**Online Appendix**

Table A1 provides a summary of the (changing) roles of French, German, and Dutch health insurers in setting prices, regulating volume and supply, and assuring quality of care across the ambulatory, hospital, and pharmaceutical sectors during the past two decades.

**Table A1. Overview of the (changing) roles of health insurers in France, Germany, and the Netherlands since 2000**

| **Role of insurers in** | **France** | **Germany** | **Netherlands** |
| --- | --- | --- | --- |
| **Ambulatory sector** | | | |
| **Price setting** | **Yes.** Traditionalrole of the SHI funds: Fees (for FFS providers) are set through collective negotiations between 1) the government, 2) the union of social health insurance schemes (UNCAM), 3) the union of complementary health insurance schemes and 4) unions of health professionals. UNCAM provides a proposal which considers financial constraints set by ONDAM for the ambulatory sector. Medical professionals’ unions exert considerable power through lobbying in the parliament. Therefore, the Ministry of Health also plays a significant role in the negotiations.  **Important changes/recent reforms:** P4P in ambulatory setting (out of collective negotiations) which provides incentive to improve individual performance. Moreover, SHI has been piloting new payment modes (capitation, episode base, etc.). | **Partly.** Basic definition pursuant to federal law; details delegated to corporatist institutions at the federal (point values) and state (monetary valuation) levels. Collective contracting: Two-step process for payment: (1) Sickness funds make total payments (prospective budget) to the regional physicians’ associations for remunerating physicians. Amount of overall remuneration is negotiated between regional physicians’ associations and regional associations of sickness funds. (2) Total payments (i.e., pooled from all sickness funds) are distributed among SHI-affiliated physicians according to a national Uniform Value Scale (UVS). Prices of the UVS: multiplication of points of a service with the respective regionally valid point value agreed at regional level. Selective contracting on prices (e.g., P4P) is possible.  **Important changes/recent reforms**: In 2000, introduction of option for direct selective contracting on integrated care between sickness fund and providers. | **Yes**. Prices are freely negotiable in some ambulatory care sectors (e.g., physical therapists, community nurses), but for providers in other sectors (e.g., GPs and mental care providers) maximum prices are set by the Dutch Healthcare Authority (NZa). For instance, GP are paid by a combination of a maximum capitation payment per registered patient, a maximum fee per visit, and freely negotiable fees for multidisciplinary care for patients with chronic conditions and for meeting certain performance criteria (e.g., about innovative practices and prescription and/or referral behaviour)  **Important changes/recent reforms:** Gradual price liberalisation since 2006, introduction of bundled payment for patients with diabetes, COPD/asthma, and vascular problems (since 2010). In 2022 the payment method for ambulatory mental health care has been profoundly changed from payment per treatment trajectory to payment per visit. |
| **Regulating care volumes** | **No**.Since, private providers are mostly paid by FFS and a per-case basis retrospectively, ensuring that SHI health expenditure will match the (approved) national ceiling for SHI health expenditure is difficult. SHI try to keep the tariffs low but does not control volumes as there is still freedom of choice and no mechanism to limit supply. | **No.** Each SHI-affiliated physician is assigned a volume per quarter consisting of the volume of standard services allocated to his medical practice and any qualification-based additional volumes. The volume is a quantity limit up to which a practice receives payment for its services at the (full) prices of the Uniform Value Scale. | **Partly.** For community nursing and mental health care insurers and providers negotiate contracts with expenditure caps, which put a restriction on volumes (if the cap is exceeded additional volume may not be reimbursed)**.** In addition, the government negotiates with provider associations separate annual macro-budgets for GP-care, community nursing and mental health care. These macro-budgets are laid down in sectoral agreements (in 2022 an intersectoral care agreement (IZA) was concluded, but still with sectoral macro-budgets). In case a macro-budget is exceeded, the government can impose a uniform fine to all providers in the same sector in proportion to their revenue. |
| **Regulating supply** | **No.** The Ministry of Health decides on the supply: number of doctors, number of nurses, amount of heavy medical equipment, including expensive medical technology, etc.  **Important changes/recent reforms:** SHI supports efforts for task shifting and better geographic distribution of providers mostly by carrots (additional funding) for healthcare centres and physicians. | **Yes.** General rules according to federal law; details delegated to corporatist institutions at the federal level. Usually, collective care contracts: Determined by negotiations between regional associations of physicians and sickness funds.Physicians’ associations must guarantee availability of ambulatory services, ensuring that physicians from all specialties are available according to community needs and are located within a reasonable distance. Planning of SHI providers and services is the responsibility of the FJC and physicians’ regional associations. | **Yes**. Indirectly via selective contracting.  **Important changes/recent reforms:** Selective contracting has been slightly increased since 2010. Especially since 2015 there is a growing entry of small providers of nursing care and mental health care, voluntary choosing not to contract with insurers. |
| **Assuring quality of care** | **Yes.** P4P for GPs and in primary care settings: SHI offers individual contracts on a voluntary basis to GPs. Since 2011, this P4P scheme was incorporated into the physicians’ collective bargaining agreement and extended to specialists. P4P scheme has extended gradually to propose 29 quality indicators with intermediate and final targets. Indicators focus mostly on prevention (e.g., vaccination and cancer screening), follow-up of chronic disorders (e.g., cardiovascular risk) and generic prescription. | **Partly.** FJC determines mandatory quality assurance measures, which are then further developed in collective contracts.  Individual sickness funds must offer their insureds GP centred programs. They can offer disease management programs according to the guidelines of the FJC. Further elements include specific integrated care programs that promote enhancing the quality of care and efficiency across sectors. Alternative payment models out of collective contracts are possible. Most programs are indications based, while population-based programs are still rather an exception.  **Important changes/recent reforms:** Several options of selective contracts including quality elements and new alternative payment models are possible. Nevertheless, participating is voluntary for insureds. | **Yes**. P4P elements in payment for GPs, physical therapists, bundled payments for chronic diseases (diabetes, asthma/COPD, vascular problems).  **Important changes/recent reforms:** Gradually more focus on quality in contracting process, but still limited. |

| **Role of insurers in** | **France** | **Germany** | **Netherlands** |
| --- | --- | --- | --- |
| **Hospital sector** | | | |
| **Price setting** | **No.** All hospitals, except for long-term and psychiatry, are funded using DRGs, Prices are set by the Ministry of Health considering the cost scale and budget of the acute hospital sector (ONDAM target expenditure) and public health priorities. | **Partly.** Operating costs by sickness funds are paid mainly via case-based payments (DRGs). DRG prices are determined by multiplying the countrywide relative weight of a DRG by a state-wide price. Prices for new diagnostic or treatment methods can be negotiated between hospitals and sickness funds.  Selective contracting in the context of integrated care is possible. | **Yes.** Prices are freely negotiable for on average 70 % of hospital revenues; for complex hospital products (Diagnosis Treatment Combinations) maximum prices are set by the Dutch Healthcare Authority (NZa). The government can enforce a macro budget if total hospital expenditure exceeds this budget, by imposing a fine to all hospitals (as a proportion of their revenue).  **Important changes/recent reforms:** Yes, gradual price liberalisation since 2006. Since 2015 payments for self-employed hospital-based medical specialists have been integrated in hospital product prices. |
| **Regulating care volumes** | **No.** | **Indirectly.** Case volumes are part of annual budget negotiations between individual hospitals and sickness funds. Deviations from the agreed budget are only partially compensated.  **Important changes/recent reforms:** Introduction of a fixed cost degression deduction as an instrument against medically not indicated treatments. Hospitals that provide more services than previously agreed are to have this share deducted from the additional services billed. | **Yes.** hospital budgets or expenditure caps are negotiated in almost all hospital-insurer contracts.  **Important changes/recent reforms:** Macro budgets negotiated between government, provider and insurer associations since 2012; these macro budgets were an important driver for the agreements about global budgets or expenditure caps in individual hospital-insurer contracts. |
| **Regulating supply** | **No.** The Ministry of Health decides on the supply: number of doctors, number of nurses, number of hospital beds, amount of heavy medical equipment, including expensive medical technology, etc. | **Partly.** Planning of hospitals' inpatient care (location and size of hospitals, often number of beds) are carried out by ministries of health at state level (in the case of university hospitals by the ministries of science) based on the federal legal framework. Under certain circumstances, sickness funds can contract those hospitals not included in a state hospital plan.  **Important changes/recent reforms:** FJC determines lower limits for nursing staff in hospitals and minimum hospital volumes for specific indications (insufficient enforcement power for years). | **Yes.** Indirectly, because capital cost is included in the prices negotiated in hospital-insurer contracts.  **Important changes/recent reforms:**  Until 2008hospitals’ capital costs were retrospectively reimbursed, and hospitals needed government permission for capital investments (‘building license’). In 2008 this requirement was abolished and from 2008 to 2017 capital costs were gradually phased in the prices of hospital products (i.e., DTCs) to be negotiated with health insurers. |
| **Assuring quality of care** | **No.** The quality and safety of hospital care is out of SHI responsibility. Hospitals are certified by the Haute Autorité de Santé – HAS, an independent public authority. The ARS are responsible for tracking the volume and quality of hospitals in their region and can provide some targeted funding to hospitals for investing in certain areas for improving quality. But they have little funding power, and most hospital funding comes from activity-based payment disconnected from quality. | **Limited**. Usually, FJC specifies mandatory quality assurance measures. Examples: (1) Mandatory reporting system: hospitals are required to publish findings on selected process and outcome indicators to enable hospital comparisons. Based on this, sickness funds report outcomes to support patients in choosing hospitals. (2) Quality contracts: Sickness funds and hospitals can negotiate on quality contracts to test whether an improvement in inpatient care can be achieved by agreeing on incentives related to higher-value quality requirements including initiating pay for performance reimbursements. (3) No remuneration if minimum volume defined for procedures by the FJC is not reached. (4) Audits, e.g., of non-indicated treatments, by the medical review boards have the consequence of reducing the remuneration (up to the complete non-reimbursement). (5) Selective contracting in terms of e.g., integrated care programs can be used to set up quality measures (SGB V).  **Important changes/recent reforms**: Gradually, more emphasis on quality of care in selective contracting, but still in an early stage. | **Limited.** Typically, only general provisions about quality standards are included in hospital-insurer contracts. Few P4P elements are included in shared saving contracts.  **Important changes/recent reform:** Gradually more focus on quality in contracting process, but still limited |
| **Pharmaceutical sector** | | | |
| **Price setting** | **Yes.** For evaluated drugs (with additional benefit) prices, which serve as the basis for reimbursement, are set through a bargaining process between the Economic Committee for Health Products CEPS) and each pharmaceutical company. CEPS composed of representatives from SHI and complementary health insurance organisations and representatives of three ministers (Health, Economy, and Research) | **Yes.** (I) Drugs with an additional therapeutic benefit: the Federal Association of Sickness Funds negotiates a reimbursement price with the drug company. (II) For those without an additional benefit as well as off patented with the same benefit, grouping by the FJC and reference price setting by the Federal Association of Sickness Funds. In addition, individual contracting of discounts between sickness funds and pharmaceutical companies to obtain lower prices (mainly for generics).  **Important changes/recent reforms**:2007 selective contracting between sickness funds and pharmaceutical companies; 2011 introduction of an early benefit assessment for new pharmaceuticals followed by price negotiation (value-based pricing). | **Yes.** Competitive tendering for off-patent drugs, price negotiations for patented drugs if substitutes are available. Within a therapeutic class typically only the generic drugs from suppliers that won the bid (known as “preferential drug”) are reimbursed by the insurer. MoH negotiates prices for expensive new specialist drugs for which there are no competitors.  **Important changes/recent reforms:** In 2008 health insurers started competitive tendering for off-patent drugs with generic substitutes. Since 2012 prices for pharmacy services were deregulated and health insurers started negotiations about price and other contractual conditions with pharmacies. |
| **Regulating care volumes** | **Yes**, in price negotiations, estimated volume of sales is integrated. Indeed, the drug price is set by considering price of other drugs with same therapeutic indications and the estimated volume of sales. | **No.** Each Regional Association of SHI Physicians defines individual target volumes for pharmaceuticals in respective regions and establishes procedures and performance audits when physicians exceed those target volumes. | **Few.** For expensive specialised inpatient drugs (> € 1000 per patient per year) there are no volume restrictions since these are typically carved-out from hospital budgets. Other inpatients drugs are included in the hospital budget or fall under the expenditure cap negotiated with the health insurer.  **Important changes/recent reforms:** Annual macro budgets for total hospital expenditure are negotiated between government, provider, and insurer associations since 2012; this resulted in agreements about global budgets or expenditure caps in hospital-insurer contracts. |
| **Regulating supply** | There is a positive list. The distribution of drugs is regulated, both for wholesalers and for pharmacies. | **Partly.** The SHI benefits basket includes all licensed prescription drugs and there is no positive list. The distribution of prescription drugs is regulated by law, both for wholesalers and pharmacies.  **Important changes/recent reforms:** Pharmacies may be part of integrative care contracts. | **Yes.** There is a positive list for retail prescription drugs (provided on an outpatient basis). Health insurers can indirectly influence the supply of medicines by contracts with GPs about prescription of generics, by competitive tendering of preferential generic drugs with a therapeutic class and by negotiating budgets or expenditure caps with hospitals.  **Important changes/recent reforms:** Introduction of competitive bidding for preferential drugs in 2008, contractual arrangements with GPs about prescription of generics. |
| **Assuring quality of care** | **Few.**Recently there are a few indicators added in the ROSP for reducing inappropriate prescriptions. | **Yes.** Quality criteria may be included in discount contracts and integrated care contracts (P4P). Details related to quality control of physician prescription behaviour are delegated to corporatist institutions. | **Few.** Health insurers include minimum quality requirements and quality profiles in contracts with pharmacies since 2012. |
| **Any significant change in overall role since 2000** | | | |
|  | Since 2011, responsible for containing overall health expenditure with spending targets (ONDAM) without having all the power for steering all healthcare providers | 2000, permitting selective contracts on integrated care between sickness funds and providers with adaptions over the years.  2011, early benefit assessment of newly licensed pharmaceuticals, including price negotiations  2015, foundation of the IQTiG to develop cross-sectoral quality indicators to link health and quality outcomes with the planning and payment of service providers.  2017, quality contracts between sickness funds and hospitals. | Since 2006, a gradual strengthening of the purchasing role (by liberalising price setting) and increasing financial risk for health insurers. Since 2012 health insurers and providers are jointly responsible to keep overall health expenditure per sector within overall spending targets set in general agreements between the government and the associations of providers and health insurers. |