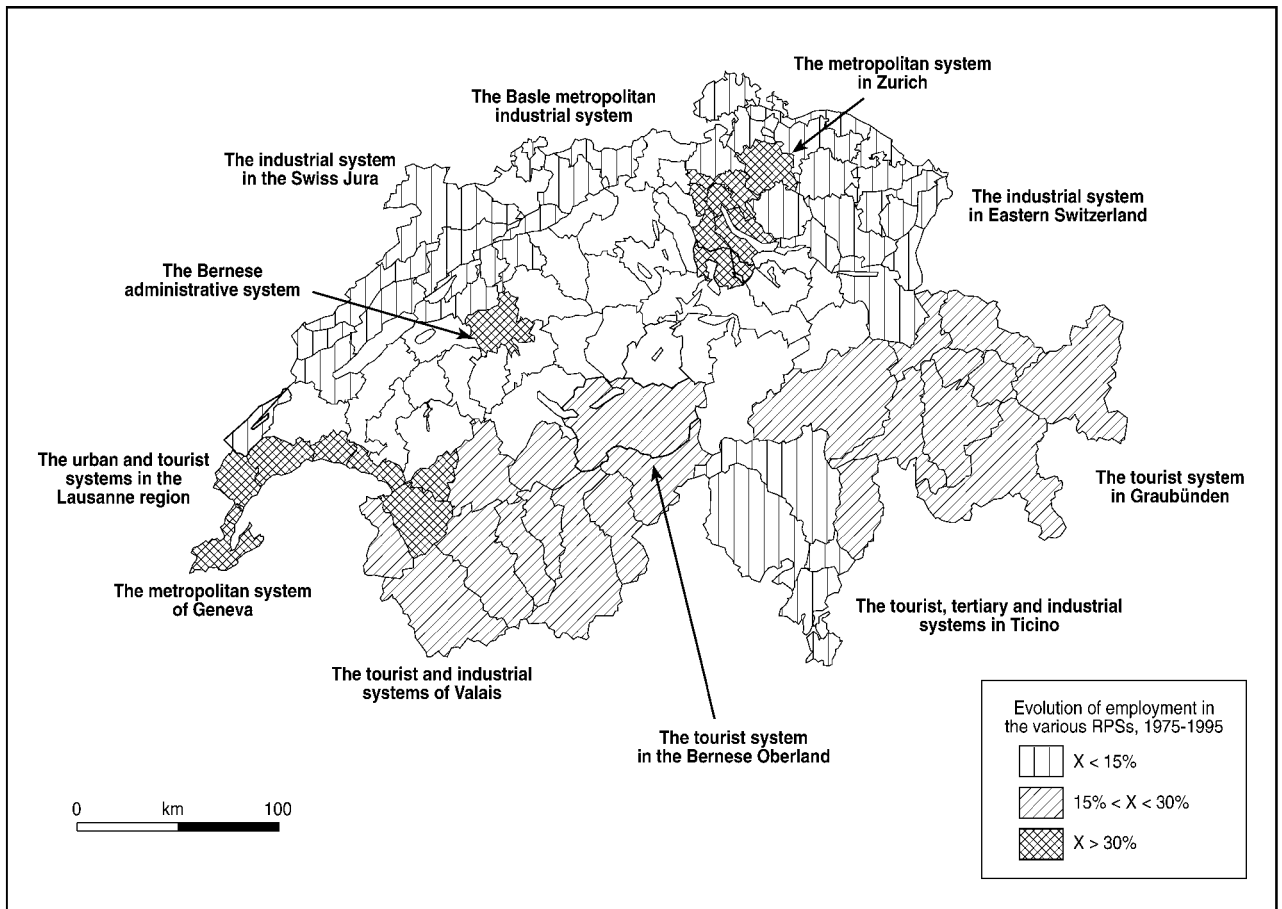


Fig. 8. Evolution of employment in the various RPSs, 1975–95

The metropolitan systems, the activities of which are geared mainly to finance, earn a substantial share of their revenue abroad and the franc's appreciation thus represents an advantage. In the period under consideration, the strategies adopted by the main Swiss production systems specializing in this area: Zurich, Geneva, and to a lesser extent Lugano were to restructure financial activities and the control of economic flows on an international basis as well as to expand these activities.

Employment in the industrial RPSs fell largely below the national average and generally developed negatively. There are two reasons for this development: negative exposure to the Swiss franc's rate and the various movements that constituted the reaction to this shift (dramatic increase in productivity, relocation or simply decline). It is nevertheless interesting to note that even the highly innovative systems, such as watch-making, were to experience waning employment. On the other hand, new activities (micro-technology, biotechnology, etc.) were unable to gain impetus. Was this due to difficulties in exporting?

RPSs focused on tourism which, like those related to industry experienced negative exposure, did not respond in the same way to the franc's appreciation because productivity in personal services cannot be

increased to the same extent. The nature of activities within tourism make them ill-suited for automation, for example, nor is the innovation potential of establishments (hotels, restaurants, etc.) as strong as that within other industries. Faced with the appreciation in the external value of the franc, cost compression was applied in two ways. Firstly, by bringing in low-cost foreign labour, which explains the relatively good performance of these systems in terms of employment. Secondly, by changing from hotel-based tourism to a more cost-effective para-hotel trade, which allowed for services to be replaced by the construction of apartments. Nonetheless, this evolution came to a brutal stop at the beginning of the 1990s when the Swiss franc appreciated again. This convulsion lasted for too long and the tourist RPSs experienced a crisis that affected the construction sector with particular severity.

Surprisingly, the RPSs that were protected from the franc's fluctuations (the Bern and Lausanne conurbations) experienced higher growth than the financial centres. This was mainly the case of centres that are of central importance to the region concerned or even to the whole of Switzerland and whose main activities are geared to controlling the country's internal flows. These are basically service activities (health, administration, higher education, media, etc.) whose productivity

can hardly be increased plus the activities concerning the domestic market, which is usually an expanding one.

The industrial, metropolitan system of Basel experienced a distinctly lower growth cycle compared with the country's other large urban regions. The labour force in the chemical industry, which influences the structure of the whole region, declined by 12% whilst the large Basel firms in this sector boosted their international competitiveness by specializing in high added-value finished products. The rise in the cost of research and manufacturing in Switzerland occurred at the same time as the pull of relatively low investment costs abroad: the strength of the Swiss franc was used as leverage and helped the large industrial Basel groups to become global. Since the end of the 1970s, acquisitions and direct investment have multiplied to such an extent that jobs abroad today account for two-thirds of all jobs within these firms. The SMEs in the chemical industry sometimes paid very dearly for acting as a buffer. It is interesting to note, however, that the shift in decision making to the international level did not lead to a true metropolization of the Basel region. The tertiary and above all the financial activities did not follow suit.

CONCLUSION: EXCHANGE RATES, REGIONS AND MONETARY INTEGRATION

To conclude, one may wonder to what extent the appreciation of the Swiss franc reflected the good performance of the Swiss economy and somehow also the necessary adjustment of the less competitive sectors of the economy such as industry and tourism. Indeed, and fundamentally, it was neither the competitiveness nor the dynamism of the financial activities concentrated in two or three cities that caused the franc to appreciate: it is also the opposite. As always in economics, the explanation must be sought in the cumulative effects. *It is the appreciation of the franc that is, in part, responsible for the financial centre's competitiveness.* On the other side of the coin, the industrial and tourist RPSs were forced to adjust, i.e. to survive despite the unfavourable macro-economic framework conditions. The reasoning with regard to adjustment to, and development of, new activities with a high added value must be examined carefully. Indeed, the evolution of the franc eliminated all mass production in Switzerland. In the internationally highly competitive sectors such as the chemical and watchmaking industries, there were massive job reductions in Switzerland and extensive relocation, and yet new activities were able to develop. Large firms were able to benefit from the strong franc in order to globalize, sometimes at the very expense of their home region. The resulting regional imbalances are severe: migration to the finan-

cial centres, which are expanding; a steeper decline of industrial and tourist regions than is strictly required by globalization and technological change.

The purpose of this study was to demonstrate that the structural impact of exchange rates can and should be analysed from the viewpoint of the territory. Although there is no ready-made theory that encompasses both the regional productions systems (RPSs) and the traditional macro-economic flows, we were still able to identify the main RPSs in Switzerland and to understand the structural impact of the Swiss franc's evolution from 1975 to 1995. Naturally, we were not able to resolve some methodological issues, or only partly resolve them. Thus, it was difficult to separate the regional effect of exchange rates from the other economic transformations. The difficulties encountered by the industrial systems, for example, should be attributed partly to the general trend towards the decline of jobs in industry that is taking place in the West. It is always impossible to give due consideration to all elements, especially when all other elements refuse to be equal. It is obvious, however, that the difficulties with which all the industrial regions must contend are aggravated by exchange rate fluctuations. Was this necessary, desirable or excessive?

Taking Switzerland as a case in point, different RPSs appear to react very differently to identical monetary constraints, as was observed with the exchange rate. This raises a certain number of questions, or rather research hypotheses that can be examined in the study of other spatial economic entities. Until now, very little work has been carried out on the *real* future convergence or divergence differences in the Euro zone according to the intrinsic characteristics of nations and regions (MARTIN, 2001). As a final statement, let us imagine what kind of evolution the Euro could impose on regions depending on their intrinsic characteristics. Up to a certain extent, the continuous rise of the Swiss franc is easily assimilated to the abolition of exchange rate adjustments between highly integrated regions and countries of the Euroland. What kind of structural change will export regions located in traditionally weak currency countries face? Will the presence of strong local networks help industrial and tourist regions of southern Europe face rising costs? In the long run, European financial centres could face more direct competition than in the past. The strength of their local networks will become more important than the size of their national economy. Regions without strong financial centres (especially in the southern and eastern parts of the continent) could become directly dependent on the main European financial centres.

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NOTES

1. For a summary of these theories, see FAUGÈRE and VOISIN, 1993; for a critical review, see LORDON, 1997.
2. AGLIETTA, 1987, defines this concept as follows: 'Centres of competitiveness are groups of firms, which have gained dominant positions in international competition and which have a driving effect on a large variety of productive activities'.
3. According to some estimates made by Chase Manhattan Bank (1993) in SWISS BANKERS' ASSOCIATION, 1996.

APPENDIX

Method of identification of RPSs

In each case the *localization quotient* is the main indicator used to identify the RPSs; it expresses the degree of concentration of an activity *i* in a region *j* in relation to a reference territory, in general the national territory:

$$Q_{ij} = \frac{\left(\frac{E_{ij}}{E_{.j}}\right)}{\left(\frac{E_i}{E_{..}}\right)}$$

Or:

Q_{ij} = localization quotient of the sector of activity *i* in region *j*

E_{ij} = jobs in the branch of activity *i* in region *j*

E_i = jobs in the branch of activity *i* in the reference territory

$E_{.j}$ = total jobs in region *j*

$E_{..}$ = total jobs in the reference territory.

A quotient greater than 1 means that the branch considered is proportionally more important in the region than in the whole of the country. Thus, it may be seen as a specialized activity of this region. It is usually even interpreted as a basic activity generating revenue for the region, since it can be assumed that, because of its over-representation, part of the output is sold outside the region.

To be considered as a specialized branch, the economic branches in a given territory must meet the following condition:

$$Q_{ij} \geq 1.5$$

The first stage of identifying the RPSs and their spatial and sectoral boundaries was handled as follows:

- drawing of SM maps based on the statistics of the localization quotients
- pin-pointing the contiguous SM regions with a localization quotient of > 1.5 in a given branch
- on this basis, and for every identified zone, the various highly specialized branches were overlaid.

By this operation, however, a large number of RPSs clustered in diversified regions with a high density were eliminated. We therefore applied an additional criterion by retaining economic activities with a quotient greater than 1, but lower than 1.5 accounting for either at least 3% of all jobs in the region, or for at least 10% of jobs in the branch of activity at the national level, i.e:

$$(1 \leq Q_{ij} \leq 1.5) \wedge \left(E_{ij} \geq \frac{3}{100} E_{.j} \vee E_{ij} \geq \frac{10}{100} E_i \right)$$

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