

Case Study 3: Bremen's Innovation Policy

By Jörg Plöger



Photo: Universum Science Centre, Bremen

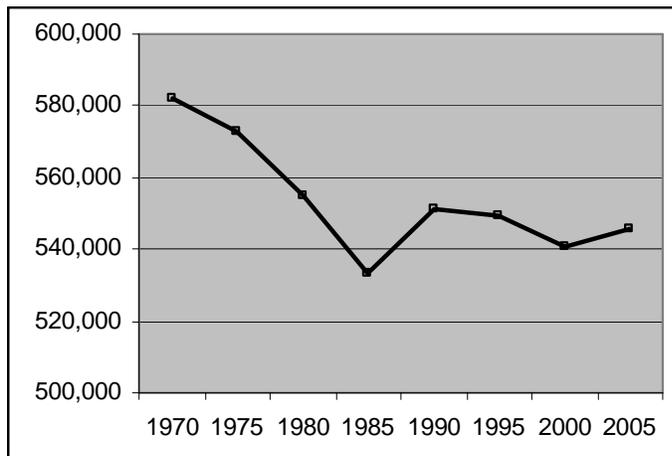
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1. Context

City context

- For historic reasons, Bremen is one of three city-states in Germany and therefore holds regional government powers. The state of Bremen is formed by the cities of Bremen and Bremerhaven.
- With 546,000 inhabitants, Bremen is the 10th largest city in Germany. It is located on the river Weser in North Western Germany.
- Bremerhaven was founded by Bremen in 1827 as an enclave to ensure future access to the sea. It is located 70 kilometres to the North of Bremen on the North Sea coast, and has 117,000 inhabitants. The port area in Bremerhaven still belongs to the City of Bremen.
- Bremen has a long tradition as an international port. It was a member of the Hanseatic League in the 13th/14th century. It has the second largest port in Germany after Hamburg.
- Since industrialisation Bremen's economy was dominated by industrial and harbour activities. Its employment and population numbers peaked around 1930. Nevertheless, with the post-war economic boom in Western Germany, Bremen's economy proved strong up to the 1970s.

Fig. 1: Population development of the City of Bremen (1970-2005)

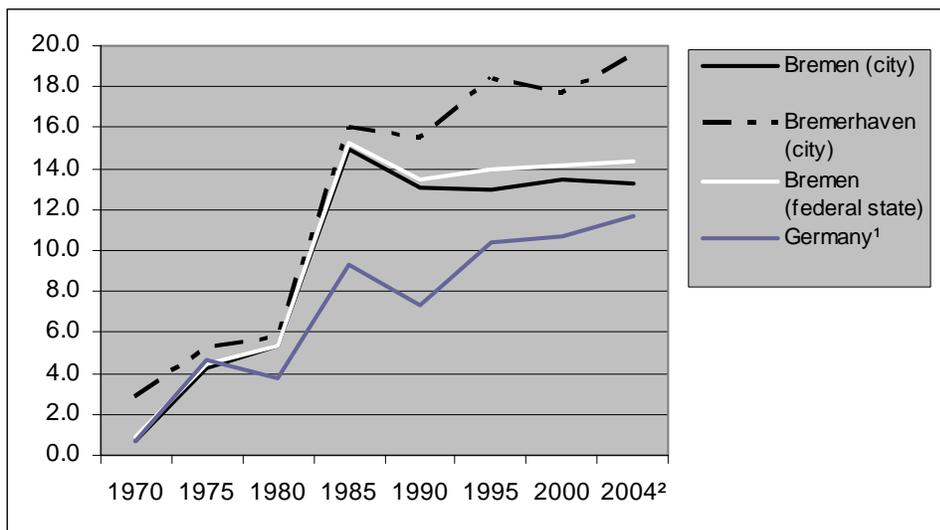


Source: Stat. Landesamt Bremen

Crisis context

- The peak of the economic crisis was reached by the mid-1980s. The city's unemployment level was highest in 1985, and its post-peak population was lowest in 1987 (see Figs. 1 and 2).
- For many in Bremen, the industrial crisis was closely associated with the collapse of the two major shipbuilding companies AG Weser (1984) and Vulkan (1997) and the subsequent loss of harbour-related employment due to changing transport systems (Belina, 2001). Jobs were lost in most other industries as well. Overall employment in manufacturing dropped from 33% in 1970 to 19% in 2005 (see Fig. 3).
- During the crisis, the State of Bremen faced severe financial problems created by such things as the structure of the federal tax system, suburbanisation of wealthier middle-class households (Bahrenberg 1999, Mönnich 2005), and the increasing burden of expenditures for social benefits.
- The manufacturing economy was still being transformed throughout the 1990s. Between 1994 and 2004 1.6% of jobs were lost (see Fig. 4). Losses were heavily concentrated in manufacturing where the number of jobs dropped by 25.2% (Peters, 2005). However, some of the losses were compensated by strong growth in other parts of the service sector.

Fig. 2: Development of unemployment rates for Bremen and Germany

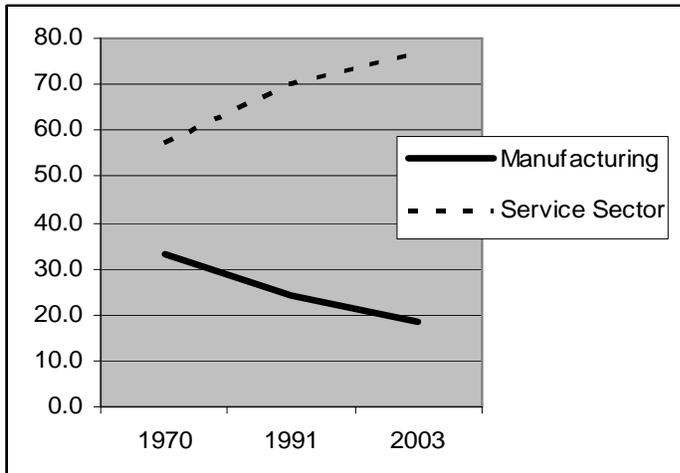


Source: Statistisches Landesamt Bremen (2006, online)

Notes: Values for West Germany until 1990, the reunified Germany after 1990.

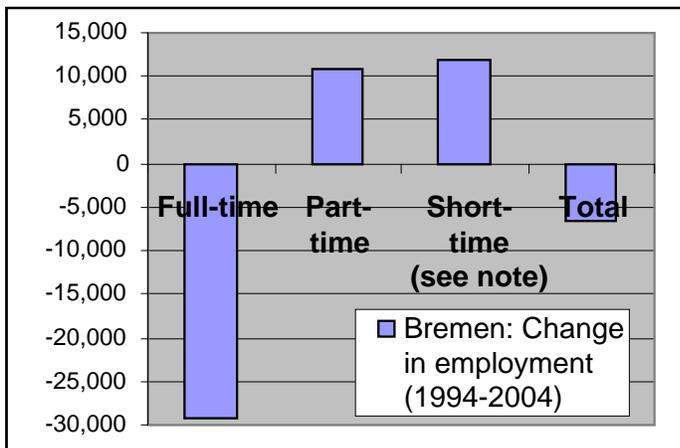
Variations due to new structure of social benefits system (rates generally higher).

Fig. 3: Change in employment in Bremen (city-state)



Sources: Statistisches Landesamt, BAW.

Fig. 4: Change in employment in Bremen (city-state)



Source: Peters (2005), Data: Bundesagentur für Arbeit, Stat. Landesamt Bremen.

Note: Short-term employment for 1999-2004.

2. New economic strategy: from 'Port City' to 'City of Science'

Already in the early 1980s, city officials realised the challenge of structural change for Bremen. It was at this point that decisions were made to initiate a profound 'change of direction' in the economic focus of the city (Warsewa, 2006). In the past, Bremen's economic fortunes had been linked closely to its harbour. The plan was to strengthen other activities seen as more adapted to the economic requirements of the present and future. Through the accompanying strategy it was intended to transform Bremen from a 'harbour city' to a modern 'city of science'. Hence, in contrast to our other European case studies which were directed towards the low-skilled population excluded from the post-crisis, post-industrial labour market, Bremen followed a

policy of strengthening its scientific base with the university at its core. The city-state decided to fund new economic activities identified as future areas of expansion and to build on strengths in existing sectors such as aerospace and aircraft industries, car production, maritime services and logistics. Two successive well-funded programmes were key to the strategy's implementation: 1) 'Economic Policy Action Programme' (WAP, 1984); and 2) the 'Special Investment Programme' (ISP, 1994).

3. Methods and Instruments

Economic Policy Action Programme (WAP)

The WAP was the first programme to be introduced as a reaction to the process of economic restructuring and marked the beginning of Bremen's innovation policy. It began in 1984 for an initial four-year period, followed-up by further programmes later. Two main lines of action were identified. Firstly, it was decided to expand Bremen's 'science landscape' and adapt its 'science portfolio' to the requirements of the new economy. The University in Bremen was founded by the city as a 'new university' only in 1971 and had been labelled a left-wing institution. It was decided to shift the main academic focus of the university away from the social sciences and humanities towards high-skill technologies, engineering and natural sciences by creating new faculties and expand existing ones. The state of Bremen also invested in attracting renowned research institutes to the university.

At the same time, it was decided to strengthen the regional economic base, especially high-tech sectors. One of the triggers here was to create synergies between the higher education institutions and local companies. The policy was influenced by the rapid development of the Silicon Valley in the US.

Special Investment Programme (ISP)

While the WAP was an important device to stimulate an innovation-driven economic recovery, an even broader potential for change was provided by the ISP in the 1990s. Bremen's progress in overcoming its urban crisis is closely connected to additional funds provided by this unique financial aid programme from the federal government (Bahrenberg, 1998). From the 1980s, Bremen became increasingly indebted. As a result, fulfilling its city-state functions and providing services became increasingly difficult. While some of these financial problems derived from their own budget failures, most could be ascribed to the city providing higher level functions both for the region (retail, higher education, public services) and all of Germany (international port). In addition, suburbanisation had stripped Bremen of many wealthier households and therefore a significant part of its tax base.¹

¹ Income taxes in Germany are paid to the municipality where one resides.

By the end of the 1980s the budgetary crisis had become so severe that Bremen was forced to make a claim at the federal Constitutional Court. The claim was based around the arguments that the city had to be compensated for its special role providing higher level functions. In 1991, the claim was successful and Bremen was granted a total of €8.5 billion in special federal aid over two five-year-periods between 1994 and 2004 (Prognos, 2002). It was agreed that the money would be primarily used to reduce debts. Nevertheless, the amount saved on paying interest on debts could be strategically invested. These still significant funds of €2.6 billion were used for the special investment programme begun in 1994. The ISP is a follow-up of the WAP, though equipped with much higher funding levels. The ISP had four main investment areas, set out in Box 1.

Box 1: ISP investment areas

	Areas of investment	Examples	Investment (in €million) ¹
1	Policy for and development of new industrial/office parks	e.g. Airport City, Logistics Centre, Technology Park, Overseas City	Business parks: ~ 670
2	Transport-related projects	Mostly with new development; also harbour and airport investments	Traffic infrastructure: ~ 460 Total: 1,148
3	a. Tourism-related projects b. Strengthening the core roles of a major city	e.g. Tourism, Space Park, events / congresses, city centre	- Urban revitalisation: 201 - Centre (retail, tourism): 205 - Suprastructure, events: 172 Total: 579
4	Research and development (innovation and technology)	e.g. research institutes, new university departments	Total: 653

Source: Prognos 2002

Note: Total funds: €2,612 million (€293 million not yet accounted for in this total).

Innovision 2010

With the ISP funds running until 2004, the City of Bremen designed a new programme to ensure the continuing development of its innovation and technology focus. Innovision 2010 was started in 2002. It receives additional funding from the federal government and the EU (Objective 2). It is equipped with roughly €200 million, far less than the ISP. One of the aims mentioned is to establish Bremen as one of the Top Ten German cities for technology. The programme identifies seven economic clusters which should receive special attention. Apart from traditional areas like air and aerospace, logistics, maritime economies, these are T.I.M.E., environmental technologies, health technologies, and design.

4. Technology Park University Bremen

Map 1: Technology Park and University of Bremen

Source: City of Bremen



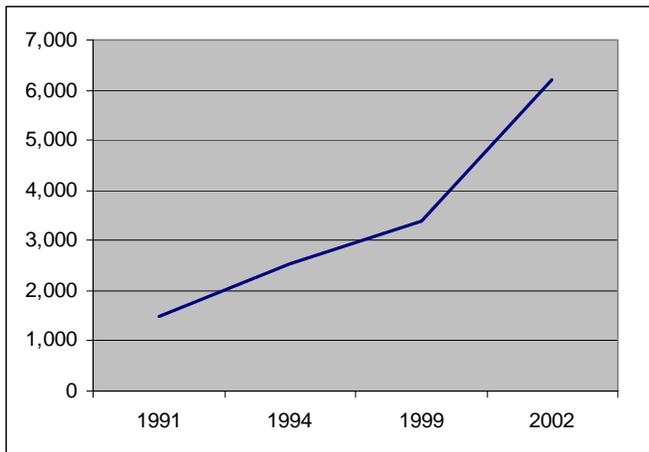
The Technology Park had 'organic' origins. It follows the idea of locating seminal economic sectors in the vicinity of higher education and research institutes to take advantage of cross-fertilisation. Offices for spin-off companies linked to university graduates served as a development incubator from the late 1980s. Here, graduates had access to cheap offices and communication infrastructure necessary to start their own businesses. The success of this complex led to development of the Technology Park, a business park of 75 ha (see Map 1). The centre for start-ups functioned as an incubator for the Technology Park attracting offices, production sites and research institutes, many from modern high-technology sectors such as aerospace, aircraft,

environmental technology or health technology. Later, an interactive science museum, the *Universum Science Centre* with striking architecture was located on the site (see front cover).

Development of the Technology Park

Employment in the Technology Park increased steadily since its foundation in the late 1980s. It is now the third largest of its kind in Germany. Its success is closely linked to the investments enabled through the ISP. Between 1999 and 2002 the total number of employees in its 320 companies doubled to 6,200 (see Fig. 7). Due to saturation, employment has been stable since then. The total number employed includes 1,700 scientific staff at the University of Bremen, 600 employees in 14 research institutes and 250 employees in 50 companies within the start-up centre known as BITZ. In terms of the relation between public and private investment, the Technology Park shows the lowest ratio (1:8.2) of public investment for all business/industrial parks in Bremen (Prognos, 2002).

Fig. 7: Development of employment in the Technology Park Bremen



Source: Wilms 2003.

5. Challenges and responses

Challenge	Response
The innovation policy is endangered by Bremen's severe financial situation	Budget cuts in university spending have already been agreed
To continue with the innovation-based approach	Programme Innovision 2010: Aiming to enter the top-ten of Germany's innovative cities
Structural change is not completed. New job creation is hardly matching ongoing job losses	The Innovation policy is based on investing in the future economic structure
Challenge (ctd.)	Response
Some traditionally strong economic sectors in Bremen (e.g. food industries, trade) have relatively low research input, making linkages to higher education institutions difficult.	Strengthening of maritime and logistics sectors, hoping to benefit from global trading boom through being the major European harbour city
Neighbourhood deprivation and social exclusion	Bremen has traditionally linked urban renewal with social issues. Design its own programmes which are applied in most deprived areas in combination with external (e.g. federal, EU) funding resources.
Bremen has large and marginal migrant communities	The city has a specific focus on the integration of people from a migrant background.

6. Outcomes

- Using a long-term strategy with a strong focus on innovation and high-tech skills, the implementation of economic restructuring adjusted to the changing funding situation.
- Investing in the university and a number of research institutes created a broad knowledge-base.
- Offering sites at new, modern office and production sites aided company location (e.g. Technology Park).
- Building on existing strengths in specific economic sectors proved invaluable.
- Accompanying social policy and urban renewal strategies for poor neighbourhoods should help integrate marginal communities.

Impact of Bremen's policy on job trends

Figure 5 shows that employment rose in several high-tech related job categories in Bremen between 1999 and 2004. An analysis of several research and development institutions assisted through ISP funds shows that the programme was successful in attracting considerable external investment (Prognos, 2002). Figure 6 shows the employment and funding effects of the ISP for research and development in Bremen.

Fig. 5: Indicators for employment trends in Bremen (1999-2004, in %)

	Employment rates	
	Bremen (city-state)	Germany
Cutting edge technology	+2.8	+0.7
'Knowledge intensive' services	+3.2	+3.7
Employees in Research and Development	+7.2	+1.0
Employees with higher education degree	11.7	7.7

Source: BAW-Innovationsbericht

Fig. 6: Employment and funding impacts of the ISP in Bremen (for 2001)

Directly employed in ISP funded institutes:	1,008 people
Indirectly employed (e.g. companies in cooperation with ISP-funded units):	210 (region) people
New jobs in spin-offs (since 1997):	79
External funds acquired by all ISP funded units:	€38.9 million
Private investment induced through cooperation with ISP-funded units:	€51.5 million

Source: Prognos 2002

7. Overall lessons and results

Administrative status and fiscal constraints

- Bremen benefits from its city-state status giving it more autonomy over spending and decision-making. Federal programmes can be implemented earlier and access to funding is easier.
- Its disadvantages in the federal tax system and the additional economic burdens of paying for functions which are beneficial to the region and the country were acknowledged in 1992, giving it the unique opportunity to use the compensation for a special investment programme (ISP) targeting areas which Bremen identified as crucial for the future (business/industrial parks, transport connections, city centre and tourism, research and innovation)
- Bremen has again become highly indebted and faces an unconstitutional budget crisis. The debts have risen to a record €12 billion, the highest per capita of all German states. Without new federal financial aid, Bremen will face bankruptcy and this will obviously endanger the recovery. Bremen has taken a new claim to the Constitutional Court. The city hopes to receive significant federal aid but chances are much lower this time, especially since the Constitutional Court has already rejected a similar claim by Berlin, another city-state.

Labour market impacts

- The unemployment rate is still high (especially in Bremerhaven)
- In comparison with these massive investments in strengthening Bremen as a high-tech city, only limited efforts have been made to link the low-skilled to the labour market. A corporation founded to improve the labour market situation in Bremen (BAG), funded through EU money, offers some skills development programmes and we would like to explore this.
- As a result, worries must be raised that social inequality in Bremen is rising. While the collapse of old-economy jobs and long-term disadvantages leave the low-skilled outside the regular labour market, the appearance of high-skill jobs in economic growth sectors have created good prospects for the middle-classes.
- The low-skilled have considerable problems in accessing the labour market. The unsuccessful high-profile tourism/entertainment project 'Space Park' was supposed to bring benefits to the nearby neighbourhood of Gröpelingen which shows high levels of social disadvantage, by creating lower-skilled service sector jobs (especially in retail and restaurants). The low-skilled suffer from 'qualification mismatches' in the Bremen labour market (Landsberg/Wehling), leading to many employees taking jobs for which they are overqualified. This hampers lower skilled workers' entry into the job market.
- Some of the economic sectors in which Bremen traditionally was strong have managed to adapt to new technological requirements and perform successfully e.g. airplane/aerospace engineering, car manufacturing, logistics and trade. The aircraft and aerospace industry and its suppliers employ 12,000 in Bremen and another 6,000 in the region (Tholen/Schekerka, 2003). Its strength in this sector is also

demonstrated by the Airport City office and industrial park development, opened in 2000, which houses 500 companies with a combined workforce of 13,500 (Meurer, 2005).

Success of technology and innovation focus:

- The transformation of the university towards natural, engineering and high-tech sciences was recognised as a major success. In 2005, Bremen received the title, Centre of Excellence in Education, for the outstanding performance of its 6 higher education institutions.
- The relocation of several renowned research institutes e.g. Fraunhofer, Max-Planck in Bremen generated investment.
- The efforts in this field have given Bremen a basis on which to create linkages between the sciences and the local economy.
- The considerable financial investments made through WAP and ISP programmes could stop the widening of the development gap between Bremen and other German agglomerations as studies show (BAW-Innovationsbericht). Most experts agree that – apart from obvious failures such as the ‘Space Park’ – the ISP money has generally been used well.
- But the current financial situation also makes further achievements in this sector difficult

8. Concluding thoughts

After witnessing the impact of economic restructuring on the local economy, city leaders decided to design a comprehensive innovation policy based on strengthening the city’s scientific base and creating links with companies. The success seems to stem from building new skills on an updated existing economic structure. Massive financial aid enabled the realisation of this ambitious strategy. But it remains an open question as to whether these efforts will be enough to adapt to new economic requirements in the long-run.

At present, with the boom in international trade, Bremen gains an advantage from its function as a major European sea-port. Many harbour-related economic sectors are benefiting from this trend. Bremen still has a strong but heterogeneous industrial basis. While food production requires only a low research input, other sectors such as for example aerospace and environmental technology benefit from the new university strengths in these sectors.

The unusual decision to go out of the way with the investment in innovation and knowledge production and the efforts to link research institutions and the regional economy have built a strength that will most likely equip Bremen with sufficient energy to establish a competitive economy around different niche but forward-looking sectors.

Although the working-class tradition and historic dominance of social democratic governments has given relatively high attention to providing the social infrastructure, social inequalities are now rising. With the focus on high-skilled economic sectors, the low-skilled, often from an immigrant background, are being threatened with permanent exclusion from the formal labour market. Like many other cities, the new economic and political conditions are making it increasingly difficult for cities to be both economically competitive and social integrative.

Annex

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Interviews

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Pictures



Area of Innovation: Technology Park Bremen

The 'incubator': start-up office complex BITZ



The embedded Centre for Excellence: University of Bremen