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INCLUDES 10-YEAR FORECASTS TO 2019

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VIETNAM PHARMACEUTICALS & HEALTHCARE REPORT Q4 2010

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Business Monitor International
Mermaid House,
2 Puddle Dock,
London, EC4V 3DS,
UK
Tel: +44 (0) 20 7248 0468
Fax: +44 (0) 20 7248 0467
email: subs@businessmonitor.com
web: http://www.businessmonitor.com

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Executive Summary

In **BMI**'s Asia Pacific Business Environment Ratings (BER) matrix for Q410, Vietnam remains ranked 13th of the 17 key regional markets, which now include Sri Lanka. Due to a combination of economic and regulatory drawbacks, Vietnam is a relatively high-risk proposition, especially given the high level of counterfeiting activities and dispensing without prescription. Nevertheless, Vietnam's large and fast-growing population, which is expected to top 96mn by 2019, will continue to pique the interest of foreign players. Although the country's regulatory environment will remain fairly challenging, the introduction of global standards for manufacturing and pharmacy distribution will improve the market value. Globally, Vietnam ranks 66th out of 83 countries surveyed in our ever-expanding pharmaceutical universe.

Valued at US$1.54bn in 2009, we expect the Vietnamese pharmaceutical market to post a five-year compound annual growth rate (CAGR) of 16.03% in local currency terms (14.80% in US dollars), to reach a value of US$3.07bn in 2014. At over US$33 in 2014, spending per capita will have almost doubled in five years, with further growth expected through to 2019. Over the ten-year forecast period, overall market CAGR will slow somewhat (to 12.79% in local currency), due to a higher uptake of cheaper, domestically-produced medicines, patent expirations and likely measures to reduce consumption in government hospitals, as the government deals with budget deficits.

Vietnam's large and inexpensive workforce remains the largest attraction to foreign investors, although there is an increasing occurrence of foreign direct investment (FDI) projects aimed at tapping the country's growing consumer market. While there is still a large degree of state intervention, the government has been moving gradually towards a market economy. The country's decrepit infrastructure continues to be an impediment for many foreign investors, but we see this as a diminishing problem as the government invests heavily in new roads, railways and ports. In fact, a number of foreign-financed pharmaceutical manufacturing projects in 2009 stood at over 20. A general development project for the drug industry for 2015-2020 has mapped by the government, intended to raise the number of foreign drug traders and producers in the country and enhance domestic drug output and quality. By 2020, the government is looking to meet 80% of domestic demand through local production, up from around 50% currently in volume terms.

The local industry is also expanding. For example, the **Vietnam Chemical Pharmaceutical Joint Stock Company** (VCP) recently opened a new manufacturing plant in the northern province of Bac Ninh. The US$10mn plant meets World Health Organization (WHO) standards: Good Manufacturing Practice (GMP); Good Storage Practices (GSP); and Good Laboratory Practices (GLP). VCP Chairman Ngo Chi Dung has stated that the plant will limit material imports and generate new jobs for local workers.

SWOT Analysis

Vietnam Pharmaceutical And Healthcare Industry SWOT	
Strengths	▪ Significant growth potential, given a population of approximately 88mn in 2009, which will grow to almost 100mn by 2019. ▪ The government's commitment to developing the health sector. ▪ Sizeable local generics sector, which is being encouraged by the government. ▪ Strong traditional medicines segment with potential to improve the non-prescription drugs market in the longer term, as long as sufficient investment in extraction technologies can be found.
Weaknesses	▪ One of the least developed pharmaceutical markets in Asia, with low per capita spending on drugs. ▪ Counterfeit drugs account for a significant amount of market consumption. ▪ Little distinction made between prescription and over-the-counter (OTC) drugs, with most medicines available without a prescription. ▪ Complex drug pricing policy biased towards local drug producers. ▪ Import-reliant market, especially in terms of high-tech products and active pharmaceutical ingredients (APIs), which makes it vulnerable to international currency movements. ▪ Underdeveloped primary care services and shortage of trained pharmacists continuing to hamper access to medicines and improved product market penetration. ▪ Population concentrated in rural, rather than urban areas, preventing access to modern drugs and encouraging dependence upon traditional medicines.
Opportunities	▪ The ASEAN harmonisation initiative, including the adoption of Western regulatory standards such as ICH and WHO guidelines. ▪ Introduction of five-year exclusivity for clinical dossier data encouraging research-based multinationals. ▪ If investment can be found for technological improvements, then there is great potential in the TCM market, in addition to fledging biotechnology. ▪ Full WTO membership will improve the trading climate and potentially, in the longer term, redress pharmaceutical trade issues. ▪ Domestic companies being forced to comply with international Good Manufacturing Practices (GMP) should boost exports.
Threats	▪ Government resistance to aligning patent law fully with international standards deterring multinational sector expansion. ▪ Need to resolve infrastructural and power supply issues, as well as higher education, before higher levels of foreign direct investment (FDI) can be expected. ▪ The government increasingly interfering in the industry, protecting indigenous firms through the use of legal trade barriers, which will affect competitiveness. ▪ With a notably fragile regional economy, Vietnam is increasingly susceptible to regional and global economic fluctuations. ▪ The legalisation of parallel imports negatively impacting performance of patented drugs. ▪ New health insurance legislation decreasing patients' access to medicines.

Vietnam Political SWOT	
Strengths	▪ The Communist Party government appears committed to market-oriented reforms, although specific economic policies will undoubtedly be discussed at the 2011 National Congress. The one-party system is generally conducive to short-term political stability. ▪ Relations with the US are generally improving, and Washington sees Hanoi as a potential geopolitical ally in South East Asia.
Weaknesses	▪ Corruption among government officials poses a major threat to the legitimacy of the ruling Communist Party. ▪ There is increasing (albeit still limited) public dissatisfaction with the leadership's tight control over political dissent.
Opportunities	▪ The government recognises the threat that corruption poses to its legitimacy, and has acted to clamp down on graft among party officials. ▪ Vietnam has allowed legislators to become more vocal in criticising government policies. This is opening up opportunities for more checks and balances within the one-party system.
Threats	▪ The slowdown in growth in 2009 and 2010 is likely to weigh on public acceptance of the one-party system, and street demonstrations to protest economic conditions could develop into a full-on challenge of undemocratic rule. ▪ Although strong domestic control will ensure little change to Vietnam's political scene in the next few years, over the longer term, the one-party-state will probably be unsustainable. ▪ Relations with China have deteriorated over the past year due to Beijing's more assertive stance over disputed islands in the South China Sea and domestic criticism of a large Chinese investment into a bauxite mining project in the central highlands, which could potentially cause widespread environmental damage.

Vietnam Economic SWOT	
Strengths	▪ Vietnam has been one of the fastest-growing economies in Asia in recent years, with GDP growth averaging 7.6% annually between 2000 and 2009. ▪ The economic boom has lifted many Vietnamese out of poverty, with the official poverty rate in the country falling from 58% in 1993 to 20% in 2004.
Weaknesses	▪ Vietnam still suffers from substantial trade, current account and fiscal deficits, leaving the economy vulnerable as the global economy continues to suffer in 2010. The fiscal picture is clouded by considerable 'off-the-books' spending. ▪ The heavily-managed and weak dong currency reduces incentives to improve quality of exports, and also serves to keep import costs high, thus contributing to inflationary pressures.
Opportunities	▪ WTO membership has given Vietnam access to both foreign markets and capital, while making Vietnamese enterprises stronger through increased competition. ▪ The government will in spite of the current macroeconomic woes, continue to move forward with market reforms, including privatisation of state-owned enterprises, and liberalising the banking sector. ▪ Urbanisation will continue to be a long-term growth driver. The UN forecasts the urban population to rise from 29% of the population to more than 50% by the early 2040s.
Threats	▪ Inflation and deficit concerns have caused some investors to re-assess their hitherto upbeat view of Vietnam. If the government focuses too much on stimulating growth and fails to root out inflationary pressure, it risks prolonging macroeconomic instability, which could lead to a potential crisis. ▪ Prolonged macroeconomic instability could prompt the authorities to put reforms on hold, as they struggle to stabilise the economy.

Vietnam Business Environment SWOT	
Strengths	▪ Vietnam has a large, skilled and low-cost workforce that has made the country attractive to foreign investors. ▪ Vietnam's location – its proximity to China and South East Asia, and its good sea links – makes it a good base for foreign companies to export to the rest of Asia, and beyond.
Weaknesses	▪ Vietnam's infrastructure is still weak. Roads, railways and ports are inadequate to cope with the country's economic growth and links with the outside world. ▪ Vietnam remains one of the world's most corrupt countries. Its score in Transparency International's 2009 Corruption Perceptions Index was 2.7, placing it in 22nd place in the Asia-Pacific region and 120th globally (of 180).
Opportunities	▪ Vietnam is increasingly attracting investment from key Asian economies, such as Japan, South Korea and Taiwan. This offers the possibility of the transfer of high-tech skills and knowhow. ▪ Vietnam is pressing ahead with the privatisation of state-owned enterprises and the liberalisation of the banking sector. This should offer foreign investors new entry points.
Threats	▪ Ongoing trade disputes with the US, and the general threat of American protectionism, which will remain a concern. ▪ Labour unrest remains a lingering threat. A failure by the authorities to boost skills levels could leave Vietnam a second-rate economy for an indefinite period.

Vietnam – Business Environment Ratings

Table: Asia Pacific Pharmaceutical Business Environment Ratings For Q410

			Rewards			Risks		
	Industry Rewards	Country Rewards	Rewards	Industry Risks	Country Risks	Risks	Pharma Rating	Regional Ranking
Australia	63	73	66	72	85	77	70.2	1
Japan	63	70	65	73	76	74	68.8	2
South Korea	67	60	65	70	70	70	67.0	3
Singapore	40	73	48	80	82	81	61.3	4
China	63	43	58	67	56	62	59.9	5
Taiwan	50	53	51	70	67	69	58.0	6
Hong Kong	40	70	48	67	78	71	57.0	7
India	60	40	55	60	50	56	55.3	8
Malaysia	40	57	44	70	71	70	54.6	9
Thailand	60	50	58	37	58	45	52.6	10
Indonesia	53	53	53	40	45	42	48.9	12
Philippines	50	57	52	43	45	44	48.7	11
Vietnam	**43**	**40**	**43**	**40**	**44**	**42**	**42.1**	**13**
Sri Lanka	33	40	35	40	63	49	40.7	14
Bangladesh	43	30	40	43	33	39	39.7	15
Pakistan	23	47	29	33	43	37	32.4	16
Cambodia	33	20	30	30	38	33	31.3	17
Regional Average	**49**	**52**	**49**	**55**	**59**	**57**	**52.3**	

Source: BMI. Scores out of 100, with 100 highest.

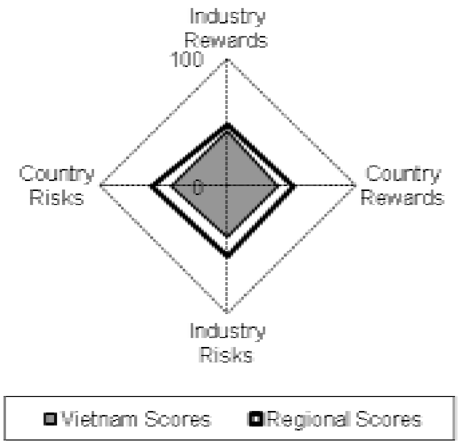
In the Asia Pacific Business Environment Ratings for Q410, Vietnam remains ranked 13th of the now 17 key regional markets, which now include Sri Lanka. Due to a combination of economic and regulatory drawbacks, Vietnam is a relatively high-risk proposition. Nevertheless, over our forecast period through to 2019, we expect Vietnam to consolidate its placing above other markets such as Pakistan and Bangladesh, as the country's market matures. Globally, Vietnam ranks 66th out of the 83 countries surveyed in our ever-expanding pharmaceutical universe. The key components of Vietnam's score are:

Rewards

Pharmaceutical market and country structure scores are weighed and combined to form the overall rewards score. Vietnam's score of 43 is lower by two points in relation to the previous quarter and puts the market below the regional average of 49.

Business Environment Ratings By Sub-Sector Score

Q410



Scores out of 100. Source: BMI

Industry Rewards

Vietnam is an attractive market currently experiencing double-digit growth and, importantly, we expect this trend to continue for at least the next five years. However, very low annual per-capita spending (US$17.6) and a relatively small market (US$1.54bn) are distinct drawbacks, which limit the country's score in this category.

Country Rewards

Vietnam scores poorly for its large rural population, which lacks access to healthcare providers such as hospitals, clinics and pharmacies. As a result of the Vietnam War – when 2-5mn people perished – demographics are skewed, so there are many more youths compared to elderly people. Since old people consume more medicines, the apparent opportunity for drugmakers in a country with a population of 86mn is less than should be expected. However, with rapid demographic growth expected, there should still be opportunities in the market. By 2019, the population should top 96mn.

Risks

Industry and country risks are weighed and combined to form the overall score for risks. Vietnam's score of 42 is among the lowest scores in the table, indicating substantial risks facing multinationals operating and wishing to operate in the country. The regional average stands at 57 for the quarter.

Industry Risks

One of the most obvious drawbacks of the Vietnamese pharmaceutical market is erratic pricing. Indeed, in 2009, numerous products saw double-digit price hikes, with some companies raising prices for their drugs twice in a couple of months. This was partly due to currency depreciation and rises in the cost of imported APIs, but is also partly due to poor state monitoring, with the situation continuing into 2010. While a significant obstacle to smaller domestic manufacturers, the upcoming deadline to adhere to GMP requirements should benefit foreign firms that are already accredited.

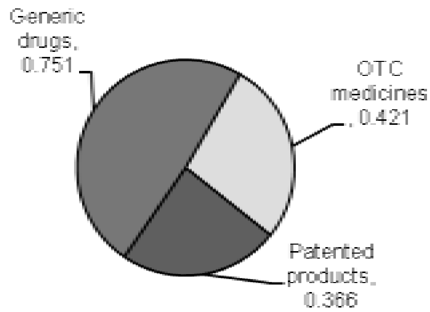
Country Risks

Vietnam is a stable Communist state and thus scores highly for policy continuity. Its economic structure, which is characterised by increasing privatisation, is below global standards, but improvements are expected. Corruption is an issue, as is the sub-standard legal framework.

Vietnam – Market Summary

Pharmaceutical Market By Sub-Sector (US$bn)

2009



f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI

In common with many of its regional neighbours, the Vietnamese pharmaceutical market is underdeveloped and suffers from poor regulatory and intellectual property (IP) standards, which have held back foreign investment in the country. Low-cost, locally-produced generics – as well as counterfeit products – account for a sizeable proportion of drug consumption due to low consumer purchasing power and an under-funded healthcare system. Uneven and inadequate public insurance coverage means that patients are responsible for financing many of their medical needs, which in the past has hampered stronger market growth. Consequently, pharmaceutical consumption represents only 1.7% of Vietnam's GDP, although we expect this figure to top 2% from 2014.

Moreover, membership of the WTO will serve to promote the development of Vietnam's pharmaceutical sector as well as to reduce the role of counterfeit trade. The domestic industry, traditionally characterised by poor manufacturing standards and obsolete facilities, is likely to undergo a wave of consolidation in the face of rising pressure – and associated costs – on companies to implement international GMP standards. Additionally, WTO membership will have a positive effect on the sector as it encourages imports and foreign direct investment (FDI) and improves operational efficiency in what has traditionally been an overly bureaucratic and less than dynamic industry.

Prescription medicines will remain dominant over the next five years, with the biggest focus on drugs for the treatment of infectious and chronic diseases. The over-the-counter (OTC) sector has the potential to be boosted by the re-categorisation of popular traditional medicines, although presently there are no such plans. In the meantime, market figures will remain distorted by the lack of a distinction made between prescription and OTC drugs, with most medicines available without a prescription.

Vietnamese drug makers account for only 40% of the total medicines market, while the country imports around 90% of the active pharmaceutical ingredients (APIs) used in drug production. However, capacity is improving gradually, and in Q409 the government announced its aim to ensure that 60% of domestic demand is met by local pharmaceutical companies during 2010. At the start of 2005, there were more than 10,000 kinds of medicines registered for sale in Vietnam, of which some 60% were produced locally. The figures represent a marked improvement on 1995 when the local sector produced only 80 substances, as well as on 2002, when 384 products were manufactured.

Regulatory Regime

The main regulatory authority in Vietnam is the Ministry of Health (MoH) and its Drug Administration of Vietnam (DAV), established in 1996. The basis for market regulation is Decision No. 1203/BYT/QD of the Ministry of Health, Regulations on Medicine Registration, implemented in 1996. By 2004, some 7,569 drugs had received registration, according to official figures. By the start of 2005, more than 10,000 kinds of medicines were registered for sale in Vietnam, with some 6,107 produced locally and 4,656 medicines sourced from foreign companies. Drug approval times vary although long delays are the norm, while the MoH has been accused in the past of being susceptible to lobbying from drugmakers.

Regulations governing the pharmaceutical industry traditionally have been unclear and often implemented on a case-by-case basis, representing a market entry barrier to foreign companies. Nevertheless, some have been able to take advantage of the situation and increase the price of pharmaceutical products considerably in recent years.

Vietnam's regulators are facing their greatest challenge with the country's entrance to the WTO, which was achieved in January 2007 (full adoption of rules took place in January 2009). Foreign enterprises have been given the right to open branches in Vietnam and to import medicines directly, although they will still be barred from distributing their products. As part of its membership application, Vietnam also pledged to set import duties at less than 5% for pharmaceutical products and drug tariffs are expected to average just 2.5% within five years of accession.

The newly liberalised environment could cause problems for Vietnam's small drug production sector, with the government calling on firms to adopt GMP standards by the start of 2010. In July 2008, however, the Ministry of Health extended the deadline for domestic producers to obtain GMP certificates to the end of 2010, which will provide some relief to smaller players in particular. It was subsequently revealed that even this extension could be negotiated.

Distributors, meanwhile, have been slowly applying ISO 9001: 2000 quality management standards. The Ministry of Health, for its part, is also taking action and is developing the distribution network to help improve access to medicines throughout the country. Official statistics indicate that Vietnam currently has 165 drug manufacturers, of which 48 have been certified as GMP-compliant.

Pharmaceutical Advertising

Pharmaceutical advertising remains restricted in Vietnam. Prescription drugs cannot be advertised directly to consumers, restricting the potential marketplace. However, these products can be promoted to health officers via qualified representatives of pharmaceutical companies and through product conferences and health seminars. Foreign firms are required to obtain permission from a provincial health department before holding a conference and the department must be made aware of any pharmaceutical displays. Meanwhile, all advertising materials must be registered with the Drug Administration of Vietnam (DAV).

Advertising laws are more liberal for OTCs than prescription products. Consumer marketing is permitted via magazines and newspapers as well as leaflets and brochures. The Ministry of Health issues a list of drugs that can be advertised to consumers through TV, radio and other mass media outlets.

Intellectual Property Environment

Vietnam's accession to the WTO, ratified in January 2007 and implemented two years later, has already resulted in some improvements to the country's IP regime after the government agreed to immediately implement IP guidelines to the standards of the Trade-Related Aspects of Intellectual Property Rights (TRIPS) pact. The government has taken a number steps to increase IP protection and the country's patent structures are already broadly in line with those demanded by the WTO. This includes a 20-year patent term and the five-year market exclusivity of undisclosed and other test data, which was clarified in September 2006 by a more detailed decree. The exception to this rule is when an applicant grants a third-party permission to use its data, such as through a contract manufacturing or partnership agreement, or when a company generates the data anew. The regulatory authorities, meanwhile, will release protected data only if it is deemed necessary to protect the public.

IP Shortcomings

Counterfeiting remains a major deterrent for research-based foreign companies, and recently these problems have escalated given the current economic crisis. Leading the criticism is the Office of the US Trade Representative (USTR) and the US research-based drug makers' association Pharmaceutical Research and Manufacturers of America (PhRMA), with the former leaving Vietnam among its 'watch' countries in its 2010 Special 301 Submission, a status unchanged from 2004. In its 2009 version, PhRMA noted improvements in terms of protection against unfair commercial use for data generated to obtain marketing approval. However, in 2010, the association was critical of the limited progress made in addressing some of the concerns, despite acknowledging the government's willingness to consult on proposed reforms.

Key concerns voiced by PhRMA in 2009 and 2010 include the following:

- **Drug Registration:** Drug registration is a problem because Vietnam does not automatically recognise foreign Certificates of Pharmaceutical Products (CPPs) and does not require state-owned importers to obtain registration for their products. Additionally, despite more stringent regulations, companies under the Ministry of Health's jurisdiction continue to import products that are not properly registered and/or infringe trademarks. In mid-2009, the Drug Administration (DAV) of Vietnam drafted new regulations, which were passed to PhRMA for comments. PhRMA has made suggestions for improvements, with the final decision on the draft awaited with interest.

- **Parallel Imports:** In May 2004, the Ministry of Health authorised parallel imports of medicines used for the prevention and treatment of various diseases. Under the regulations, parallel imports must be less expensive than the same drug already registered in Vietnam. However, the move also allowed imports by third companies that have no prior approval from patent holders, which violates the rights of the latter. Vietnamese consumers stand to benefit from the parallel import law, although the country's pharmaceutical trade balance may suffer.

- **Patent Protection:** While new legislation allows for 20 years of patent protection, the enforcement of patent legislation is lax due to the fragmentation of the agencies responsible for such matters, including the Ministry of Finance, the Ministry of Planning and Investment and the National Office of Intellectual Property (NOIP). Although the parliament is working on rectifying the situation, no changes are expected in the immediate future.

- **Enforcement:** IP enforcement remains disorganised and patchy, worsened by the fact that many agencies can independently decide whether to take action or not, or refer the complaints to another body. In addition, the legal system has little experience of patent enforcement and interpretation, with guidelines on those issues lacking.

- **Trade Dress:** The current legal framework for the protection of 'trade dress' has a number of loopholes that allow companies to copy packaging originally used by other firms. In doing so, the copy companies benefit from the original 'trade dress' standing.

- **Infringement of Registered Pharmaceutical Trademarks:** While the Civil Code provides a legal background for trademark protection, infringement remains widespread as much as within the state-owned drug industry as within the distributors from foreign countries. Trademark holders can only petition the NOIP, although its decisions are difficult to enforce due to the lack of co-operation between agencies. In addition, the local generics industry holds a general disregard for the NOIP.

- **Compulsory Licensing:** PhRMA has called on the government to adopt an amendment to patent law that would require companies with compulsory licences to pay compensation to the original patent holder, which would be in line with WTO provisions. Presently, however, there is no specification that a patented import is legally equivalent to manufacturing the product locally, which therefore does not block the grant of a compulsory licence on the basis on non-use or inadequate use.

- **Counterfeiting:** Despite some efforts to the contrary, a number of branded pharmaceuticals on the local market are counterfeit goods. The situation not only negatively impacts the original producers but also jeopardises public health. PhRMA has called on the government to introduce additional measures to stem the tide of counterfeit products in the country.

- **Clinical Trials:** In the 2010 submission, PhRMA expressed its concerns over the proposed regulations on clinical trials, which could hamper innovative pharmaceuticals. According to Article 4 of the draft legislation, new ‘western’ drug applications would need to be supported by results of clinical trials conducted in Vietnam. The draft also stipulates that new indications of currently approved products would require support of local clinical trials.

Counterfeit Drugs

Despite recent improvements to the IP environment, illegal copying remains commonplace due to the lax enforcement of legislation. Part of the problem is the fact that the government has little scope to tackle the problem, given that the majority of drug sales in Vietnam are achieved not through regulated pharmacies but through private dealers that handle drugs worth an estimated US$450mn per year. In addition, the country has long, poorly monitored borders with countries such as Laos, China and Cambodia, where the drug counterfeit trade is active.

The Ministry of Health has reported that the rate of counterfeit drugs in the country was 0.09% for the 16,500 medicines examined in 2005, the highest level for five years. Among the examined products, 3.4% were ‘low quality’, down from a figure of 3.74% in 2003. Vietnam’s testing system has the capacity to analyse around 500 pharmaceutical ingredients or about 50% of the total licensed for sale. In the five years to September 2007, some 35mn doses of fake medicines circulated in the local market.

The Ministry of Health acknowledges that the high levels of fake and low-quality drugs are due to lax management and therefore it is planning to introduce more drastic punishments for producers and importers found circulating such products, a move supported by the WHO. In addition, Vietnam’s drug management administration has revoked the licence for 12 medicines on sale in the domestic market. The seized drugs include anti-allergy treatment astemizole, which can cause dangerous side effects. Of the banned drugs, five had been imported from India.

The Ministry of Health estimates that the country’s traditional medicine market comprises of around 500 products, with only 50 of this figure being legal (50 being legitimate imports and a further 20 domestically produced). HCM’s District 5 (otherwise known as Chinatown) is estimated to account for up to 70% of all counterfeit trade.

Reports published by local news provider Thanh Nien in November 2009 do little to suggest that improvements have been made. The Ministry of Health began a countrywide inspection of Chinese and other foreign clinics to examine the validity of medical licences, medicines stocked and their origins following suggestions that many unqualified doctors were prescribing overpriced and inappropriate drugs to patients. Figures published by the ministry in mid-November 2009 claimed that in Ho Chi Minh City alone, around a fifth of the 1,500 traditional medicine clinics did not meet government regulations regarding medical care and treatment.

In February 2010, however, local press reported that the police had issued an arrest warrant for the director and a number of other racketeers operating under a front called **Viet-Phap (France) Medicine Company**. The men stand accused of manufacturing and supplying fake pharmaceuticals. In late January 2009, Ho Chi Minh police exposed a gang that had re-packaged local drugs in boxes labelled as imports.

Other Regulatory Issues

International manufacturers remain concerned by a number of other regulatory issues, beyond the immediate scope of intellectual property and pricing matters. Key concerns noted by research-based firms include the requirement for local clinical trials of vaccines. In this area, US manufacturers have argued that vaccine products approved under US FDA or ICH regulations should be exempt from the requirement for local testing. To address those concerns, in June 2006 the government reported that regulations had been harmonised with WHO standards in this area but it was unclear whether any changes had been made to the country's onerous testing regime. At the very least, the health ministry has provided details on vaccines and biological medical products that have not been registered but that have been provided as part of relief operations by international organisations such as the WHO and UNICEF.

Regulation that has attracted opposition includes Vietnam's imposition of import quotas on pharmaceutical companies, which are due to be phased out under international trade agreements including accords signed as a precursor to WTO membership. Another source of difficulty for foreign firms is a regulation, known as Dispatch No. 5410, which requires all imported APIs to be used in finished formulations within six months of manufacture. Instead, PhRMA has called on the government to revise the rules to cover inputs within 12 months of manufacture or within six months of the date of expiry of shelf life.

Meanwhile, the country has pledged to cut import duties on drugs to an average 2.5% within five years of WTO accession, as well as to improve transparency and uniformity of the tariffs system. Forty-seven pharmaceutical categories that have tariffs of between 10-15% would be the first to be targeted in the proposed shake-up, despite strong opposition from the local industry, which fears the competitive threat posed by WTO membership. In addition, foreign companies have gained the freedom to import and distribute their products in the country as well as to establish local branch offices.

One further problem on the regulatory side is that foreign manufacturers and importers are not free to select their distribution partners but are assigned distributors by the authorities. Despite this, the distribution system continues to be chaotic. However, under WTO rules foreign companies will no longer be barred from establishing regional branch offices in Vietnam, which should make supply chain management less complex.

In fact, as of the start of 2009, local entities that are fully owned by foreign companies are no longer barred from importing pharmaceuticals into the country in an unrestricted fashion. Clarification is still reportedly needed from the MoH on requirements for importing entities, according to PhRMA's 2010 submission. Currently, foreign-owned distribution companies in Vietnam must be licensed by the MoH and prove that they comply with international standards.

Pricing Regime

Due to a lack of controls, medicine costs fluctuate wildly throughout the supply chain, which has emerged as a key concern for foreign companies. Imported active pharmaceutical ingredient (API) prices follow the global market, with its inherent peaks and troughs. Domestic manufacturers use mark-ups indiscriminately and wholesalers also take seemingly random cuts. Finally, retail pharmacies do not adhere to Good Pharmacy Practice (GPP) standards set by the World Health Organization (WHO).

These factors combine to create variable prices for the consumer. The Drug Administrator of Vietnam (DAV) wants to end this situation by exerting its influence more effectively. Under the present system, importers calculate the cost, insurance and freight (CIF) and then submit wholesale and retail price recommendations to the DAV. The DAV then decides whether the proposed prices are reasonable before allowing them to be distributed. However, the management of this system has been criticised as lax. Pharmaceutical companies must also publicly list product prices and make announcements when changes are made.

Prices of pharmaceuticals in Vietnam have been rising rapidly, but this is not due to the new WTO rules. The main driver is the growing consumer price index (CPI), but increasing wages and electricity costs are also having an effect. The DAV warned that medicine prices, especially of local products made with imported APIs, would rise by over 10% in 2009, due to the depreciation of the dong against the dollar.

In H109, the DAV effectively controlled drug spending, with medicine prices rising by only 1.82%. The prices of domestically-produced drugs remained stable, again highlighting the importance of an indigenous pharmaceutical industry. A survey of 8,000 drugs showed that only 22 products recorded prices increases in the period, while 10 reported price decreases. However, during H209, price inflation accelerated, as increased costs for gasoline pressured manufacturing and distribution, and the appreciation of the US dollar against the dong made imports more expensive.

In order to prevent rapid price rises for the remainder of the year, the DAV was listing medicine prices on a daily basis on its website, thus allowing regional health departments to compare the prices of drugs on the market, when making purchasing decisions.

In June 2010, DAV Chief Truong Quoc Cuong denied the claim made by a Vietnamese analyst that a WHO survey of seven popular medicines had shown prices in the country to be 5-40 times higher than the world's average. Cuong added that the prices of the medicines are actually lower than those in many other countries.

Price Hikes

Pricing has also gained attention through recent research published in specialist journal, Southern Med Review, in September 2009, voicing concern about the costs of medicines in Vietnam. An investigation was conducted into the price and accessibility of 42 different drugs (25 of which belong to the WHO and Health Action International’s (HAI) list of core medicines) across five regions. The study authors found that not only were these medicines high in price, but that they were also unavailable in some areas. The authors concluded that lower-priced drugs should be made available, particularly in Vietnam’s public sector, and that the authorities should promote generics as a means to widen access to medicines.

Additional studies suggest that medicine prices are far from uniform. A survey conducted by students of Ho Chi Minh City’s Medicine and Pharmacy University in mid-2009 found that drug prices varied from 10-38% across retail outlets, with large drugstores charging between 4-10% more than Good Pharmacy Practice stores like **Eco** and **V-Phano**.

In H109, there were three occasions when drug prices were hiked by between seven and 10%. At the end of May 2009, distributor **Diethelm Vietnam Corp** increased the prices of 14 speciality drugs – manufactured by US-based **Merck –** by 7.3-10%. Local distributors claim that they had no choice as the prices of imported drugs have been increasing as a result of currency depreciation and the growing price of raw materials.

However, there are allegations that importers collude with distribution monopolies in order to keep prices artificially high. One method of achieving this is through restricting supplies, thus forcing prices upwards. Another factor causing price inflation is the cutting of promotions. For example, whereas previously retailers would offer free products if a customer purchased a certain quantity, these offers are now being removed, which is impacting access for low-income patients.

In early 2008, drug makers were hiking wholesale prices charged to drug stores because of increasing supply costs, specifically due to the import of APIs from abroad as well as rising staff, packaging and transportation costs and exchange rate fluctuations. Due to complaints from patients and healthcare providers, the government put a cap on the prices of pharmaceuticals in late March 2008.

However, as the supply issues did not go away, the burden shifted back to manufacturers in Q208. A representative from **Imexpharm Pharmaceutical Joint-Stock Company** said that many drug companies had been forced to buy foreign currency on the black market because banks could not meet their demand. Reinforcing this unacceptable situation, the **National Pharmaceuticals Company No. 25** said it took nearly two weeks to secure enough foreign currency from a bank to purchase a shipment of goods. Meanwhile, **Vidipha Central Pharmaceutical Joint-Stock Company** estimated that the price of some APIs had risen by six-fold since June 2007.

The DAV statistics revealed that, because of rocketing costs and inflation, as many as 25 firms failed to fulfil supply contracts with hospitals, choosing instead to incur penalties amounting to 10-20% of the tender value. These companies stated that the fines were lower than the losses they would suffer if they had supplied the healthcare facilities with medicine at the agreed price.

Price Freeze

The above situation in turn led to shortages, especially of cardiovascular medicines. Fearing a public health crisis, the Health Ministry moved to break its price freeze on a total of 788 medicines from the start of July 2008. Conscious of fuelling inflation, the government has relaxed the controls in a stepwise fashion and is following a pre-determined roadmap for implementation, although fears persist that the lowest income groups may be priced out of the market.

In July 2008, the Ministry of Health met with drug companies to discuss ways to check the rise in drug prices. Some pharmacies increased prices by 20-50% after the government sanctioned a 5-10% rise in the prices of some medicines, fearing a supply shortfall. According to a *VietNamNet Bridge* report, the Ministry has requested that municipal and provincial authorities monitor prices following the June 30 expiry of a government directive forbidding price hikes for essential commodities. The Ministry was set to allow raising medicine prices to ensure adequate supply for hospitals but is concerned that some firms may take undue advantage of the situation to increase profits.

Reimbursement Regime

From the start of 2010, a new health insurance system has been in place in Vietnam, causing public discontent. Many people on low incomes cannot afford the co-payments and are forgoing check-ups and treatment. The new legislation states that certain patients – ethnic minorities, welfare recipients and people who contributed to the revolution – must pay 5% of medical services costing over VND97,500 (US$5.28). Up to that level, the provision of healthcare is free. Students, employees and others not obliged to buy health insurance will have to pay 20% of healthcare costs out-of-pocket. It is calculated that 90% of patients will have to make a co-payment.

Vietnam previously also had a law that stipulated co-payments on medical services, although this was not enforced. Parents are now also being charged for some of their children's medical treatments. Insurance covers up to VND29.2mn (US$1,581), but many complicated procedures, such as heart surgery, are considerably more costly. In the meantime, hospitals stand accused of overprescribing in general and of excessive use of expensive foreign-made medicines in particular.

In March 2010, Vietnam's Ministry of Health decided to provide additional medications and supplements to children under age six for no charge, reports Viet Nam News. The Head of the Ministry's Health Insurance Department announced that 58 more medicines were included on the list of treatments for heart diseases, blood pressure, cancer, diarrhoea and mental illness, among others. The medicines, which are to be provided under the national health insurance fund, will be distributed at all health clinics and hospitals across the country. According to the Minister of Health, some 600 medicine are already covered by government reimbursement through the national health insurance programme. Children younger than six are entitled to subsidised treatments and medical services, regardless of whether they had national insurance cards or not.

Recent Pricing and Reimbursement Developments

In April 2010, Vietnamese government leaders, regulators and drug company officials conducted a meeting to discuss issues regarding increases in drug prices. The talks ended without conclusions as it is technically difficult for the government to control medicine prices. The public recently expressed their dissatisfaction over increase in drug prices as poor patients are unable to afford essential medicines. Some stakeholders suggested that the authorities should put the prices of the 500 essential drugs under their control.

Around the same time, local press reported that prices of imported medicines rose by around 3-5% in Ho Chi Minh City, due to hikes in petrol prices and the depreciation of local currency in relation to the US dollar. For example, the prices of **GlaxoSmithKline** (GSK)’s *Seretide* (salmeterol+fluticasone) and *Augmentin* (amoxicillin clavulanate) increased by 5-7%, according to The Daily, a local newspaper. The source also indicated that the prices of 17 drugs produced by **Merck & Co** increased by between 3 and 5%, while the prices of products supplied by **National Day Pharma** (Nadyphar) rose by between 5 and 9%. The authorities reported that the price increase was ‘normal’ and expected due to market forces, although unauthorised price hikes could result in the revoking of import permissions. In fact, South Korean **Dasan Medichem Co** and **Vietnam-France Pharma** recently had their import licences revoked for this reason.

According to a survey conducted by the Vietnam Pharmaceutical Manufacturers Association (VPMA), in December 2009 and January 2010, the retail price of 32 foreign-made drugs increased by 5.1%. GSK’s *Augmentin* (amoxicillin/clavulanate) rose in price from VND14,000 to VND15,000 per pack, for example. The total number of drugs surveyed was 5,760.

Vietnam registered a 10-30% increase in drug prices in a period of less than two weeks in December 2009, despite the DAV's warning pharmacies not to raise prices, reported *VietNamNet*. Nguyen Viet Hung, deputy head of the administration, stated that the body and provincial health departments would impose fines on pharmacies, distributors and manufacturers who fixed unreasonable drug prices.

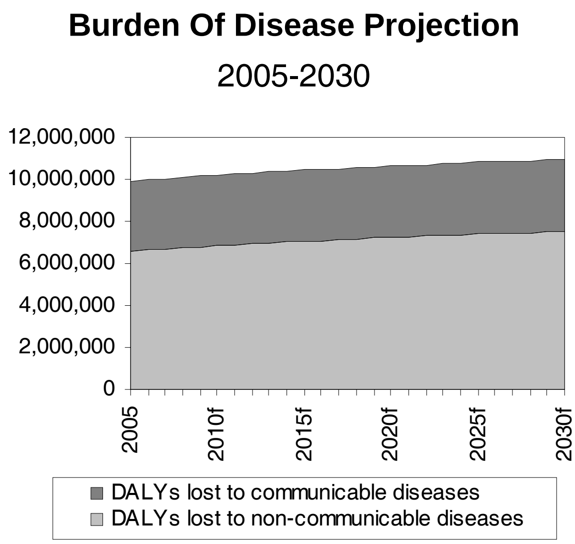
Although rising prices in recent months can be seen as a sign of the tough economic situation, there is also a growing feeling that the DAV should get a better grip on pricing. A dependence on imported drugs lies at the route of the problems, and **BMI** believes that greater local production would help to create greater continuity in the pricing system. However, price fluctuations are nothing new, and pharmaceutical costs also increased significantly during 2008, mainly due to exogenous pressures.

In the meantime, the Vietnam Insurance Agency has blamed an overuse of costly imported drugs by hospitals, which are also accused of overprescribing to seek fees from patients, for high pharmaceutical expenditure. According to the Agency, around 60-80% of total hospital-incurred pharmaceutical spending is accounted for by foreign-made products, above the 50% recommended limit, as stipulated by the MoH. However, many advanced drugs, such as biologics, cannot be manufactured in Vietnam, so some spending on imports is necessary. This problem is developing rapidly, with spending on medicines for Vietnamese health insurance holders increasing by 43.8% in 2009 compared with the previous year.

Industry Trends and Developments

Epidemiology

BMI's *Burden of Disease Database* (BoDD) reveals that Vietnam will become unhealthier over the next 20 years. The number of disability-adjusted life years (DALYs) lost to non-communicable disease will increase from 6,748,973 in 2008 to 7,518,246 in 2030, a rise of 11%. Meanwhile, the number of DALYs lost to communicable disease will increase from 3,347,168 in 2008 to 3,437,835, a rise of 3%. The main driver of these increases is a growing and ageing population.



f = forecast. DALYs = disability-adjusted life years. Source: BMI's Burden of Disease Database (BoDD).

In fact, in July 2010, Bloomberg reported that a new study had revealed that diabetes affects three times more people in Vietnam than the 3.5% estimated by the Brussels-based International Diabetes Federation. The survey, conducted with adult citizens of Ho Chi Minh City, indicated that 11% of men and 12% of women have undiagnosed type-2 diabetes that could be discovered by normal body and blood-pressure measurement checks. The increase in the number of people prone to obesity-linked diseases is attributed to the changing lifestyle and eating habits in the country.

The majority of Vietnam's 86mn inhabitants live in rural areas. Most are below the age of 35 and born after the conflict with France and the US. While health outcomes are improving, UNICEF figures show how infant mortality rates have dropped from 40 per 1,000 live births in 1990 to 13 per 1,000 live births in 2007, a need still exists to improve basic services. Three quarters of the population – or 60mn people – have parasitic worms due to unhygienic eating habits such as eating rare and raw food.

According to latest figures from the WHO, the under-five mortality rate dropped from 58 to 27 deaths per 1,000 live births between 1990 and 2006. This encouraging drop has been attributed primarily to the Expanded Programme of Immunisation (EPI), which was initiated in 1985 and is designed to protect children against tuberculosis, tetanus, diphtheria, typhoid, polio, measles, whooping cough and hepatitis. Polio, for example, has been completely eradicated nationwide for five years, thanks to the provision of three doses of vaccines to all under-ones and two additional doses to under-fives in 32 high-risk provinces and cities that border neighbouring countries.

Immunisation coverage is almost at a maximum, with the 95-100% range frequently quoted. For a developing country, this is extremely impressive and other nations are looking to the committed actions of the Vietnamese government for inspiration. According to the UNICEF, foreign experts work with the Vietnamese Ministry of Health to train local people to administer immunisations. These indigenous 'on-the-ground' healthcare workers also spend a lot of time educating people, explaining vaccination schedules and when to seek medical help.

Vietnam is currently looking to cooperate with Laos in the field of paediatric health, with a particular focus on fields including emergency medicines, infectious diseases and autism. The two countries are aiming to share expertise and improve their respective provisions of paediatric services.

In a related development, a WHO report in April 2010 highlighted worrying trends in terms of depression affecting women and children, with such issues reportedly largely ignored. Although the country runs a national programme for mental health issues, the scheme only adequately deals with epilepsy and schizophrenia. The WHO has worked with the government of Vietnam to raise awareness of depression and highlight measures that could be effectively used to tackle the issue. In Vietnam, depression has been closely linked with suicide, with a recent study finding that almost 17% of suicides were caused by depression. Poverty has been cited as a major cause of depression of women.

Communicable Diseases

The government-sponsored 2001-2010 programme aims to reduce or eradicate incidences of communicable diseases such as tuberculosis (TB), dengue fever and leprosy. The scheme also addresses the nutritional and educational needs of the population, although the funding and logistical solutions have so far proved somewhat lacking. Despite these efforts, in terms of dengue fever, Ministry of Health figures published in October 2009 revealed an increase in the number of cases during the year, with the Prime Minister Nguyen Tan Dung calling for nationwide action to control the spread of the disease. Dengue fever is of particular concern given that the National Institute for Infectious and Tropical Diseases reported two mortal cases of combined dengue fever and swine flu in November 2009.

Additionally, cholera is spreading fast in certain areas of Vietnam, according to reports in VietNamNet Bridge. Poor sanitation is a key cause of cholera outbreaks and, reflecting the country's economic development, **BMI**'s *BoDD* forecasts that the number of DALYs lost to diarrhoeal diseases in Vietnam will decrease considerably over the coming years. On a positive note, Vietnam's campaign to provide vaccines to under-fives is already proving extremely successful. The Expanded Programme of Immunisation (EPI) has been acknowledged by the WHO as the major factor in reducing infant mortality rates by half.

Polio, for example, has been completely eradicated nationwide for five years, thanks to the provision of three doses of vaccine to all under-ones, and two additional doses to under-fives in 32 high-risk provinces and cities that border neighbouring countries. In the case of measles, however, progress is still required. Despite measles vaccinations being available free of charge, and the announcement by a deputy Health Minister in November 2009 that Vietnam is now self-sufficient in terms of measles vaccine production, previous shortages mean that many children are yet to be immunised against the disease.

In fact, measles remains a significant problem in Vietnam. Despite an immunisation coverage rate that has surpassed 90% every year since 1993, disease outbreaks have occurred every seven to eight years. Many children die as a result. **BMI**'s *BoDD* reveals that 65,733 DALYs were lost to measles in Vietnam during 2008. This equated to 3.26% of the total infectious and parasitic disease burden. By 2030, as a result of the NEIP and other factors, the number of DALYs lost to measles will have dropped by over 80%. On average, around seven people are admitted with the disease every day to the National Hospital for Infectious and Tropical Diseases, according to the institute director.

With the SARS crisis of 2003 and fears concerning avian influenza affecting Asia, the Vietnamese government is focusing on detecting and preventing potential epidemics. To prevent the spread of disease, a number of laboratories will be upgraded, including the Central Institute of Hygiene and Epidemiology and the Ho Chi Minh City Pasteur Institute. Naturally, such plans will require the cooperation of the pharmaceutical industry and the authorities are looking to boost drug production capabilities, especially regarding the utilisation of advanced technology.

In early November 2009, the Department of Animal Health, part of the Ministry of Agriculture, announced that after a six-month break, new cases of avian flu among poultry have been reported. With Vietnam having the world's second-highest human avian flu death toll (behind Indonesia), a WHO representative warned that Vietnam must take full precautions against the disease. With regards to swine flu, the Ministry of Health announced in November 2009 that the first batches of an A/H1N1 flu vaccine made at the Ho Chi Minh City Pasteur Institute were undergoing preclinical trials. Of particular concern to the health authorities is the re-emergence of cases of avian flu, which might lead to a potentially lethal combination of avian and swine flu developing.

HIV/AIDS

With increasing rates of population mobility, drug use and a nascent commercial sex industry, HIV has emerged as a major health issue in the country. Vietnam currently has around 132,000 people afflicted by the HIV/AIDS virus, with annual treatment costs around US$330 per person. This figure is reported to be one of the lowest levels of expenditure in Asia. Nevertheless, HIV/AIDS is expected to account for 857,243 DALYs in 2008, which equates to nearly 50% of the total burden caused by all infectious diseases. Worryingly, the situation is forecast to worsen through to 2030, as access to antiretroviral (ARV) drugs is limited.

In July 2010, the chief of the Vietnamese health ministry's HIV/AIDS control department, Nguyen Thanh Long, was reported by local press as saying that the country requires at least 20,000 healthcare workers by 2020 for its HIV/AIDS prevention and combat programme. He added that only 1,300 workers – an average of 21 workers per province or city – are presently engaged in the programme. Insufficient investment and improper training facilities are the main reasons behind the shortage of preventive health workers for the programme, according to Tran Thanh Duong, deputy chief of the ministry.

Around the same time, Vietnam's Deputy Prime Minister Truong Vinh Trong entered into an agreement with leaders of Kenya's National AIDS Control Council (NACC). Under the deal, both countries decided to promote cooperation in HIV/AIDS prevention and increase their respective visits in order to share experience in the field. The agreement will enable Vietnam to explore the HIV/AIDS prevention programmes initiated by the NACC in Kenya.

Related problems, such as hepatitis B and hepatitis C infections, are also on the increase and are estimated to have reached a level 10 times higher than that in the US or the EU. Similarly, liver cirrhosis affects as many as 15 times more people than in Europe, with a regional incidence rate of 150 per 100,000 people.

Other health issues include the high prevalence of drug abuse. The recent launch of a methadone programme in Vietnam will go some way to moderating the country’s vast burden of disease and will provide a small upside to US drugmaker **Mallinckrodt**, the major manufacturer of the synthetic opioid. UNAIDS has applauded the development, which is viewed as an effective way to reduce the spread of HIV/AIDS, heroin use, crime and other blood-borne conditions such as hepatitis C. Two methadone clinics have been established in Haiphong, the third largest city in Vietnam and a hotspot for heroin addicts and HIV/AIDS patients, while facilities have also been established in Ho Chi Minh City.

As a result of the success of the programme, more clinics are being rolled out across the country. A recent report from the National Committee for Combating AIDS, Drugs and Prostitution claims that methadone treatment has been highly effective in reducing the number of addicts taking opium-based drugs and also the frequency of drug-taking among those who are still addicted. Six new clinics are being planned for

Hanoi, making it the third city in the country to establish a methadone-based programme. Two facilities were scheduled to be up and running in September 2009, with a further four opening in 2010. Funding will largely come from international sources, with VND13bn (US$760,000) in donor aid being invested this year. After this, the Vietnamese government will allocate VND8bn (US$468,000) from its Drug and Prostitution Prevention programme to keep the rehabilitation centres running.

The government appears to be favouring a medication-based approach to drug addiction, which is a positive sign for the drug industry. In May 2009, the Ministry of Health approved the herbal medicine *Cedemex* for use in drug detoxification centres. This follows on from research by Chinese scientists in 2008, which stated that *Cedemex* was effective in reducing the mental reliance on morphine in addicts. The drug is manufactured by **Que Lam Pharmaceutical Company**.

Non-Communicable Diseases

Smoking is a major problem and between 30,000 and 40,000 people in Vietnam die of smoking-related diseases each year. However, there is a distinct gender difference. While some 50% of males smoke, only 3% of females do. Lung disease is on the rise and a recent study found that 5.2% of Vietnamese people over 40 – roughly 4mn individuals – have chronic obstructive pulmonary disorder (COPD). The country spends VND12bn (US$750,000) a year on COPD treatment and management.

Vietnam has the highest prevalence of COPD in the Asia Pacific region, according to the WHO, due to the popularity of smoking and high levels of air pollution. Lack of awareness is a problem in the country, with many sufferers unaware of their condition until the final stages, when intervention is generally ineffectual. **BMI** expects the frequency of disease education programmes in the region to increase and notes a significant opportunity for the two main manufacturers of COPD therapeutics – Germany's **Boehringer Ingelheim** and the UK's **GlaxoSmithKline** (GSK).

Greater awareness of the respiratory disease will result in fewer hospital admissions and a greater use of preventative agents such as inhaled corticosteroids. **BMI** believes that this presents an opportunity for pharmaceutical companies and medical device manufacturers in this field, although many modern treatments, such as GSK's *Advair/Seretide* (fluticasone + salmeterol), are not always covered by public insurance.

According to a recent study, asthma is under-diagnosed and an increasing burden in Vietnam. Research conducted by the Vietnam Allergy, Asthma and Clinical Immunity Association found that 4.7% of the Vietnamese population has asthma, with air pollution being one of the key causes. The average annual management cost per patient was US$301, which is more than the mean monthly wage. This finding compares unfavourably to a 2006 study that calculated the yearly cost to be just US$141. Admittedly, different methodologies were used to reach these top-line figures but it is clear that the cost of prevention and treatment is growing.

Cancer is becoming increasingly prevalent in Vietnam. The main drivers are growing cigarette and alcohol consumption, the Westernisation of diets, worsening air quality, urbanisation and more people adopting a sedentary lifestyle. This is a trend seen in all countries but Vietnam is not coping with the increasing burden well. **BMI** believes that there will be a growing opportunity for drug makers and medical device firms as the government begins to tackle the problem. According to reports in VietNamNet Bridge in October 2009, the Ho Chi Minh City Tumor and Cancer Hospital has launched a new treatment for cancer, stereotactic body radiation therapy, in response to this growing problem. However, by mid-2010, the proportion of cancer patient deaths increased to 73.5% in Vietnam, according to Mai Trong Khoa, deputy director of Bach Mai Hospital. He added that the treatment of cancer patients is difficult and takes more time due to late diagnoses, usually at the metastasis phase.

The incidence of diabetes has grown by three to four times in urban Vietnam; similarly it has become more common in rural areas and on World Diabetes Day in November 2009 Vietnam’s Health Minister, Nguyen Thi Xuyen, acknowledged that while around 5% of the country’s population suffers from diabetes, the number of people at risk from the disease is much higher – between 15 and 20%. Reports in Thanh Nien News claim that the disease is also affecting younger patients, and Thai Hong Quang, vice-chair of the Vietnam Endocrinology and Diabetes Society said that increased obesity in towns and cities is a key cause. In 2009, the Health Ministry dedicated VND29bn (US$1.62mn) to national diabetes programme, and these attempts to raise public awareness of the disease could develop into opportunities for drugmakers and medical device companies specialising in this field.

It was revealed in March 2009 that 8,000 new cases of kidney failure are reported each year in Vietnam. However, only 10% can afford dialysis treatment, which costs US$25 per session. Moreover, due to poor diagnosis, many patients are unaware of their status until end-stage disease develops.

Hypertension is another area of concern in Vietnam. The prevalence of the cardiovascular disease is approaching levels seen in developed countries, and the vast majority of sufferers are unaware of this potentially lethal condition. Assessing the scale of hypertension is difficult. At a National Congress of Intervention Cardiology in October 2009, Nguyen La Viet, Director of the National Cardiology Institute (NCI) said that about 6.8mn Vietnamese suffer from the hypertension. This prevalence of 7.93% is low by global standards, but other sources suggest these figures underestimate the scale of the problem. The fact that the NCI survey found 77% of sufferers were unaware of their hypertensive state suggests that the burden of the disease is considerable. **BMI** would encourage the government to work to increase the medical community and the general public’s awareness of the disease. This will result in commercial upsides for manufacturers of antihypertensives such as ACE inhibitors, calcium channel blockers and diuretics.

Healthcare Financing

According to a panel of stakeholders that includes UN representatives, Vietnam needs to increase healthcare spending significantly and improve the distribution of funds to reduce inequalities among its population. The allocation of 10% of the government budget to health by 2010 was suggested; however, Vietnam's Ministry of Health has said that this target is not feasible and that 10% by 2015 is more realistic. While the investment in healthcare is not as immediate as **BMI** would like, we note that the country has other ambitions to increase the wealth of its people such as infrastructure projects, human resource training and strengthened national security. These should attract more FDI and its associated benefits.

The panel comprised both domestic and international organisations such as UNICEF and UNDP. It was encouraged that public spending on health in 2008 was set to reach US$1.43bn, or 7.1% of the total government budget, but urged that more must be done to improve healthcare – particularly in the area of maternal and child mortality. The key areas for improvement are immunisation, pre-natal care, obstetric delivery and family planning. Moreover, increased efforts must be made in targeting the poor, many of whom are ethnic minorities living in remote locations.

A number of medical facilities in the country are financed by foreign governments or international bodies, such as the World Bank. According to the Ministry of Health, in 2008 around 130 international NGOs operated in Vietnam, donating up to US$100mn in the country. The majority of the population visits either a hospital as their first point of call, clogging up scarce resources, or alternatively they do not seek any medical assistance at all, due to the high costs of treatments and low levels of public subsidy. Doctors' salaries are minimal, as are most hospitals' budgets, which have a detrimental effect on the overall level of healthcare services.

In fact, according to the chairman of the Vietnam Medical Association, the government has not been able to meet the expectations associated with healthcare services, despite the state doubling its healthcare spending over the course of 2007. According to a report by the Ministry of Health, even though the government's healthcare expenditure as a percentage of the state budget increased to 5.61% in 2006 from 4.98% in 2002, the country was 189th out of 191 countries surveyed on state budget healthcare spending.

In August 2010, it was reported by Sai Gon Giai Phong that Vietnam spends nearly the same amount as developed countries on healthcare services, with medical costs accounting for up to 6.2% of the nation's GDP. The government is spending more than 40% of its medical costs on medicines. During a meeting of the Committee for Social Affairs of the National Assembly, weak management of the DAV was found to be the main cause for the rise in medical costs in the country.

However, in mid-2010, the Asian Development Bank granted a US$60mn loan to the Viet Nam Health Human Resources Sector Development Programme in support of healthcare services in Vietnam. The Australian government has co-financed the programme with an US$11mn aid package. According to the ADB, healthcare spending by the Vietnamese government has failed to keep pace with the economic growth of the country.

State hospitals often have problems with budgetary deficits and cannot afford the latest equipment and treatments. Most run tenders for pharmaceutical procurement. Recently, there have been problems with overcrowding in paediatric wards due to the introduction of a policy to provide free healthcare to children under the age of six. In one regional hospital, the number of young children receiving treatment increased by over 30% in 2005. Local authorities claim healthcare expenditure is not sustainable at these levels and many parents are now bypassing the system and opting to pay medical expenses in order to ensure that their children receive better care.

Going some way to alleviate the problem of overcrowding at state hospitals, Prime Minister Nguyen Tan Dung announced in November 2009 that additional investment would be made in hospitals in urban centres, advancing payment from 2010 and 2011 budgets to enable hospitals to improve services. In a report published in VOVNews, the Ministry of Health revealed that some hospitals have been operating at nearly 150% capacity levels. In addition, Ho Chi Minh City is to host a pilot project whereby a new network of general practitioners at three health centres will attempt to divert patients with minor ailments to these clinics and reduce some of the pressure on city hospitals. The municipal health authorities announced in November 2009 that, if successful, the model would be expanded to other city districts.

Health Minister Nguyen Quoc Trieu recommended that the private sector invest in the healthcare sector, with the aim of improving service quality and reducing the financial burden on the country. The need for public-private partnerships in the health sector was discussed in a conference held by the Ministry of Health and the World Bank in Ho Chi Minh City in May 2010.

In a related development at around the same time, Singapore-based healthcare group **Parkway Holdings** announced plans to establish hospitals in China and Vietnam. The development is part of the company's strategy to diversify its operation from the domestic market, which is approaching saturation. The company has recognised China and Vietnam as priority countries on the back of their strong economic growth, said Chief Executive Tan See Leng.

In May 2010, Vietnamese **Saigon Institute of Technology** (SaigonTech) was due to start the construction of a US$400mn ‘digital’ hospital, the first of its type in the country. The hospital, due to be erected in Vung Tau City, will use information and communication technology in the provision of healthcare. The 500-bed facility, which is expected to be finalised by 2013, is due to largely provide services for oncology, cardiology and mental health issues.

Healthcare Insurance

Since 1987, Vietnam has been moving from a centrally planned economy to a market-based system, a process known as '*Đổi mới*' ('Renovation'). Funding for the public sector was reduced, but the private sector was slow to adapt. Realising the need for cost-sharing, the government introduced a National Health Decree in 1992 that imposed compulsory health insurance for people in salaried employment. This requires a monthly fee of 3% of the employee's salary and is paid for jointly by the employee and their employer. While voluntary membership was encouraged from the start for dependents, students and farmers, uptake was low due to the cost involved.

In November 2009, the Vietnam Social Insurance Agency (VSI) announced that around 50mn Vietnamese citizens will receive new health insurance cards in spring 2010. These cards will contain the holder's personal details and information about their levels of benefit. Alongside the Ministry of Health, the VSI is currently investigating co-payments relating to the patient's diagnosis in pilot clinics. The government's plans to issue health insurance cards to the entire population by 2015 are, in **BMI**'s opinion, ambitious.

Participants at a meeting of health officials in February 2009 revealed that the Vietnamese were still unwilling to buy voluntary health insurance until they are ill, estimating this trend to have cost the country US$23mn in 2008. The health ministry stated that, over the previous four years, only 3mn people joined the insurance scheme, though the predicted figure was over 50mn. However, by the end of January 2010, official figures put the number of people who bought insurance at almost 50mn, in the wake of the introduction of new insurance regulations.

In fact, the health insurance industry in Vietnam has experienced significant growth in the period between Q409 and June 2010. During the period, the number of new customers holding health insurance increased by 5.5mn to total more than 50.2mn people who now have some form of health insurance in the country. The government of Vietnam aims to provide access to health insurance to the people in the country who need it most.

New state-issued health insurance regulations came into effect at the start of 2010, with many patients critical of the fact that they must now pay for treatments or tests for children. Prior to the changes, state insurance covered such services for children. Additionally, new regulations stipulate restrictions on the type of medications that can be issued, with particular regard to cost. Chronic patients covered by state insurance also have to pay 5% of their hospital treatment costs, which is unaffordable for many of them.

On the other hand, urban hospitals are reportedly overwhelmed by rural patients, as they now only have to pay 70% of costs (down from the previous 100%). Similarly, the state-covered insurance payment per hospital bed, of just VND8,000-10,000, has reportedly not been increased for over a decade. The Health

Insurance Department is presently seeking to resolve some of the issues, with local press reporting that a fund for the poor or a ceiling for hospital fees may be set up to cushion the impact of the reforms.

The new regulations in practice mean that over 90% of those insured will have to pay some sort of fees for services and pharmaceuticals used. Hospital fees of between 5 and 20% vary depending on procedures and the level of individual hospitals. If patients opt out to be treated in hospitals other than those assigned, the fees can be as high as 30-70%. Students and other social groups that are not mandated to purchase health insurance must cover 20% of their hospital fees.

The new law has also been criticised for a lack of clarity. For example, the Health Insurance Department said insurance scheme members could use their old cards one last time after January 01 2010, but this was not communicated effectively, leading to confusion at healthcare facilities.

In August 2010, Vietnam Business News reported that the Ministry of Health could move to increase hospital fees by between 7 and 8%, due to finding shortages and increases in costs of electricity and other materials. Opponents of the move demand a corresponding increase in quality. In higher-end hospitals, examination fees have already reached VND15-30,000, which is out of reach for most patients.

Healthcare Insurance Spending

According to the WHO, social security spending on healthcare in Vietnam has increased significantly over the past decade, from US$228mn in 1999 to US$3.12bn in 2009. Over the same period, social security spending as a percentage of total healthcare expenditure rose from 15.8% to 42.6%.

Spending on medicines for Vietnamese health insurance holders increased 43.8% in 2009 compared with the previous year. Figures provided by the Ministry of Health show that VND10.8trn (US$585mn) was spent by government hospitals on medicines during 2009 – a 35.7% year-on-year (y-o-y) rise. Of this spending, nearly a third (32.3%) was on antibiotics, increasing fears concerning the spread of bacterial resistance in the South East Asian country. The new regulations are likely to decelerate the rate of growth of healthcare insurance expenditure in the coming years.

Healthcare and Pharmaceutical Reforms

In June 2005, the government unveiled a new 10-year industry development plan aimed at increasing the domestic sector’s market share from 40% to 60%, by 2015. Officials hope that the strategy will reduce the country’s dependence on imported raw materials and finished drugs. Some of the major obstacles currently facing the domestic pharmaceutical industry are its dependence on imports for 90% of its raw materials, the sector’s limited product range and a lack of human resources.

Meanwhile, under the government's 2006-2012 economic plan the regulation of drugs, food safety and hygiene and cosmetics will be strengthened and healthcare investment increased, supported by a substantial reorganisation of the current network of treatment centres. General hospitals in urban areas will be turned into multi-use clinics or specialist institutions, with the current hospital network due for expansion through the construction of a number of new facilities. These new developments will be large scale – between 500 and 1,000 beds – and will be capable of providing the majority of health services, which should improve access to health in the more remote areas of the country such as the northern mountainous provinces of Son La and Thai Nguyen.

Additionally, all rural districts are expected to have a 50-200 bed hospital by 2010. Three international-standard centres will be established to test drugs and evaluate their effects in Hanoi, Da Nang and Ho Chi Minh City. Meanwhile, the Central Drug Testing Institute and the National Institute for Vaccines Testing will be upgraded. By the end of the planning period, the country should meet requirements for human health protection, which in turn will help encourage further international integration.

Investment will also be ploughed into the distribution network in order to ensure that drugs can be supplied at affordable prices. Preferential loans will be handed out to companies engaged in research for products and equipment not currently available in Vietnam. To support this endeavour, government sources have suggested that pharmaceutical sector laws may be reformed. This could involve the greater enforcement of intellectual property rights, which are undermined by a weak and inexperienced judicial system in Vietnam.

The end goal of the national strategy is to increase life expectancy in the country to 71 by 2010. Maternal mortality is targeted to fall to 70 per 100,000 births, while the infant mortality rate is targeted to fall below 25% of births. Further aims include reducing the impact of communicable diseases such as typhoid and malaria, as well as sexually transmitted diseases.

Illustrating further modernisation of the healthcare system in Vietnam, electronic insurance records have been available in Vietnam since February 2010. Patients can now use online services to book appointments and seek health and pharmaceutical information. The first such system was introduced by the Vietnam Health – Drug Information Network in Hanoi, as reported by VietNamNet Bridge.

Foreign Partnerships

In 2005, Vietnam and Indonesia agreed to increase bilateral cooperation in areas relating to healthcare services, drug production and the fight against infectious diseases. In the field of healthcare services, in particular, both countries have pledged to promote technology transfer schemes as well as encourage the exchange of healthcare personnel between the two countries. Indonesia and Vietnam have also committed to producing new vaccines for epidemics currently threatening the Association of South East Asian Nations (ASEAN) region. The two countries hope that the new accord will help develop their respective healthcare sectors as well as improve competitiveness ahead of the planned ASEAN Free Trade Agreement, which is due to be signed in 2015. The region's pharmaceutical market is expected to reach US$6bn in the next decade.

Vietnam and the US are signatories of the first ever co-operation accord in the health sector between the two countries. Under the five-year plan, the US and Vietnam will increase technical and research exchanges, with a special emphasis on infectious diseases such as HIV/AIDS and avian flu. The deal represents improving relations between the former enemies and should see the US provide assistance for healthcare training as well as help develop Vietnam's medical infrastructure.

Reinforcing the trend of co-operation between regulators in various jurisdictions around the world, the Bulgarian government has announced plans to collaborate with Vietnam in the field of healthcare. Under the two-year plan, Bulgaria and Vietnam will share information and study each other's processes in the areas of public health, outpatient care, food security and medical education. There is also the possibility that medical students will be able to participate in exchange programmes to enhance post-graduate training. Additionally, in a ground-breaking development for emerging markets, the co-operation would also enable the exchange of Bulgarian and Vietnamese patients who would have the opportunity to seek remedies in the country that offered the better treatment for their illnesses.

In September 2008, Health Ministries of Vietnam and Singapore agreed to bolster medical and healthcare co-operation with a view to enhancing their medical networks, health insurance, high-tech training, the treatment of incurable diseases and epidemic control. The two countries have also discussed ways of transferring technology and training of medical and pharmaceutical experts. The focus of the recent meeting was prevention as a core of successful health improvement and control, with future conferences likely to discuss further improvements of the partnership.

In November 2009, Vietnam and Argentina signed their first agreement to boost pharmaceutical co-operation. As part of the agreement, the two countries will exchange research, training, offer the other technical assistance and conduct drug controls.

Traditional Medicines

The Vietnamese population has for generations used traditional and herbal medicines that belong to one of the three streams, namely *Thuoc Bac* (Northern Medicine), *Thuoc Nam* (Southern Medicine) or *Thuoc Tay* (Western Medicine). In more recent times, the government has committed to the development of an identifiable Vietnamese Medical Science, which will work to stimulate the OTC market.

Indeed, Vietnam is one of the few countries, alongside China and South Korea, which have fully integrated traditional medicines within their healthcare system. Additionally, the WHO has organised training workshops on the use of traditional medicines for selected diseases and disorders in Vietnam.

However, despite having a vast and diverse array of medicinal plants, Vietnam lacks the investment to turn these into commercial medicines. Currently, many materials required to manufacture herbal medicines are imported from China. According to the DAV, in 2008 locally-produced drugs accounted for just 50.18% of pharmaceutical demand. By exploiting its natural resources, which comprise more than 4,000 herbal plants, Vietnam could help to kick-start its local drug manufacturing sector. However, without investment in appropriate extraction technologies traditional medicines cannot be produced on a large scale.

Vietnam Medical Products Import-Export Company (Vimedimex) confirms that a lack of suitable equipment is a major obstacle to sector development. The country has not invested sufficiently in the extraction and separation technologies needed to properly exploit medicinal plants. Presently, there are no major extraction facilities in the country, with the manufacture of traditional medicines predominately remaining small-scale. Although some TM manufacturers are investing in modern equipment, until standards improve dramatically across the industry, locally produced products will not be able to compete with imports.

Vietnam has announced an ambitious plan to develop a domestic pharmaceutical manufacturing and distribution industry by 2020. Prime Minister Nguyen Tan Dung has also pledged to invest in extraction technologies, although to date no local companies have benefited, despite the opportunities being huge. For example, in the 1980s Russian researchers found large quantities of the anti-oxidant mangiferin contained in mango leaves in Vietnam. Russia now exports US$1mn worth of the product– which is used in the treatment of shingles – after setting up **Sovipharm Joint-Venture,** a JV extraction plant in the country**.** Yet, Vietnam has many hundreds of medicinal plants as effective as mangiferin. For example, chemotherapy drug *taxol* is found in the Taxaceae tree, while heart drug *troxerutin* is found in the Sophora Japonica (Japanese Pagoda) tree.

In order to gain the required technologies, Vietnam will need to offer tax credits and other incentives to investors. Hi-tech extraction is capital intensive and for Vietnam’s medicinal plants industry to take-off it will need concerted government support. But these products could end up supplying much of the raw materials Vietnam will need for local production. This will further reduce the country’s reliance on imports and reduce exposure to currency fluctuation and other exogenous risks.

On a positive note, the government has recently announced that it has successfully cultivated the *Thuong Hoang* mushroom, which has been traditionally used to treat breast, liver and stomach cancer. The total global production of the mushroom – which is in high demand with researchers – is around 30 tonnes per year, with Korea, Japan, Thailand and China the only other countries who have managed to successfully farm it. Presently, a kilogram of the mushroom can cost up to VND10mn (US$584.62), and the authorities are looking to export it to drug companies.

Pharmacy Retail Sector

There are approximately 57,000 pharmacies in Vietnam, equating to 6.6 outlets per 10,000 people. According to more recent figures released by the department of health, the ratio of pharmacy outlets to 1,000 residents in Ho Chi Minh City (HCMC) is around 4.5 in 2010, three times the national average, but still below international standards.

Additionally, in terms of organisation, Vietnam's pharmacy sector is a shambles. Patients can get most drugs without a prescription, there are insufficient pharmacists, counterfeits are not uncommon and many doctors still illegally disburse medicines from their private offices.

Regulators hope that the implementation of Good Pharmacy Practice (GPP) in 2011 will solve these problems but numerous challenges must be addressed first. However, by August 2010, the number of GPP-compliant pharmacies in HCMC stood at 467, out of a total of 3,577 pharmacies. In Hanoi, 249 were certified, out of the 1,500 registered pharmacies, according to the department of health. The main obstacle to the programme roll-out is the substantial investment required by pharmacies, as well as the need for strict compliance with dispensing requirements, which mean that patients – and thus revenue – are turned away for lacking proper prescriptions.

The HCMC Department of Health is adopting its own policies to improve GPP standards. These include giving free training courses for pharmacists and also publicising those drug stores that meet GPP standards. The city is also working with the Department of Finance to provide tax breaks for pharmacies meeting the regulations; a policy **BMI** believes could be effective if rolled out across the country.

Indeed, one of the main problems is the fact that prescription-only drugs are dispensed without a doctor's script, despite rules prohibiting this practice. At any drugstore, a patient simply tells the employee what drug they need and they are immediately supplied. Moreover, if the patient does not know what they want, the employee asks what their ailment is and then personally chooses a medicine they think is appropriate.

These problems are compounded by a lack of quality pharmacists, according to Cao Hung Thai, Deputy Director of Vietnam's Ministry of Health's Examination and Treatment Management Department. In December 2009, he stated that about 73% of doctors' prescriptions are not checked properly. Furthermore, patients in the country are rarely properly informed about drug prices and the potential side-effects of medicines. To rectify this situation, the Ministry of Health has set a target of 1.5 pharmacists per 10,000 people. To put this in perspective, there were 0.8 pharmacists per 10,000 people in 2007.

Illustrating this fact is a recent debate that has emerged over the distribution of *Tamiflu*. According to a report published in Thanh Nien News in October 2009, doctors suggested that drug distribution rules change so that patients with lighter cases of flu treat themselves at home, but current regulations mean *Tamiflu* can only be administrated at medical centres and to admitted patients. Ministry of Health officials have rejected these proposals, claiming that widespread use of *Tamiflu* may lead to drug resistance. The authorities fear that by making *Tamiflu* available for sale in drugstores, it will be dispensed without a prescription.

According to some drugstores, only 20-30% of patients buy drugs with a prescription. Only medicines that cause dependency, such as benzodiazepines, are routinely refused sale without a prescription. Antibiotics are the most popular drug sold without a prescription. This has resulted in worrying levels of antibiotic resistance. For example, nearly 70% of bacteria carried by people living in urban parts of Vietnam are resistant to penicillin.

Under GPP plans for Vietnam, all dispensed drugs will have to be safe and effective. Pharmacies will be required to have proper facilities, including air conditioning to ensure the right temperature for certain medicines, and a monitoring system to regulate the internal supply chain. Unlike common practice, a qualified pharmacist must be present during all hours of operation. Labels must state country of origin and expiry date. Finally, except for OTC medications, pharmacists will ask for a prescription before the sale of a drug.

Pham Khanh Phong Lan, deputy director of the health department of Ho Chi Minh City said in March 2009 that approximately half of the existing 3,300-plus pharmacies in the city are likely to shut by 2011, on account of their failure to meet the government's GPP standards. For example, the government is presently investigating **My Chau** pharmacy chain over alleged violations of GPP standards. The My Chau chain is owned by **Minh Phuc Pharmacy**.

However, in order to help this process along, the MoH is encouraging pharmaceutical companies to set up their own drug store chains, which adhere to GPP standards. Although building the pharmacies would be capital intensive in the early stages, drugmakers are expected to reap the benefits in 2010, when their non-GPP compliant rivals are shut down.

The MoH has also created numerous incentives for companies setting up their own chains. As well as tax breaks, they will be given preferential treatment when it comes to supplying national health programmes and the health insurance system. To date, 15 pharmaceutical companies have registered to create their own pharmacies, and **BMI** expects all to profit relatively quickly, as the pharmaceutical market increasingly attracts foreign investment.

Table: Key Aspects Of Good Pharmacy Practice (GPP) In Developing Countries
All people have access to a qualified pharmacist
The country to be self-sufficient in training pharmacy personnel
That there should be adequate premises from which to provide services
To ensure that the right patient receives the appropriate medicine in the correct dose and form
To preserve the integrity of the product
To ensure that the patient knows how and when to take/use the product
To facilitate patient care and provide an audit trail
To promote good health and prevent ill health
To establish a national GPP policy that can be adequately enforced
To ensure equitable access to safe and effective drugs of good quality by establishing a National Drug Policy

Source: Good Pharmacy Practice (GPP) in developing countries: Recommendations for stepwise implementation, International Pharmaceutical Federation, September 1998

In September 2008, Vietnam News reported that the Ministry of Health was addressing the countrywide shortage of hospital drugs and medical devices. The director of the Vietnam Drug Administration stated that immediate measures to restore drug supplies include forcing large companies to comply with their contracts, allowing hospital directors to purchase batches of drugs with a value less than VND100mn (US$6,066) and fining smaller drugmakers that had not fulfilled their contracts.

More than a year later, the effects of such shortages were evident: in November 2009, VietNamNet Bridge reported that the number of children admitted to hospital in Ho Chi Minh City with measles was the highest in a decade. These figures reflect a shortage of measles vaccines, despite the fact that children are immunised for free as part of the National Vaccination Programme.

Research and Development

Vietnamese pharmaceutical companies lack the expertise as well as financing to support a thriving R&D sector in the country. Instead, Vietnam has in the past been used as a location for clinical trials conducted by multinationals, although some concern has been voiced over requirements that new drug applications must be supported by data obtained from local clinical trials.

Nevertheless, regulatory and trading standards improvements will gradually attract more foreign capital. For example, US-based **Quintiles Transnational**, a leading pharmaceutical and clinical trials services provider, has extended its Asia operations with the opening of an office in Hanoi. The company believes that Vietnam is an increasingly important market in the region with a large population, a strong educational system and a robust healthcare industry. Furthermore, the recent issuing of a revised set of guidelines for the conduct of clinical trials by the Ministry of Health has helped set in motion a consistent regulatory framework for the carrying-out of clinical trial procedures.

Quintiles will work closely with the Ministry of Health to increase the number of sites trained in Good Clinical Practice (GCP) protocols – which are the regulatory standards designed to ensure the accuracy of information obtained in clinical trials – while protecting the rights and confidentiality of patients and other volunteers participating in such trials.

Meanwhile, in April 2009, the DAV announced that the MoH and the Ministry of Science and Technology had chosen five medicines to be the target of large-scale R&D programmes. Further details concerning the nature of the drugs being targeted have been vague, although **BMI** expects them to be in the major therapeutic areas, as these are the most likely to gain a wide audience and prove profitable, and the ultimate aim is to export them to Asian and then global markets. So far VND500bn (US$29.2mn) has been invested in the first phase of the project, the aim of which is to develop a domestic pharmaceutical industry by 2020. The country is desperate to reduce its dependence on imported drugs. In the short term this will involve the construction of an antibiotics factory, which will be able to meet local demand.

In other developments, the October 2009 opening of a Cyclotron-30Mev acceleration centre at Military Hospital 108 for diagnosing and treating cancers and cardiovascular diseases was another sign of progress in Vietnam's R&D sector. The VND508.9bn (US$28.4mn) equipment was partly funded by Belgium developmental funds.

Progress in R&D can be slow, however. Plans for a US$400mn high-tech healthcare park in Ho Chi Minh City have disappointed investors following little activity over the past year. According to reports in VietnamNewBridge, little visible progress has been made since the project was licensed in July 2008, with complaints being voiced as a result. Lai Voon Hon, general director of **Hoa Lam-Shangri-La Healthcare**, assured in November 2009 that they were awaiting planning permission, stating that he envisaged work on the first phase: a hospital, medical training centre, schools and staff accommodation; would start in 2010. The healthcare park is a joint venture between Vietnam's **Hoa Lam Service Co.** and Singapore's **Shangri-La Healthcare Investment**.

Biotechnology Sector

In common with many emerging countries, Vietnam is looking to develop its nascent biotechnology industry as a driver of economic growth. Due to high growth rates and value-added products, the three main biotech sectors – medical, industrial and agricultural – are seen by many governments as the premier way to stimulate prosperity. A total of VND500mn (US$31.3mn) has been allocated to the project for developing the sector. The funds may seem modest, but given Vietnam's low-cost base, numerous initiatives will benefit.

For many years, biotechnology has been identified as prioritised technology in Vietnam due to the country's wide range of biological resources and reliance on agriculture. In fact, most of Vietnam's success in this field has been in the development of green biotechnology, which covers agricultural products. Notable examples include year-round pineapples and high-yield rice varieties. The evolution of red biotechnology in the development of medical interventions, such as affordable recombinant proteins, is likely to be the next step.

In early 2010, Vietnam and other developing countries were to receive a donation of US$7.9mn from the Biomedical Advanced Research and Development Authority (BARDA), under the US Department of Health and Human Services, to manufacture swine flu vaccines, reported Vaccine News Daily. BARDA will grant the donation, funded through the WHO, to an international non-profit health organisation, the Program for Appropriate Technology in Health (PATH).

Demonstrating the sector's rapid development, construction on Vietnam's first applied biotechnology research centre started in September 2008. A total of VND530bn (US$32mn) will be spent on the project, which will cover 200 hectares. The centre will investigate biological solutions to agricultural problems and unmet medical needs. Construction is expected to be completed in 2010.

Working under the auspices of the National Institute of Hygiene and Epidemiology, **Company for Vaccine and Biological Production No. 1** (Vabiotech) discovered a vaccine which targets the deadly A/H5N1 strain of bird flu. Importantly, Vabiotech has a wealth of experience in vaccine science, having developed agents that protect against hepatitis B, Japanese encephalitis, cholera, rabies and hepatitis A. The H5N1 vaccine, known as *Fluvax* appears to be progressing well after it was announced that it is ready to enter phase II trials. The second phase was scheduled to be conducted in Q109, with 200 volunteers aged between 20 and 40.

Most recently, the company has been working to develop a vaccine against H1N1 influenza. In January 2010, commercial batches of the vaccine were reportedly ready for testing by the National Institute for Control of Vaccine and Biologicals (NICVB). The company will commence the production of 2mn vaccinations per year if the sample displays positive results in the tests.

Vaccines

During Q309, an affordable cholera vaccine developed in Vietnam was launched in India. *Shancol* is administered orally, and was developed by the Seoul-based International Vaccine Institute (IVI). The vaccine will be manufactured by India's **Shantha Biotechnics**, and will cost less than US$1 – significantly less than the only other internationally approved cholera vaccine, Crucell/SBL Vaccine's

Dukoral, which retails for GBP30 (US$44) in the UK. This development underlined the capabilities of Vietnam's small but impressive R&D sector.

In July 2009, Vietnam introduced its first domestically-produced measles vaccine. This means the South East Asian country's 10-vaccine National Expanded Immunisation Programme (NEIP) is now self-sufficient. Commenting upon the vaccine production in November 2009, deputy health minister Cao Minh Quang implied that Vietnam would eventually like to be an exporter of vaccines.

The preventative agent was developed by the Centre for Research and Production of Vaccines and Biological Products (POLYVAC) in partnership with the Japan International Cooperation Agency (JICA), with technical assistance from the Kitasato Research Centre for Biological Products. It adheres to both Vietnamese and World Health Organization (WHO) GMP standards. A total of 7.5mn doses will be produced annually when the production facility is operating at full capacity.

In November 2008, Deputy Minister of Health Cao Minh Quang stated that three of Vietnam's six vaccine production facilities now meet the WHO's GMP criteria. Meanwhile, Vietnam's campaign to provide vaccines to under-fives is proving extremely successful. The Expanded Programme of Immunisation (EPI) has been acknowledged by the WHO as the major factor in reducing infant mortality rates by half.

Nevertheless, there are some parts of the country that are not receiving the necessary immunisations, particularly rural areas where there is a high percentage of ethnic minorities. Even in the more developed Ho Chi Minh City (HCMC), local clinics reportedly ran out of supplies of measles and chickenpox vaccines in early February 2009. Local health officials linked this to the large scale annual migration made by citizens returning from a Tet holiday spent with their families in rural provinces. Indeed, in the capital Ha Noi, there have been a large number of students contracting measles.

In Q110, many public hospitals in Vietnam's HCMC were facing a shortage of recognised and more expensive brand-name vaccines, which are not covered by the national immunisation programme. The vaccines have run out despite suppliers warning of shortages in September 2009. Director of the Central Institute of Hygiene and Epidemiology was quoted as saying that vaccines covered in the national expanded immunisation programme are available in sufficient amounts.

However, the opinion of vaccines in Vietnam received a setback recently. In early February 2008, the Ministry of Health once again suspended the use of a hepatitis B vaccine after two infants receiving the product died. State media said batches were being tested along with a co-administered diphtheria, whooping cough and tetanus vaccine. Last year, the country suspended use of **LG Life Sciences**' all-subtype *Euvax-B* vaccine from the EPI after three infants died.

Given Vietnam's high rate of hepatitis B infections, *Euvax-B* is given to newborns for free within 24 hours of birth. The programme, in place since 1997, costs US$20mn annually, of which the country pays one-fifth and the remainder is covered by the GAVI Alliance through UNICEF. Since 2001, more than 10mn doses of *Euvax-B* have been given to 4mn Vietnamese children.

Clinical Trials

Despite the high prevalence of tropical diseases, Vietnam is a relatively minor destination for international clinical trials. ClinicalTrials.gov recorded just 46 ongoing or recently completed clinical trials in February 2009 – one tenth of those in South East Asian neighbour Thailand, which registered 475 ongoing or recently completed studies. In May 2010, the number of clinical trials listed by the same source was 65, in comparison to 685 in Thailand.

Medical Device Market

The regulation of medical equipment in Vietnam is overseen by the Ministry of Health, which is continuously looking to improve standards. According to the government's Decree 89/CP from 1995 and Circular 05/2000/TT-BTM from 2001, all new medical devices must be approved and publicly listed. Moreover, a 1997 ruling (Decision 2019/1997/QD-BKHCNMT) stipulates that used equipment – not an uncommon scenario in emerging countries – must retain at least 80% of life expectancy and have a maximum of 110% energy consumption when compared to a new version. In terms of labelling requirements, text must be in English and Vietnamese or French and Vietnamese. International aid to Vietnam is often made through donations of medical equipment.

Over 95% of the market is made up of foreign goods. The main sources are the US, Germany and Japan, with Taiwan, Italy, France and South Korea also accounting for significant shares. Local production is extremely limited in terms of value but volume levels suggest the foundation for ascent up the value chain. There are presently 50 domestic firms making approximately 600 products officially licensed by the Ministry of Health. The vast majority are low-end offerings such as dressings, plastic gloves and syringes. Importantly, however, quality is high since ISO 9001-2000 came in effect in November 2004. Nevertheless, the government has not achieved its goal of domestic medical equipment meeting 40% of demand by 2005 and 60% by 2010, as set out in its 2002-2010 national policy on medical devices.

A recent survey found that half of medical equipment being used in Vietnamese hospitals and clinics was obsolete. Shortages are commonplace, placing a strain on providers and patients alike. The state is attempting to redress this situation but not necessarily through buying more foreign goods. By 2010, Vietnam wants all medical establishments to have 'sufficient' medical devices, all of which meet international standards. While these goals appear overly ambitious, they are a clear indication of the sector's potential.

As with other areas of the economy, there is currently a push for increased privatisation. The broad economic reform package called ‘*đổi mới"*‘(Renovation) has been in effect for over 20 years, but local enterprises lack the critical mass for significant market share. Joint ventures with foreign expertise are a trend, as evidenced by **Shimadzu** Vietnam (Japan), **B Braun** (Germany) and **Vinahankook** (South Korea) predominantly making X-ray appliances, intravenous infusion kits and disposable syringes, respectively.

Previously, only local players are allowed to distribute medical devices in Vietnam. Companies from overseas were required to sell their products to a local wholesaler that would then disseminate the goods themselves or through a network of smaller agents. Following WTO admission in November 2006, the country was looking to sanction joint ventures between overseas companies and local distributors. As of the start of 2009, wholly foreign-owned companies have been allowed to establish market presence.

Compared to some other markets, making a product available in Vietnam does not involve a large financial outlay. The medical device registration fee is just US$19, while the prices of import permits are also reasonable: US$31 for equipment costing less than US$63,000, US$62 for the range US$63,000-US$190,000 and US$187 for goods over US$190,000. Foreign registration processing with the correct documentation – US FDA or EC approval – is very rapid, with positive or negative responses usually given within two weeks.

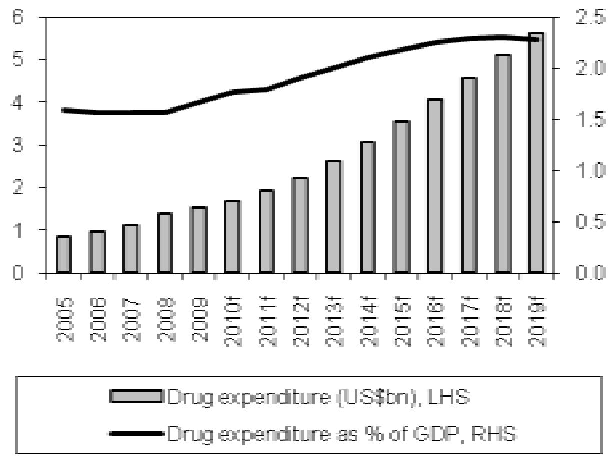
Industry Forecast Scenario

Overall Market Forecast

Vietnam's pharmaceutical market was valued at around VND27,351bn (US$1.54bn) in 2009. Over the next five years, **BMI** forecasts that the market should grow at a CAGR of 16.0% in local currency terms to reach a value of VND57,515bn (US$3.07bn) in 2014. **BMI**'s long-range forecast is for the market to reach VND91,166bn (US$5.61bn) in 2019, equating to a CAGR of 12.8%. According to the DAV, drug expenditure in the country will top US$2bn by 2012.

Our forecast for GDP-beating drug market growth underlines our view that there is considerable scope for increased pharmaceutical consumption in a country where per-capita drug expenditure is currently just US$17. This, combined with an expanding population, higher levels of health awareness and increased access to pharmaceuticals, creates a strong base for market growth assuming the required resources are put into healthcare sector development. However, pricing remains a concern, due to a lack of controls.

Pharmaceutical Market Forecast
2005-2019



f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI. For data, see Forecast Tables section below.

Additionally, some have blamed unscrupulous practices by pharmaceutical companies and prescribers for pharmaceutical expenditure being higher than necessary. However, it is not just companies that bribe Vietnamese healthcare professionals. Patients pay doctors and nurses to avoid waiting lists and receive above-average care. Those on low incomes that cannot afford 'gifts' for staff members have to use overcrowded facilities and rely on relatives to complement the provision of care.

In fact, according to a survey by the Vietnam Union of Science and Technology Associations (VUSTA) published on the VietNamNet Bridge website in September 2009, gifts – which we interpret mostly as cash, but can also be physical goods – accounted for 9% of the cost of a health check-up. The research was performed through interviews with 140 people in rural and urban areas who had visited public and private hospitals over the previous six months. Interestingly, 'medications/examinations/tests' only accounted for 53% of expenditure. It is not clear how the remaining funds were spent.

Vietnam's regulators faced their greatest challenge with the country's entrance to the WTO at the start of 2007. Foreign enterprises have been given the right to open branches in Vietnam and to import medicines directly, although they will still be barred from distributing their products. As part of its membership application, Vietnam pledged to set import duties at less than 5% for pharmaceutical products and drug tariffs are expected to average just 2.5% within five years of accession.

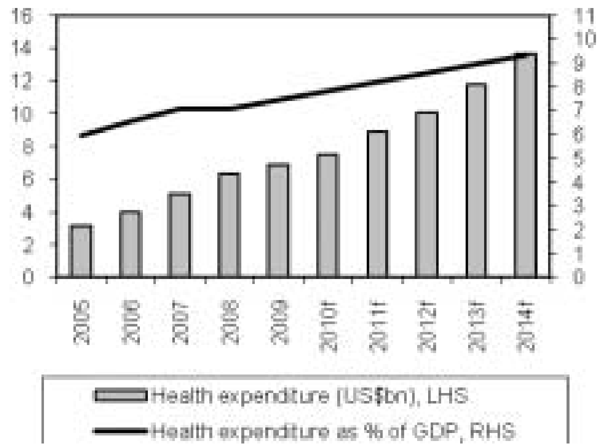
The newly liberalised environment could cause problems for Vietnam's small drug production sector. Nevertheless, while the government originally called on firms to adopt GMP standards by the start of 2010, the deadline was extended to the end of 2010. However, in August 2008, it was revealed that companies that did not have accreditation could come up with provisory regulations. Firms not planning to establish GMP standards must either shift to other sectors or produce traditional medicines, the latter being an area with problems of its own, as many traditional drugs are incorrectly labelled and dispensed by unqualified practitioners.

Key Growth Factors – Industry

In 2009, overall health expenditure was US$6.89bn (7.5% of GDP). By 2014, we expect this to reach US$13.65bn (9.3% of GDP), posting a CAGR of 15.8% in local currency terms, in line with the development of the pharmaceutical market. With drug expenditure rising relative to GDP, much of this increased expenditure will be on health infrastructure, which remains basic in many rural areas. Over the longer term, this is likely to result in greater access to basic medicines.

In the meantime, the government has outlined plans for the investment of up to US$1.5bn in the pharmaceutical manufacturing sector over the next 10 years to reduce reliance on imports. The money is to be used for a variety of programmes, including upgrading technology to meet GMP standards, the development and expansion of the pharmaceutical supply network to poor and remote areas, the establishment of joint ventures with foreign players and achieving a greater percentage of domestic pharmaceutical demand.

Healthcare Expenditure Forecast
2005-2014



f = forecast. Source: World Health Organization (WHO), BMI. For data, see Forecast Tables section below.

The government's intention to invest in the development of its biotechnology sector is likely to act as a catalyst for wider industry reform, in particular concerning patent protection. However, local drug production is still weak and incapable of meeting domestic demand, although local regulation reform on a considerable scale is expected to attract foreign investment. In some sectors, such as vaccines, considerable progress has been made to increase Vietnam's self-sufficiency, the most notable example in 2009 being that the country now produces sufficient measles vaccines domestically to meet national demand.

To help make further progress, the government has outlined plans to invest US$241mn in eight projects within the local drug manufacturing industry. This will include the construction of four pharmaceutical plants in the next four years. The authorities aim to have 80% of domestic demand met by local producers by 2015, up from around 50% currently.

The pending liberalisation of tariff structures as part of WTO membership could result in many local players exiting the sector through acquisition or failure. The government seems aware of the threat and is embarking upon a number of plans to modernise the drug sector, while the local industry is calling for a relaxation of price controls to enable it to increase investment in R&D and upgrade facilities.

The removal of market access barriers will benefit the Vietnamese drug sector in the long run, as foreign investment will increase and the extra competition has a galvanising effect on local drug manufacturers. The increased number of mergers and acquisitions (M&A) in the domestic industry should result in larger and more dynamic players, which can then take a more active role in regional trade. WTO accession will also force Vietnam to take a more pro-active stance against the counterfeit drug trade, including increased vigilance and enforcement of IP rights.

Key Growth Factors – Macroeconomic

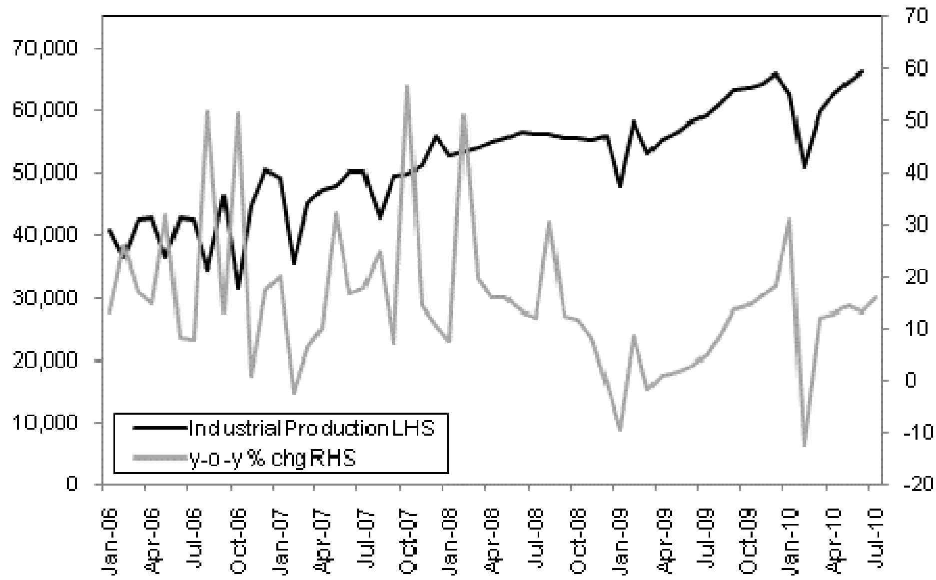
Private Consumption And Infrastructure Investment Cushion External Weakness

BMI View: *Economic indicators in July provided an optimistic outlook for Vietnam's economic growth in H210. We believe private consumption and investment in infrastructure development will continue to be the main drivers of economic growth going forward. However, we see external demand weakness leading to a widening of the trade deficit, which will be a drag on growth. Therefore, we are maintaining our real GDP growth forecast of 6.0% and 5.5% for 2010 and 2011 respectively*.

Vietnam recorded an impressive real GDP growth of 6.3% y-o-y in Q210 as the economy heads towards the government's growth target of 6.5% for 2010. Economic indicators in July also reinforced the government's aggressive target after industrial production came in at a better-than-expected 16.0% y-o-y in July. To a certain extent, the encouraging numbers helped to alleviate concerns that weakening external demand from the US and EU would be a drag on the economy. Industrial production accelerated after slowing down for three consecutive months, falling from 5.0% m-o-m in April to 3.3% and 2.2% in May and June respectively. This prompted the Vietnamese government and the State Bank Of Vietnam (SBV) to exert pressure on commercial banks to lower lending rates in June. However, we expect loan growth to remain weak on a historical basis in H210 due to the threat of higher inflation, which forces commercial banks to keep lending rates high at around 12-14%. Therefore, we do not see business investments contributing significantly to industrial production growth going forward. Instead, we see private consumption and government-supported infrastructure investment as the main drivers of economic growth in H210.

Picking Up The Pace

Vietnam - Industrial Production, VND bn (LHS) & % chg y-o-y (RHS)



Source: General Statistics Office, BMI

Retail Sales and Tourist Arrivals Point To Strong Domestic Demand

Retail sales came in at 35.3% y-o-y in July, reflecting the strong momentum in consumer demand. We see retail sales as a relatively good indicator of consumer demand as private spending makes up 85.8% of the indicator. Given that retail sales tends to accelerate in the second half of the year largely due to the holiday season, we believe private consumption will play a more significant role in providing support for economic growth in H210. We note that the retail sector is heavily dependent on tourist arrivals. As the accompanying chart shows, the correlation between tourist arrivals and private consumption is strong.

Tourist arrivals rose 47.5% y-o-y in July, in line with strengthening retail sales figures. The tourism industry's pace of growth also highlighted the industry's growing potential as a source of economic growth for Vietnam going forward. The government announced in July that it has set a target for Ho Chi Minh City to host 4 million foreign visitors by 2015, raising the tourism industry's revenues from an expected US$2.1bn in 2010 to US$3.15bn by 2015. We believe the government's tax policies aimed at promoting investment in the tourism sector will continue to provide support for the industry's growth in H210.

Infrastructure Development To Support Construction Industry And Jobs Growth

In a previous report, we highlighted that infrastructure projects that are already initiated, such as the construction of a number of ports, roads and thermal power plants, will continue to provide support for the construction sector in H210 and 2011. We believe growth on this front will help to support demand for building materials such as cement and steel, which Vietnam produces domestically, thus having positive spillover effects. Indeed, looking at the breakdown of industrial production data in July, cement production increased by 27.4% y-o-y, while steel production remained stable at 1.5% y-o-y.

External Demand Weakness Supports Forecast

In line with our view that strong private consumption will drive domestic demand in H210, we expect the trade deficit to widen in 2010. The construction sector's need to import large quantities of materials and capital goods for ongoing infrastructure projects will also keep imports elevated over the coming month. Furthermore, with Vietnam's exports remaining concentrated on the US and EU, the country's trade deficit looks set to widen significantly based on our view of a slowdown in the US and EU in H210 (*see chart*). The widening trade deficit will no doubt be a drag on Vietnam's economic growth in H210. Therefore we are maintaining our real GDP growth forecast for 2010 at 6.0%, slightly lower than the government's target of 6.5%.

Table: Vietnam – Economic Activity

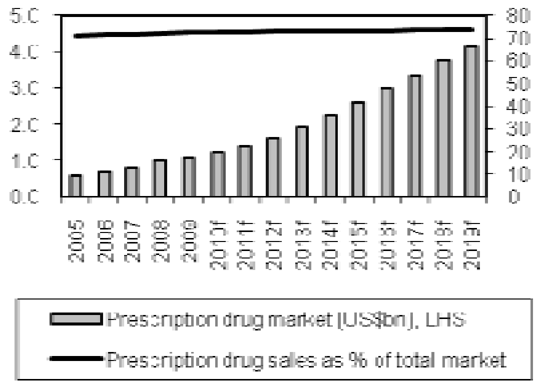
	2005	2006	2007	2008	2009	2010f	2011f	2012f	2013f	2014f
Nominal GDP, VNDbn [2]	839,211	974,266	1,144,015	1,478,695	1,645,481	1,869,503	2,103,348	2,344,536	2,625,878	2,926,497
Nominal GDP, US$bn [2]	52.9	60.9	71.1	89.8	92.4	95.9	107.9	117.2	131.3	146.3
Real GDP growth, % change y-o-y [2]	8.4	8.2	8.5	6.2	5.3	6.0	5.5	6.0	6.8	6.9
GDP per capita, US$ [2]	637	724	835	1,042	1,058	1,085	1,208	1,300	1,442	1,591
Population, mn [3]	83.1	84.1	85.2	86.2	87.3	88.4	89.3	90.2	91.1	92.0
Industrial production index, % y-o-y, ave [1,4]	17.7	16.8	16.7	14.6	7.6	10.0	12.0	14.0	14.0	14.0
Unemployment, % of labour force, eop [4]	5.3	4.8	4.6	5.0	5.5	5.5	5.0	4.5	4.0	4.0

Notes: [e] BMI estimates. [f] BMI forecasts. [1] at 1994 prices; Sources: [2] IMF (General Statistics Office). [3] World Bank/BMI calculation/BMI; [4] General Statistics Office.

Prescription Drug Market Forecast

Prescription Drug Market Forecast

2005-2019



f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI. For data, see Forecast Tables section below.

The market figures for prescription and non-prescription sectors are blurred by a lack of any proper distinction between the two. Nevertheless, the growth of the prescription medicines market will outpace that of the OTCs, mainly due to the influx of expensive patented products from abroad and increased demand for sophisticated drugs. Additionally, tighter regulations in the pharmaceuticals sector as a whole are likely to lead to the introduction of stricter dispensing guidelines with the Good Pharmacy Practice recommendations coming into force in 2011.

By 2019, we forecast that prescription medicines will be worth over US$4bn at consumer prices, posting a CAGR of 13.0% in local currency terms (and largely in line with the wider pharmaceutical market). In percentage terms, prescription drugs will account for 74% of the total market, only a slight rise from 72.6% in 2009, driven by expanded access to formal healthcare in rural areas, although the recent health insurance changes will have a detrimental effect on access to treatment in the shorter term at least. The relaxation of the drug price freeze will also have an effect on the market, although some customers may no longer be able to afford prescription medicines.

In H109, many prescription drugs reported significant prices rises. In June, **Zeullig Pharma** announced that it would increase the prices of 10 imported medicines. Meanwhile, Belgium-based drug firm **Solvay** followed suit, raising prices by 8-9% for a number of medicines. **Fournier Group Vietnam** – the Vietnamese unit of French drug firm **Fournier** – increased the prices for some of its cardiovascular drugs and antibiotics. For example, the price of *Klacid* – which treats bacterial infections of the respiratory tract – was increased by 10%.

Manufacturers have attributed the rises to foreign currency increases. However, there are accusations that foreign drugmakers collude with local distributors to keep prices high, while some distributors may pay doctors commissions to ensure they prescribe their drugs. Research published in September 2009 in the Southern Med Review reports that medicine prices in Vietnam are high, both for patented and generic drugs, and that regulation is required to control mark-ups. One other method of keeping prices to reasonable levels is through controlling the volume of drugs on the market.

Hospitals remain the primary source of healthcare, which will continue to boost the demand for prescription pharmaceuticals, especially given the government's programme to modernise and expand the number of hospitals in the country. Additionally, the government's longer term programme to privatise key secondary institutions is likely to have a beneficial effect on the market values. At present, only around 19-20% of all hospital drugs are sourced locally, according to official figures. In Q409, the DAV announced that domestic pharmaceutical companies aim to meet 60% of the market's demand by 2010.

Demographic and environmental trends will be some of the key drivers of the prescription market in Vietnam. Respiratory problems, including asthma and COPD, are on the rise, partly due to the high prevalence of smoking and partly due to poor air quality. Manufacturers of drugs in the respiratory therapeutic category will, therefore, have considerable room for expansion over the coming years. Similarly, increased incidence of cancer, diabetes and hypertension among the Vietnamese population will provide scope for drugmakers to expand.

One therapeutic area that has strong potential is oncology. In Vietnam, around 150,000 people per year contract cancer and mortality rates are very high, standing at around 50%. By 2010, cases are expected to reach 200,000 per year, with 100,000 fatalities. The most common cancers are lung, liver and stomach. Part of the problem is high smoking levels, with Vietnam having the highest prevalence rates among men in the world. Diabetes is another therapeutic area with potential for growth. Lifestyle changes influenced by the West mean the incidence of the disease has increased considerably, especially among young people, and many sufferers do not realise they suffer from diabetes until complications occur.

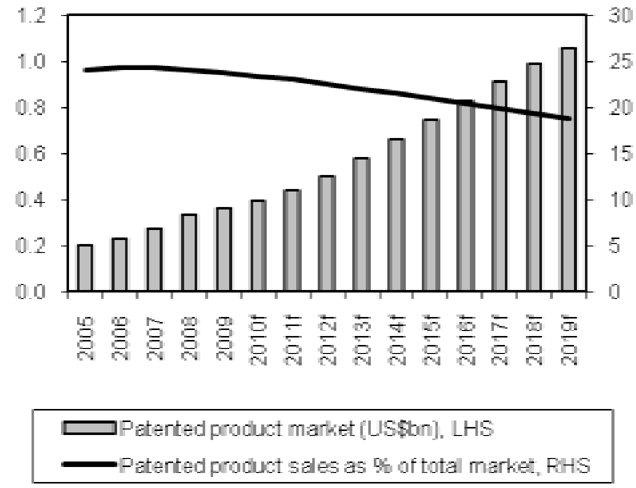
Moreover, prescribing patterns seem to be influenced by economic considerations, with pharmaceutical companies paying commissions to doctors who promote certain types of products. Recently, HCMC authorities conducted an investigation into the practice, with findings revealing that a number of doctors were in receipt of over VND500mn (US$26,300) each month. The investigators looked intothe prescribing of **Schering-Plough**'s hepatitis drugs – namely *PegIntron* (interferon Alfa-2b), in 50mcg and 80 mcg dosages, with commissions reportedly being in the region of 10% to 30% of the drugs' cost. Joint monthly revenues for the two drugs are reportedly in excess of VND6bn (US$315,000). Local industry representatives claim that large firms can therefore gain an upper hand as they can afford to pay higher commissions, although doctors' relationship with companies also have a role to play in their decisions. Moreover, despite the existence of hospital medicine councils – which are in charge of making prescribing suggestions and supervising prescribing patterns – many doctors can still suggest different types of medicines to their patients. Patients have also stated that commissions are widespread.

Patented Drug Market Forecast

Value development of the patented drugs segment – and consequently the overall prescription segment – will be hampered by the government's plan to contain pharmaceutical costs through restrictions on advertising and the request that hospitals and medical professionals give preference to domestically-produced medicines, as well as the fact that most of the insured now incur some sort of co-payment. Moreover, a number of leading drugs in terms of value sales are due to come off patent in the coming years.

Patented Product Market Forecast

2005-2019



f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI. For data, see Forecast Tables section below.

Nevertheless, the price increase evident since the start of the year may take the value of the prescription and patented markets beyond current estimates. By 2019, we expect the patented drug sector to reach US1.06bn (up from US$366mn in 2009), but representing a lower percentage (18.8% versus 23.8%) of the total market. Over the 2009-2019 period, patented drugs are expected to post a CAGR of 12.79%, in line with the wider market development.

The gradual reduction of tariffs on pharmaceutical products as part of WTO accession will have a positive effect on the patented drug market, as it will encourage import penetration, helping the sector to develop. The added competition should also force the country's state-owned drug firms to improve efficiency.

However, counterfeit drugs will continue to have a detrimental impact on patented drug sales over the forecast period, despite the government's efforts to the contrary. The global economic slowdown in 2009 has fuelled demand for cheaper drugs, and counterfeit medicines are prospering as a result. Supported by the WHO, police, customs and regulatory officials in the country have begun to co-ordinate their activities, although little can be done in terms of enforcement without greater commitment to IP rights as well as more stringent penalties for violators.

Corruption also has a role to play in drug prices, with commissions paid to pharmacists and doctors by sales representatives and distributors to persuade them to prescribe their product to push up the retail price of medicines. Such practices can only damage the industry as a whole, putting many patented products beyond the budgets of the majority of the Vietnamese population.

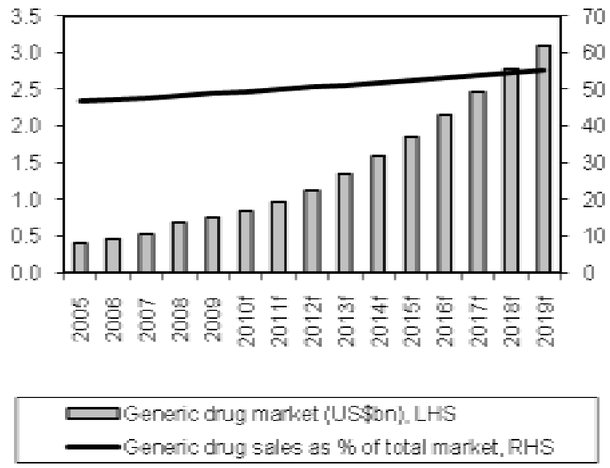
Speciality medicines such as central nervous system (CNS) and cardiovascular drugs are expected to be the key growth area, while an increase in cancer, diabetes and hypertension will also generate product demand. However, the basic nature of consumption is illustrated by the continued strong showing of antibiotics and alimentary/metabolism products. The need to contain the HIV/AIDS epidemic and related health problems will boost the antiretroviral sector, while the prevention of swine flu and similar diseases continues to drive the growth of anti-flu drugs.

Generic Drug Market Forecast

Although the overall generic drug market is sizeable, standing at around US$751mn in 2009, most products are actually low-quality copies of unproven bioequivalence. The Ministry of Health is stepping up its efforts to address the problem by enlisting the help of medical professionals in the country, in a bid to improve generic usage and the utilisation of domestically-made products in hospitals and clinics. Additionally, entrance into the WTO should result in dubious copy products gradually being purged from the market, as the country brings its IP regime in line with TRIPS. However, given the notoriously poor standard of IP enforcement in the country, these illicit products will continue to have a sizeable influence in the near future.

Generic Drug Market Forecast

2005-2019



f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI. For data, see Forecast Tables section below.

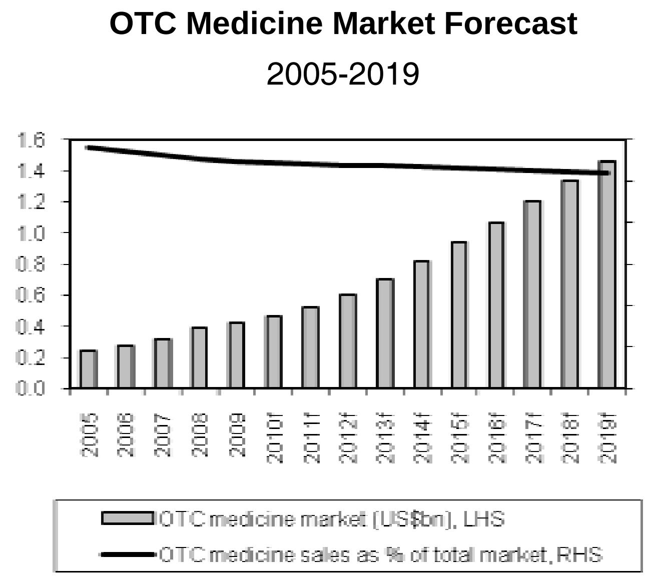
Additionally, in June 2010, the Vietnam health ministry was scheduled to hold a workshop on 'Vietnamese use Vietnam-made medicine' to promote the use of domestically-produced medicine, reported Viet Nam News citing Tin Tuc. The ministry released guidelines during April 2010 under which all hospitals across the country were asked to prescribe domestic pharmaceuticals. The ministry will instruct Health Departments to monitor and punish pharmaceutical representatives who push doctors to prescribe medicine from their companies.

Overall, generics are likely to continue to dominate the market in volume terms and we forecast the value of the sector should reach US$3.09bn in 2019, accounting for over 55% of the total market (up from the calculated 48.8% in 2009). Vietnam offers strong prospects for generic market growth due to low consumer purchasing power. However, a number of obstacles still remain, such as a widespread belief that generics are inferior to patented products and that in many cases, they are not that much cheaper than patented counterparts. They are also not as widely available as they could be.

In the meantime, the legalisation of parallel imports, which must be cheaper than locally produced drugs, will increase the pressure on companies to compete on price and should also have the impact of breaking up distributor-led monopolies. Similarly, the policy of publishing drug prices on the DAV's website should also instil further competition into the market and will allow hospitals to make more informed purchasing decisions.

OTC Medicine Market Forecast

Despite the blurred distinction between prescription and non-prescription products, OTC healthcare has been achieving relatively robust value growth in the last few years. OTC sales value is likely to reach US$1.46bn in 2019, up from US$421mn in 2009. The sector's share of the total market as a percentage is expected to fall to 26.0% by 2019, from 27.4% in 2009, due to the rising value of the prescription sector and particularly more expensive imports, but also due to stricter dispensing controls.



f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI. For data, see Forecast Tables section below.

Key drivers of growth will be mostly limited to volume, as consumers become better educated and more confident about self-medication. OTC drugs will also benefit as consumers spending power increases, and in the case of the low income population, they may well turn to OTCs and traditional medicines to seek cheaper alternatives to patented drugs.

Another factor affecting the growth of the self-prescription market is that manufacturers import the bulk of raw materials and APIs has disadvantaged segments such as vitamins and analgesics, especially given the local currency depreciation compared to key sources markets, China, Japan and South Korea. In H109, the price of analgesic *Salonpas* – which is used to treat neck and back pain – was increased twice. Meanwhile, the prices of some 20 eyewashes produced by US-based **Alcon** rose by 8%. Additionally, a key trend over the medium term will be tightened regulations, with an enforced ban on the sale of prescription drugs without the consent of doctors likely in the coming years. Under GPP regulations, it is inevitable that part of the cost of modernising pharmacy facilities will be passed on to consumers.

Nevertheless, despite these setbacks, vitamins and dietary supplements are one of the fastest growing segments of OTC healthcare in Vietnam, with analgesics remaining the best sellers. Single vitamin supplements have become common household products in the country, while high generic penetration in this area has helped to make the products affordable to the majority of consumers. In fact, according to survey conducted by market research firm **AC Nielsen** in partnership with the Association of the European Self-Medication Industry (AESGP), consumers in Vietnam (at 45% of the total) are among the most likely to take an OTC drug for a minor ailment as soon as symptoms are present.

Market research also established that it is common for people in Vietnam to ask the advice of unlicensed pharmacists or friends when choosing a medicine, rather than seeing a doctor and receiving a prescription. Concern here surrounds when pharmacists offer customers prescription-only medicines over the counter, which in the case of drugs such as antibiotics, can lead to resistance if they are overused. Like many other Asian countries, branding and advertising is becoming increasingly prevalent in Vietnam's OTC sector.

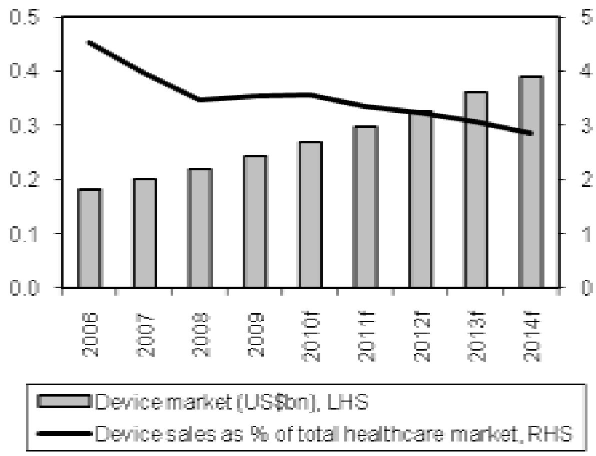
Meanwhile, **BMI** believes that there is great potential for Vietnam's traditional medicines (TM) sector as long as the government can attract investment in extraction technologies, reduce Vietnam's reliance on importing raw materials and in turn bring down the retail prices of such products. With over 4,000 medicinal herbs and plants in the country, there are could be myriad applications in the consumer health sector.

However, the government will also have to improve regulations in the sector. It is estimated that up to 70% of traditional medicines are fakes imported into the country while many Chinese medicine clinics investigated by government inspectors during H209 were found to stock poorly labelled goods and many practitioners lacked professional training. Presently, the MoH only allows around 15 herbal brands to be sold in Vietnam, although the market is saturated with unlicensed offerings. **BMI** believes that in the coming years, the MoH will increase its reliance on TM and the recent cultivation of *Thuong Hoang*, a mushroom that has been used traditionally to treat cancer, is a positive step in the right direction.

Medical Device Market Forecast

Despite lagging behind the pharmaceutical industry, Vietnam's US$243mn medical device sector is currently experiencing rapid growth, as overall demand for healthcare increases. Imported goods dominate, but the government is looking to boost domestic capacity over the next few years. **BMI** sees many opportunities – particularly when distribution channels will be fully opened to foreign players – and we are forecasting 9.87% y-o-y growth in US dollar terms (but just 3.46% in local currency) through to 2014, when the value of the sector will reach US$390mn.

Medical Device Market Forecast
2005-2014



f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI. For data, see Forecast Tables section below.

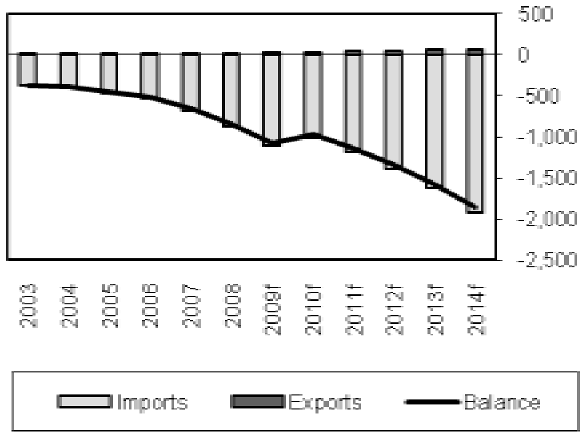
There are four main classes of medical device purchasers in Vietnam, the largest of which is government-funded hospitals, and these are increasingly buying expensive foreign systems that can serve a large number of patients. Foreign-owned hospitals and clinics are also a significant destination; however, these entities usually purchase supplies from their sponsoring country. Local private hospitals will exhibit the strongest growth, while research and educational institutions will also account for some demand.

Pharmaceutical Trade Forecast

BMI is forecasting double-digit growth for the import sector, as measured in US dollars – by 2014 we expect the value of medicines brought into the country to reach US$1.92bn, or 58% of the total drug market, marginally higher than the 56% share in 2009. In Q110, imports rose by 23% y-o-y, to US$281mn, according to the national statistics office. For the whole of 2009, imports topped US$1bn, some 27% higher than in 2008.

Pharmaceutical Trade Forecast (US$mn)

2005-2014



f = forecast. Source: United Nations Comtrade Database, DESA/UNSD, BMI. Note: HS2002 - 3004 classification. For data, see Forecast Tables section below.

Exports are also expected to post rapid growth, partly thanks to increasing compliance with international manufacturing standards. From a low base of US$28.8mn in 2009, exports are forecast to reach US$66.2mn in 2014, equating to a CAGR of 18%.

According to the Health Examination and Treatment Management Department, which is part of the MoH, Vietnam is continuing its love-affair with imported drugs, with 63.3% of medicine expenditure going on foreign-made drugs in value-terms. In H109, Vietnam spent US$596mn on drug imports. In December 2009 alone, according to a VietNamNet Bridge article, the country imported US$55.2mn worth of pharmaceuticals, down by 44% on November. In 2009, imports topped US$1.1bn, down by 6.9% y-o-y.

Local production accounts for around half of Vietnam's pharmaceutical consumption but only a tiny fraction of this is currently exported. Previously, according to the International Trade Centre, the country shipped abroad medicines worth only US$15.2mn in 2006. The government aims to increase its drug exports, deputy Health Minister Cao Minh Quang announced in November 2009 that – given Vietnam has recently become self-sufficient in terms of measles vaccine production – the next step is to look towards exporting these vaccines.

We expect increased harmonisation with international GMP standards to provide a major boost for exports by those manufacturers with sufficient capital to make the necessary investments. A further positive for the domestic industry is reports that the government is looking to increase FDI by multinationals.

Like firms from regional neighbours Bangladesh and Pakistan, Vietnamese drug makers are targeting markets with low barriers to entry. South East Asian countries such as Laos and Cambodia are prime targets, while African states are growing in popularity. Meanwhile, the Middle East and the Commonwealth of Independent States (CIS) have both been touted as potential future customers for Vietnamese-made pharmaceuticals.

The above strategy is exemplified by **Mekophar Chemical Joint-Stock Company**. Building on an existing distribution relationship, the drugmaker has entered into an agreement with Nigeria's **Neros Pharmaceuticals** to build a manufacturing plant in Africa. Mekophar also exports medicines to the Democratic Republic of the Congo, Myanmar and Russia.

In the meantime, as a greater proportion of Vietnam's vast population of around 88mn become consumers of pharmaceuticals, various state agencies are looking for local producers or Vietnamese subsidiaries of foreign firms to increase output rather than relying on imports. For example, the health ministry is facilitating this goal by improving the legal framework for setting up medicine manufacturing businesses. Indeed, by October 2007 Vietnam had licensed 370 foreign companies to make pharmaceuticals – a significant increase on 2006. Along these lines, in Q409, DAV announced that the country's pharmaceutical industry aims to meet 60% of the market's demand by 2010.

While progress has been made, much more needs to be done to maintain and improve the operating environment for such goals to be realised. According to the Vietnam Pharmaceutical Researchers' Association, it is imperative that Vietnam continues to observe intellectual property rights as defined by the WTO. In addition, the organisation is asking that the government engage in more dialogue with the industry, to ensure the effective implementation of policies.

Other Healthcare Data Forecasts

The vast majority of hospitals in Vietnam are large state-owned facilities that are frequently overcrowded and generally offer only basic services. There are a growing number of private facilities that offer advanced services but many local people on high incomes still travel abroad for healthcare. The most common destinations are Singapore, Thailand and Hong Kong. It is estimated that approximately 30,000 Vietnamese citizens leave the country for healthcare treatment each year, at a reported cost of over US$1mn.

By May 2010, local press reported that the number of private facilities topped 30,000, including over 100 private hospitals and over 5,400 beds, quoting a Ministry of Health official. To date, some 70 private healthcare projects have also received foreign investment. Similarly, foreign investors have poured capital into the pharmaceutical industry (of over US$300mn), although none of those projects involve pharmaceutical manufacturing.

According to the General Statistics Office (GSO) of Vietnam, there were a total of 956 hospitals in the South East Asian country during 2007, up from 842 in 2003. In 2008, the GSO statistics put the number of state-run hospitals at 974, which equates to a hospital:population ratio of 1:88,090, which is low compared with other countries at a similar level of economic development. By 2014, **BMI** expects Vietnam to have 1,177 government-controlled hospitals.

It was revealed in September 2008 that central hospitals in Vietnam are facing a shortage of beds to the extent that in some hospitals a single bed is being shared by two or sometimes even three patients. GSO statistics show that there were just 1.75 hospital beds per 1,000 population in Vietnam during 2008. Although this is up from 1.52 in 2004, it is still low. In comparison, the figures for Japan, South Korea and Thailand stand at 14.0, 8.6 and 2.2, respectively. Vietnam's Ministry of Health says that demand for beds in provincial hospitals is 115%, while in major cities it is 250%.

According to the Director of Viet Duc Hospital, Nguyen Tien Quyet, the main reason behind such overloading at central hospitals is the low standard of health staff training at a community level, due to which a large number of patients are transferred to these central hospitals. Each year the health sector needs over 36,000 new health workers but the training system can only provide 24,000, according to the health ministry in June 2008.

A year later, in November 2009, overcrowding in hospitals returned to the headlines with Prime Minister Nguyen Tan Dung meeting with other ministers to address the problem. Health Minister Hguyen Quoc Triey announced that Vietnam has only 18 hospital beds per 10,000 citizens and the government wants to raise this ratio to 25 beds, in line with global averages. The government views the creation of day centres and increasing the number of family practitioners as a solution to this overcrowding.

Key Risks to BMI's Forecast Scenario

Vietnam has been affected in recent months by negative macroeconomic factors, which could have a knock-on effect on the development of the healthcare sector and on pharmaceutical expenditure**.** Vietnam, like many of Asia's export-focused manufacturing economies, is vulnerable to a downturn in Western markets where much of its output is consumed. This has a knock-on effect on employment and disposable income in Vietnam, reducing the potential for drug market expenditure growth. However, the situation seemed to have improved somewhat in early 2010, as the government's economic stimulus package begins to take hold and the economic climate improves.

While economic conditions may put private sector FDI projects in jeopardy, the trend for government economic stimulus packages has the potential to boost the pharmaceutical sector if government funds are invested in healthcare infrastructure. However, a deterioration in economic conditions in key Western export destinations could have a damaging effect on investment in Vietnam's domestic manufacturing sector. Similarly, we expect a double-dip scenario, with real GDP expansion down to 4.4% in 2010, after a forceful economic recovery in the three last quarters of 2009, as fiscal and monetary policy needs to be tightened sharply in order to rein in the widening trade deficit and halt inflationary pressures.

The Ministry of Health plans to build a new antibiotics plant, introduce incentives to attract foreign investment and open GMP-compliant facilities courtesy of state-owned producer Vinapharm, which should serve to boost market development. However, the implementation of this programme remains dependent on financial resources, with the economy vulnerable to regional and global fluctuations as well as political will. Similarly, the government may accelerate the implementation of its pricing restrictions as well as possibly reverse the price increases witnessed to date, which would threaten current forecasts.

The current trend for regional harmonisation provides the ideal background for progress of Vietnam's healthcare and pharmaceutical industries. However, whether such reform can be carried out successfully is a matter for much conjecture given the disorganised state of the sector. Nevertheless, Vietnam's WTO membership since early 2007 is expected to stimulate other similar deals in the region.

Competitive Landscape

Pharmaceutical Industry

According to the Viet Nam Pharmaceutical Companies Association, 30% of some 1,000 pharmaceutical firms operating in the country are foreign-funded. Imports account for nearly 70% of the pharmaceutical market by value, while just over a fifth of medicines made in the South East Asian country are produced by foreign firms. Therefore, the output value of the indigenous pharmaceutical industry is approximately US$270mn, given that exports amounted to US$30mn in 2008, according to the International Trade Centre (ITC).

Several multinational pharmaceutical companies entered Vietnam's market by way of a joint venture. **Sanofi-Aventis Vietnam** was formed by local company **Central Pharmaceutical Manufacturing Enterprise** and **Sanofi-Synthélabo** of France (now part of **Sanofi-Aventis**). **Medical Export-Import Company** (Vietnam) and **Rhone-Poulenc** (now part of Sanofi-Aventis) of France created **Vinaspecia**, while German **Stada** and **Khuong Duy Pharmaceutical Company** work together in the form of Stada Vietnam. Stada Vietnam reported that sales increased by 26% to EUR6.7mn during 9M09 compared to 9M08 and a sign of the market's potential.

Other important foreign players include **Bristol-Myers Squibb** (US), GSK (UK) and **Roche** (Switzerland) while **Novartis**, **Baxter** and **AstraZeneca** are actively looking to increase their presence in Vietnam. AstraZeneca's CEO, David Brennan, cited Vietnam and Indonesia as strong potential areas for growth in November 2009, as, while their businesses are smaller, there are considerable opportunities for expansion in these emerging markets. Both Baxter and GSK Vietnam Company, meanwhile, applied for a licence to import and distribute swine flu vaccines in Q409.

Local companies were required to meet GMP standards by the end of 2006, with a transition period until the end of 2010. GMP inspections are carried out by Vietnam's Department of Pharmaceutical Management (DPM) in compliance with the WHO standards, with those conforming to the ASEAN GMP standards needing to apply for WHO certification upon the expiry of the original permit. Of the 180 pharmaceutical factories operating in December 2007, just 75 met GMP standards. In Q409, *Thanh Nien News* reported that the five largest domestic pharmaceutical companies all comply with GMP, GLP and GSP standards, a sign that national drugmakers are bringing their facilities in line with international quality requirements.

Most domestic manufacturers are characterised by limited R&D facilities, deficient financial capacity and backward management, and meet approximately 40% of domestic demand in the form of predominately basic treatments. Keen to rectify this situation, DAV announced in Q409 that it aims to improve production to be able to meet 60% of domestic market demand by 2010. Only a handful of local

Vietnamese pharmaceutical companies are technically and financially capable of competing with foreign pharmaceutical manufacturers, with the local industry expected to consolidate in the face of rising competition and the need to comply with international standards. Stronger local players are increasingly targeting foreign markets in order to offset the increased cost of production. The government also aims to develop the country's biotechnology sector.

A survey of over 200 investors published by **Grant Thornton Vietnam** consultants in November 2009 reveals that the country is viewed as an attractive place given the prospects of its heath, pharmaceutical and retail sectors over the next 12 months. Some 59% of those questioned viewed Vietnam's market in a positive light, a considerable improvement on a similar survey conducted in April 2009, when just 36% of investors interviewed described Vietnam as an attractive investment option. The study found that Vietnam's infrastructures were considered to be the greatest barrier to investment, however.

Previously, in February 2009, Claus J Jepson, a representative of GlaxoSmithKline, said foreign companies were facing the same problems they were seeing in 2008. It is his opinion that firms from overseas will collaborate more with domestic players, thereby leveraging each other's specialities to grow mutual sales. An example of this is a collaboration between **Danapha-Nanosoma Pharmaceutical** and US-partner **Affordable Quality Pharmaceuticals** (AQP).

Domestic Pharmaceutical Sector

Vietnam's drug industry comprises around 165 producers, primarily with poor and outdated facilities. Despite a drive towards modernisation in recent years, only around a third of drugmakers in the country are certified as GMP-compliant. This, coupled with competition from foreign firms, is likely to drive consolidation of the local industry. Although able to offer significant cost advantages, locally produced drugs are already losing market share to imported equivalents that are perceived to be of higher quality. Nevertheless, Vietnam's top five pharmaceutical companies all hold GMP, GSP and GLP certificates, as proof of their commitment to bringing their production facilities in line with international quality standards.

According to reports in *Thanh Nien News*, local drug production accounted for around 50% of the country's pharmaceutical sales in 2008, led by local manufacturer **Vietnam Pharmaceutical Corporation** (Vinapharm). State-owned Vinapharm represents all state-owned companies that have a licence to manufacture pharmaceuticals domestically, which mainly supply the mid-segment of the market. The government is currently planning to have local output meet 70% of domestic demand by 2015, with Vinapharm to restructure in the future.

Just one producer, **Mekophar**, is responsible for much of the locally-manufactured antibiotic output. In November 2009, the company revealed it had received approval for listing 9.21mn shares on the Ho Chi Minh Stock Exchange. **BMI** believes this listing of shares could be a sign that the company plans to raise funds to finance new production facilities.

Another major player is **Hau Giang Joint-Stock Co**, which posted a net profit of VND93.5bn (US$5.46mn) in H109, representing an increase of 36%. The largest publicly-traded drugmaker, Hau Giang, reported a 14% increase in sales revenue for the first eight months of 2009 compared to the same period in 2008.

One local player already improving its facilities in Vietnam is **Danapha-Nanosoma Pharmaceutical**. In late August 2009, the drugmaker began construction of a factory in collaboration with AQP, its US-based partner. AQP is providing the technology and equipment for the plant as part of the investment and technological transfer co-operation agreement. The US$3.2mn plant, which is expected to be completed by Q310, will develop drugs for treating cancer, diabetes, hypertension and heart disease. Danapha holds 51% of the joint venture; AQP a 24% share and Vinapharm 25%. Constructing a US$3.2mn plant to develop drugs for cancer, diabetes, hypertension and heart disease, AQP is providing the technology and equipment for the plant as part of the investment and technological transfer co-operation agreement. Danapha holds 51% of the joint venture; AQP a 24% share and Vinapharm 25%.

Meanwhile, FDI is playing an increasing, but still marginal, role in improving standards in Vietnam's domestic pharmaceutical manufacturing. By the end of 2008, the Ministry of Health had licensed a cumulative total of 37 FDI projects in the pharmaceutical sector worth US$282.6mn. Having said this, only two thirds of the projects have actually been initiated and the pace of investment appears to have slowed, with only one of these licences being granted in 2008. The limited impact of FDI to date lends weight to the Ministry of Health's view that foreign companies would prefer to seek out local suppliers than construct their own pharmaceutical plant in the country, despite a relaxation of rules on foreign company activities in recent years.

However, according to the DAV, FDI has trailed off in the past two years due to the global economic downturn. Although Vietnam attracted a total of US$60bn in foreign investment in 2008, none of it was earmarked for the pharmaceutical sector. In order to accelerate investment, the government is now considering creating a specialist agency to promote the drug sector to potential investors. In 2008, Vietnam spent US$1bn on drug imports, while it only spent US$164mn on raw materials, indicating the paucity of local drug production. What is more, the country's drug export sector was minimal. This is partly because despite having over 300 local drug producers, only 89 meet GMP standards.

In recent years, the Vietnamese government has done much to try to improve the competitiveness of the domestic drug sector. A new pharmaceutical sector development plan submitted in December 2005 envisaged a US$102mn investment until 2010, primarily sourced from bank loans, foreign investors and the local pharmaceuticals sector. Some US$90mn will be used on the building of five production plants in the country, each having a capacity of 2,200 tonnes. One of the plants will produce raw materials for antibiotics, aiming to meet around 40-45% of demand in this area. Vietnam currently imports 90% of its drug raw materials at an annual cost of approximately US$480mn. The remainder will be allocated for R&D and technology transfer activities – crucial for improving manufacturing capabilities – with the government giving priority to companies that serve the national market.

As part of the previous scheme for drug sector development, the Ministry of Health also plans to set up three new state-owned manufacturing facilities in the northern, southern and central regions of the country. As well as supplying local hospitals, the plants will work to 'regulate' the local market. In addition, the government also intends to build two new medical research centres, in Hanoi and Ho Chi Minh City, at an estimated total cost of VND50bn (US$3.1mn). Other proposals include the promotion of traditional medicines, which officials believe will make up 30% of the local market by 2015.

Meanwhile, in July 2009, it was announced that Vietnam would produce Swiss drugmaker **Roche**'s anti-influenza drug *Tamiflu (oseltamivir)*, in response to the threat of swine flu, which is spreading rapidly across the country. In October 2009, the government revealed that Vietnam currently has 354,000 doses of the drugs but has enough materials to produce further doses. **The Institute for Vaccines and Medical Biologicals**, **Vabiotech** and the **Pasteur Institute** are all researching possible vaccines for Vietnam, the latter revealed in November 2009 that it has produced a vaccine that is currently in preclinical trials.

In early 2006, Vietnam became the first country to produce *Tamiflu* under licence. Roche selected Vietnamese manufacturers to produce the generic version of the anti-bird flu drug and also supplied the country with 25mn capsules of *Tamiflu*, enough to treat 2.5mn people. Prior to the signing of this agreement, the country had only 600,000 capsules of *Tamiflu*, which had been donated by Taiwan.

The Hanoi University of Pharmacy is to produce Russia-discovered *Fludon H1* (arbidol) in 2010 to According to market research firm **AIPM-Remedium**, arbidol – which is manufactured by **Masterlek** (owned by **Pharmstandard**) – is the best-selling pharmacy medicine in Russia, posting sales of US$64.4mn in H109. The antiviral is also popular in Commonwealth of Independent States (CIS) countries and China. However, it is rarely used in Western Europe or the US, even though one study (non-Western based) has shown arbidol to be as effective as **Roche**'s *Tamiflu* (oseltamivir).

Once manufacturing of arbidol in Vietnam has been scaled up, the medicine is expected to be more than four times cheaper than *Tamiflu*, the first-line treatment for swine flu. Nevertheless, the DVA has ordered 1mn paediatric units of *Tamiflu* 30mg. In fact, throughout the swine flu outbreak in Vietnam, doctors have been splitting *Tamiflu* 75mg tablets to treat children. The government agency has also ordered 10,000 packets of **GSK**'s *Relenza* (zanamivir) for *Tamiflu*-resistant patients.

Foreign Pharmaceutical Sector

Since WTO accession, the number of foreign pharmaceutical firms operating in Vietnam has increased, although the local pharmaceutical sector is still dependant on imported materials. The government is addressing this issue by looking to give investment incentives – such as preferential rent prices and income taxes – to foreign pharmaceutical producers that use local materials in drug production.

According to the the Viet Nam Pharmaceutical Companies Association, production by projects backed by foreign investment accounted for 28% of the total value of the country's manufactured medicines in 2009. In the same year, of the 39 projects in the pharmaceutical industry that were funded by foreign sources, 23 were engaged in the production of medicines.

According to the Head of the Vietnam Pharmaceutical Management Bureau, the number of foreign firms rose by 58 during 2007, bringing the total number to 370. Most foreign firms operating in Vietnam are small or medium-sized enterprises and predominantly Asian. India tops the list with 81 companies, followed by South Korea and China. However, in November 2009 Indian pharmaceutical company **Ranbaxy** announced it had divested its Vietnam business, as part of a cost cutting exercise.

In June 2008, aiming to avoid the pitfalls of limited opportunities in its local market, Malaysian drug maker **YSP Southeast Asia Holdings** revealed that it will spend up to US$12mn on a manufacturing plant in Vietnam. In YSP's Q309 results, the company reiterated its expansion plans, citing Vietnam as a target market. When fully operational, the plant is expected to contribute 10% of YSP's total revenue. YSP's product portfolio of tablets, capsules, creams and powder is expected to do well in Vietnam, especially branded offerings, which are already proving very popular in Vietnam.

In October 2009, Belarusian generics company **Belmedpreparaty** announced that it had begun exporting medicines to Vietnam and Syria. Vietnam is regarded as a particularly attractive market to the drugmaker, because of its potential for growth.

Recent Pharmaceutical Industry News

- In August 2010, according to Deputy Minister of Health Cao Minh Quang, the Vietnamese government was looking to improve its pharmaceutical industry. He added that the country would meet domestic pharmaceutical demand as well as place a lower reliance on imports by creating a more favourable environment for the local pharmaceutical industry. Quang further said that the government has mapped a general development project for the drug industry for 2015-2020 to raise the number of foreign drug traders and producers in the country and enhance domestic drug output and quality. The authorities are reportedly looking for investors in eight projects in the fields of medicines, including those with **Mekophar**, **Vipaco**, **Vabiotech** and **Ampharco USA**, as well as one in the area of medical devices production. By 2020, the government is looking to meet 80% of domestic demand in volume terms through local production, up from around 50% currently.

- In August 2010, Vietnam Business News reported that domestic firm **Domesco Medical Import Export Co** (DMC) inaugurated the first phase of its VND173bn investment into a high technology plant. The 111,000 square metre facility will manufacture materials, non-betalactam as well as betalactam products, and the ‘all-purpose’ articles. The development indicates an increased interest in the local pharmaceutical industry, with companies targeting longer-term growth in demand.

- In the same month, **Vien Dong Pharmaceutical JSC** posted H110 net revenue of VND686.3bn, representing a 63.6% increase over the same period of the previous year. Gross profit topped VND179bn, higher by 150% in relation to H109, with operating profit rising to VND116.3bn, up by almost 220% year-on-year (y-o-y). For the whole of 2010, the company is targeting VND1,200bn in revenue.

- In July 2010, **DKSH Viet Nam**, a Vietnam-based subsidiary of Swiss trading group **DKSH**, was carrying out some branding changes and constructing a US$12mn distribution centre in Ha Noi as part of an expansion drive in the country, reported Viet Nam News. DKSH President & CEO Joerg Wolle stated that the 12,000 m^2 facility, scheduled to be completed during mid-2011, would allow the company to enhance its logistics service capabilities and offerings for healthcare and consumer goods.

- In the same month, the **Vietnam Chemical Pharmaceutical Joint Stock Company** (VCP) opened a new manufacturing plant in the northern province of Bac Ninh. The US$10mn plant, which meets three WHO standards – Good Manufacturing Practice (GMP); Good Storage Practices (GSP); and Good Laboratory Practices (GLP) – has the capacity to produce 500 tonnes of pharmaceuticals products per year. VCP Chairman Ngo Chi Dung has stated that the plant will limit material imports and generate new jobs for local workers.

- In June 2010, the Vietnam health ministry was scheduled to hold a workshop on 'Vietnamese use Vietnam-made medicine' to promote the use of domestically-produced medicine, reported Viet Nam News citing Tin Tuc. The ministry released guidelines during April 2010, under which all hospitals across the country were asked to prescribe domestic pharmaceuticals. The ministry will instruct Health Departments to monitor and punish pharmaceutical representatives who push doctors to prescribe medicine from their companies.

- In May 2010, Vietnam's Ministry of Health suspended the sale of a popular children's medicines, after a voluntary recall by US-based **Johnson & Johnson**'s (J&J) subsidiary **McNeil Consumer Healthcare** in the US. The company has recalled infant liquid medicines made in the US, which included *Tylenol* (acetaminophen), *Motrin* (ibuprofen), *Zyrtec* (cetirizine) and *Benadryl* (diphenhydramine), owing to a high concentration of active ingredients in some of the products.

- In April 2010, according to VietNamNet Bridge, small pharmaceutical companies in Vietnam were facing problems due to the high level of commission paid to doctors by bigger pharmaceutical companies for promoting their medicines. A pharmaceutical firm director has complained about the practice, saying that small firms cannot afford to pay similar commission to doctors without increasing the prices of their medicines. In fact, three doctors at the Ho Chi Minh City University Medical Center have recently been suspended for allegedly receiving kickbacks to prescribe *PEG-Intron* (pegylated interferon alfa-2b), which manufactured by US-based **Schering-Plough** and not prescribed widely due to its high cost. According to local newspaper Sài Gòn Giải Phóng, the doctors received up to VND500mn (US$26,000) monthly to prescribe the drug for the treatment of hepatitis B. The Prime Minister of Vietnam has ordered the Ministry of Health to investigate and impose penalties on the pharmaceutical company if necessary.

- In March 2010, Vietnam announced that it would halt imports of monotype vaccines as of July, focusing instead on supplying the vaccines as a five-in-one product. The product will target the treatment of tetanus, diphtheria, whooping cough and haemophilus influenzae type B (Hib) and polio. The move should reportedly improve supplies of the vaccines, which had been problematic in the past, partly due to cost and monopolistic nature of supplies of some monotype vaccines.

Company Profiles

Indigenous Manufacturer Profiles

Vietnam Pharmaceutical Corporation (Vinapharm)

Strengths

- Vietnam's largest state-owned company, which owns all of the state-owned pharmaceutical-producing units.
- In a strong position to benefit from any domestic increases in demand and subsequent government-promoted measures to increase domestic manufacturing, given that most foreign companies have no direct manufacturing presence.
- Wide product portfolio, including consumer health items.

Weaknesses

- The majority of the corporation's state-owned units are small in size.
- Most units facing financial difficulties.
- Need to comply with international standards requiring substantial financial investment.
- Need to import most of raw materials for pharmaceutical production.

Opportunities

- Plans for a major overhaul of the domestic pharmaceutical regulatory environment, with a particular focus on encouraging the domestic manufacture of drugs in order to reduce the country's dependence on imports.
- Government push for self-sufficiency in pharmaceutical production: plans for 60% of medicines to be produced domestically by 2010 should bring benefits.
- Improvement of regulatory climate following the WTO accession to attract foreign investment.
- Relaxation of price freeze to improve product revenues.

Threats

- Complex and discriminatory pricing policy.
- Vietnam being increasingly susceptible to economic fluctuations.
- New health insurance regulations hampering access to pharmaceuticals.
- Domestic production and the trading of pharmaceutical products facing difficulties due to rising prices of pharmaceutical materials and medicines in the world market.

Company Overview

The Vietnam Pharmaceutical Corporation (Vinapharm) is the most prominent local producer of medicines. Vinapharm is a state-owned company and controls a number of centrally owned pharmaceutical manufacturers. These include nine pharmaceutical factories – five in Ho Chi Minh City, three in Hanoi and one in Haiphong – and a number of other medical products companies. Vinapharm's status as a national monopoly supplier gives it a strong market position; in 2003 it claimed a 35% market share, reflecting the degree to which the government controls the sector.

Despite this status, in recent years Vinapharm's performance has floundered as it has suffered from poor marketing and productivity, with production equipment in dire need of modernisation. However, more recent developments suggest that the company is attempting to expand its business portfolio and improve its facilities.

Recent Activities

In 2004, Vinapharm signed a cooperation agreement with the Shanghai Pharmaceutical Group of China. The two companies are focusing on technology transfer and the construction of units to develop antibiotics, traditional medicines and drug research. As part of planned initiatives, funding will be allocated to a variety of projects, including the exploration of Kalium (Potassium) in Laos.

In addition, a Domestic Appliances and Personal Care (DAP) factory in the northern port city of Hai Phong and an Apatite Flotation Factory in northern Lao Cai province, as well as some fertiliser and antibiotics manufacturing plants, will receive funding. Vinachem is also cooperating with the Vietnam Rubber Corporation for the manufacture of auto tyres and latex gloves and it is involved in a joint venture with foreign investors for producing coal.

The government is promoting self-sufficiency in terms of satisfying pharmaceutical demand. The authorities are expecting that locally made medicines will account for 60% of the market by 2010, 70% by 2015 and 80% by 2020. To achieve these goals, Vinapharm will restructure to operate under a holding company. Due to be inaugurated in 2010, the Vietnam Pharmaceutical Group will develop a network of local factories to satisfy the basic needs of the average citizen.

Other developments include Vinapharm's role in the construction of a new production plant led by Danapha-Nanosoma Pharmaceutical. With a 25% share of the venture, (Danapha holds 51% and US AQP a 24% share) Vinapharm will benefit from US technology and investment. The US$3.2mn plant, due for completion in Q310, will develop and produce drugs to treat cancer, diabetes, hypertension and heart disease.

Company Address

- Vinapharm, 138B Giang Vo St
  Ba Dinh District, Hanoi, Vietnam
- Tel: +84 88 290 795
- Fax: +84 88 202 265
- www.vinapharm.net.vn

Vietnam OPV Pharmaceutical Co

Strengths

- One of Vietnam's most prominent pharmaceutical companies.
- Government-promoted measures to increase domestic manufacturing.
- Presence in prescription and consumer healthcare segments, with product portfolio including erectile dysfunction (ED) treatments.

Weaknesses

- Most units facing financial difficulties.
- Need to import most of raw materials for pharmaceutical production.

Opportunities

- Plans for a major overhaul of the domestic pharmaceutical regulatory environment, with a particular focus on encouraging the domestic manufacture of drugs in order to reduce the country's dependence on imports.
- Improvement of regulatory climate following the WTO accession to attract foreign investment.
- Further collaborations with foreign companies; OPV positions itself as a 'partner of choice' for firms looking to enter Vietnam.

Threats

- Complex and discriminatory pricing policy.
- New health insurance regulations hampering access to pharmaceuticals.
- Vietnam being susceptible to economic and currency fluctuations.

Company Overview

Vietnam OPV Pharmaceutical Co is one of the more prominent local drug producers. OPV's pharmaceutical plant is located in the Bien Hoa Industrial Zone II in Ho Chi Minh City. The firm also has extensive sales, marketing and distribution facilities in pharmaceuticals and consumer healthcare.

OPV Pharmaceutical first set up operations in Vietnam in the 1950s. After a long period of interruption, the company made its return in 1993 with the construction of a US$20mn project to build a pharmaceutical manufacturing facility in Bien Hoa. The GMP-certified facility was opened in 2003. The company also holds GLP and GSP certificates, and has just under 300 employees.

Recent Activities

In November 2005, the firm signed an agreement with GSK to produce GSK's high-grade products in Vietnam. The locally-produced branded medicines were expected to be priced at lower levels than imports of a similar nature. Previously, the company partnered with a number of foreign players including Bayer, Ciba Geigy, Mead Johnson, Merck & Co, Roche, Sandoz, Upjohn and Warner Lambert.

Government plans to source 60% of domestic pharmaceutical needs from local companies by 2010 could help to boost OPV's market share.

Product Portfolio

In terms of prescription pharmaceuticals, the company markets mostly respiratory and anti-infective products, but also produces diabetes treatments, antihypertensives and ED drugs.

Company Address

- OPV Pharmaceutical Co. Ltd.
  Suite 803 Saigon Tower Building
  29 Le Duan St, District 1, Ho Chi Minh City, Vietnam
- Tel. +84 88 238 999
- Fax. +84 88 275 689 / Web: http://opv.fuzing.com

Vietnam Pharmaceutical Joint Stock Company (Ampharco)

Strengths

- One of Vietnam's largest companies.
- Government encouragement of generics.
- Strong OTC portfolio supported with comprehensive PR campaigns.

Weaknesses

- Most units facing financial difficulties.
- Need to comply with international standards requiring substantial financial investment.
- Need to import most of raw materials for pharmaceutical production, and prices have been rising recently placing pressure on producers.

Opportunities

- Plans for a major overhaul of the domestic pharmaceutical regulatory environment, with a particular focus on encouraging the domestic manufacture of drugs in order to reduce the country's dependence on imports.
- Relaxation of price freeze to improve product revenues.
- Government push for self-sufficiency in pharmaceutical production, with goals of domestic production meeting 60% of national demand by 2010.
- Improvement of regulatory climate following the WTO accession to attract foreign investment .

Threats

- Complex and discriminatory pricing policy.
- New health insurance regulations hampering access to pharmaceuticals.
- Vietnam is susceptible to economic and currency fluctuations.
- Domestic production and the trading of pharmaceutical products facing difficulties due to rising prices of pharmaceutical materials and medicines in the world market.

Company Overview

Ampharco is one of the more prominent generics producers in Vietnam. In 2007 Ampharco obtained the right to import and export pharmaceuticals directly from and to foreign partners. The company also operates a subsidiary in the US.

Ampharco has a long history for an emerging market drug maker. The forerunner of the company was ThaiVan Laboratories, which was founded in 1969, during the height of the Vietnam War. In addition to manufacturing, ThaiVan Laboratories was the exclusive distributor for several European pharmaceutical firms, including Allard (France), KaliChemie (Germany) and Farmitalia (Italy).

Recent Activities

The goal of Vietnam Pharmaceutical Joint Stock Company (Ampharco) to export its products to the US and other foreign markets has received a boost after investment funds were received from Vietnam Equity Holding (VEH). The new resources will be used to restructure Ampharco's finances and 'improve competitive capacity'.

Acting under the supervision of investment fund management company Anpha Capital, VEH now owns 10% of Ampharco's issued shares. Given that Ampharco's charter capital was VND87bn (US$5.5mn) as of December 2007, BMI estimates that VEH spent US$550,000 on the investment, which is a shrewd move in our opinion. This is confirmed by Ampharco's profit projection. It expects to record net profit of VND50bn (US$3.2mn) this year, an increase of over 200% on the 2007 figure.

Arguably the most significant development to affect Ampharco was its transformation into a joint stock company in 2003. This enabled the firm to attract investment and expand operations. During June 2007 Ampharco opened one of the country's first GMP-accredited facilities, which will allow it to export to developed markets. Demonstrating the scale of commitment, it costs US$15mn to build the plant, which boasts a special air conditioning system that prevents contamination between different areas of the building. Ampharco also holds GSP certificates.

In 2008, Vietnam Equity Holding (VEH) announced a strategic partnership with Ampharco. Under the agreement, VEH acquired 10% of Ampharco's shares and also pledged to help the company to restructure and increase its capacity. VEH is an investment firm which specialises in the Vietnamese market. Ampharco, meanwhile, is looking to expand and export products to the US and also develop its local research and manufacturing facilities.

Product Portfolio

By 1979, Ampharco's product portfolio – which included *K-Cort* (corticoid), vitamin *Campofort*, vitamin B complex *Becofort* and beta-blocker *Timol* (timolol) – had become well known in Vietnam.

Nowadays, the company has products in a number of therapeutic areas including cardiovascular, dermatology, genitory-urinary, antibiotics and allergy and immune system. Some of its products are allergic treatment *Cezil (*cefprozil) and *Mepraz* (omeprazole), indicated for stomach ulcers. Other products include consumer healthcare treatments *Bosamin* (herb extract) and nicotine replacement therapy *Nicostop*.

Boasting a strong OTC portfolio across several therapeutic areas, Ampharco supports its consumer brands with comprehensive advertising campaigns. Expertise in self-medication means Ampharco is well positioned in the case of Rx to OTC switches.

Company Address

- Ampharco
  Lot.20B, No.1 Street
  Tan Binh Industrial Park
  Ho Chi Minh City, Vietnam
- Tel: +84 26 968 8808
- Fax: +84 26 968 6806
- www.ampharco.com

Vidipha Central Pharmaceutical Joint Stock Company

Strengths

- One of Vietnam's more prominent pharmaceutical companies, complying with international GMP and other standards.
- Financial backing from recent IPO.
- Strong export portfolio.

Weaknesses

- Most units facing financial difficulties.
- Low patient purchasing power and insufficient healthcare funding.
- Need to comply with international standards requiring substantial financial investment.

Opportunities

- Plans for a major overhaul of the domestic pharmaceutical regulatory environment, with a particular focus on encouraging the domestic manufacture of drugs in order to reduce the country's dependence on imports.
- Improvement of regulatory climate following the WTO accession to attract foreign investment.
- Relaxation of price freeze to improve product revenues.
- Healthcare modernisation initiatives.
- Could benefit from government plans to increase domestic pharmaceutical production to meet 60% of Vietnam's national domestic requirements in 2010.

Threats

- Complex and discriminatory pricing policy.
- New health insurance regulations hampering access to pharmaceuticals.
- Vietnam being increasingly susceptible to economic fluctuations.
- Increased competition following WTO entry.

Company Overview

Vidipha is one of the more prominent pharmaceutical companies in Vietnam. In June 2006, Vidipha revealed its plan to raise US$2.3mn in an initial public offering (IPO) of more than 1mn shares. The company produces coated tablets and solutions for injections and exports to Russia and Iraq, as well as a number of South East Asian countries. In 2008, the Drug Testing Institute in Ho Chi Minh City announced that it had discovered a number of fake *Ampicilin* tablets which had been marketed by Vidipha. In 2008, Vidipha posted positive results, with post tax profits of VND27.5bn (US$1.5mn) and y-o-y growth of 8%.

Company Address

- Vidipha
  19-21 Nguyen Van Troi
  P. 12, Q. Phu Nhuan, Vietnam
- Tel. +84 88 440 448
- Fax. +84 88 440 446
- www.vidipha.com.vn

Leading Multinational Manufacturers

Pfizer

Strengths	▪ The world's largest producer of medicines, underlined by acquisition of Wyeth in 2009. ▪ Wide product portfolio. ▪ Expertise in fighting HIV/AIDS, which is a growing problem in Vietnam. ▪ Producer of leading ED remedy.
Weaknesses	▪ Strict government drug-pricing policy. ▪ No direct presence in the country. ▪ Low purchasing power of the bulk of the population.
Opportunities	▪ Rising demand for branded products following healthcare sector modernisation. ▪ Pending overhaul of the regulatory climate, aiming to boost foreign investment. ▪ Relaxation of price freeze to improve product revenues.
Threats	▪ Sizeable counterfeit drug trade and lax patent protection, although WTO entry is improving the system. ▪ Country susceptible to economic and currency fluctuations. ▪ Legalisation of parallel imports negatively impacting performance of branded drugs.

Company Overview	Pfizer does not have a direct presence in the Vietnamese pharmaceutical market, placing the company in a disadvantageous position in relation to its main competitors. The company participates in various global communicable disease eradication programmes in place in Vietnam. In 2004 Pfizer granted US$100,000 towards the scheme improving public and private co-operation in the fight against HIV/AIDS and other sexually transmitted diseases. The new specialist HIV company, ViiV Healthcare, launched globally with GSK in Q409, could give Pfizer increased options for marketing HIV/AIDS drugs and treatments in Vietnam.
Product Portfolio	In May 2006, *Viagra* (sildenafil) was approved in the country. Previously, the drug had been available only on the black market. The drug will be sold in public hospitals. Illicit versions of the drug had retailed for approximately US$2 per tablet, however, generic versions of the drug by Indian and German drug firms have been sold on prescription during the past two years.
Company Address	▪ Pfizer Saigon Trade Center, 37 Ton Duc Thang St District 1 Ho Chi Minh City, Vietnam ▪ Tel: +84 8 39 105 120 ▪ Fax: +84 8 39 105 118 ▪ www.pfizer.com

Sanofi-Aventis

Strengths

- Direct manufacturing presence in the country, benefiting from the advantages given to locally-produced drugs.
- Among the top three pharmaceutical companies in Vietnam.
- Strong product portfolio covering a wide range of therapeutic areas.
- Involvement in the vaccines sector.
- Long tradition of partnerships with local players.

Weaknesses

- Government drug-pricing policy.
- Substandard IP regime in the country.
- Sizeable parallel imports and counterfeit industries.
- Need for local vaccine trials before gaining product approval.

Opportunities

- Sector modernisation to increase the demand for branded products.
- Company in a strong position to increase its market penetration as the sector continues to open.
- Plans for a major overhaul of the regulatory environment, aiming to boost foreign investment.
- Relaxation of price freeze to improve product revenues.
- WTO membership to improve operating conditions for foreign players in the country.

Threats

- Government resistance to aligning domestic patent law fully with internationally acceptable standards.
- Lack of progress in terms of significantly reducing the role of counterfeit drug industry.
- The government aiming to protect local drug companies through the use of legal trade barriers, potentially adversely affecting the company's market presence.
- Vietnam becoming increasingly susceptible to economic fluctuations, which would jeopardise local investment.
- Legalisation of parallel imports negatively impacting performance of branded drugs.

Company Overview

Sanofi-Aventis enjoys a strong position in the Vietnamese pharmaceutical market. Sanofi-Aventis Vietnam was established in 1989 and has more than 600 employees.

The first pharmaceuticals joint venture in the country, Sanofi-Aventis Vietnam, was set up by local company Central Pharmaceutical Manufacturing Enterprise and Sanofi-Synthélabo. Medical Export-Import Company (Vietnam) and Rhone-Poulenc (now part of Sanofi-Aventis) followed with Vinaspecia.

Sanofi-Aventis Vietnam is likely to be negatively affected by government plans to control drug prices in the country. Meanwhile, the company is also impacted by the high tariff rate, which can reach as much as 15% for imported drugs.

Sanofi-Aventis – which is one of the world's largest vaccine manufacturers – is also affected by regulations in the country that require foreign manufacturers to conduct clinical trials in Vietnam before being able to release their vaccines. In Q409, the Ho Chi Minh City based Pasteur Institute announced it had produced its first batch of domestically produced swine flu vaccines. The vaccine is soon to be tested in preclinical trials.

Sanofi-Aventis's production facilities are GMP and ISO 9002 certified. Main export destinations include other Asian countries and the former USSR. Vietnam is also the site of several clinical trials of pipeline products.

Product Portfolio

The company manufactures products and acts as a distributor for imported medicines, with the product portfolio numbering around 150 items. Its main products include *Plavix* (clopidogrel), *Aprovel* (irbesartan), *Lovenox (*enoxaparin), *Tritace* (ramipril), *Taxotere* (docetaxel), *Eloxatin* (oxaliplatin), *Xatral* (alfuzosin), *Amaryl* (glimepiride), *Lantus* (insulin glargine), *Stilnox* (zolpidem), and *Actonel* (risedronate).

A rabies vaccine made by Vaccine and Biomedical Product Company No. 1 was removed from the market in September 2007 due to safety fears. The withdrawal was not wholly unexpected as adverse events related to the product have been known about for over a decade and Vietnam was one of only three countries that still used the Fuenzalida-Palacios vaccine. To fill the market void, the health ministry allowed Sanofi-Aventis's semi-finished rabies vaccine, *Verorab*, to be imported.

Company Address

- Sanofi-Aventis Vietnam
  10 Ham Hghi, District 1
  Ho Chi Minh City, Vietnam
- Tel: +84 8 82 98 526
- Fax: +84 8 91 44 801
- www.sanofi-aventis.com.vn

Novartis

Strengths

- Well-established presence through its subsidiary Novartis Vietnam, which directly manufactures in the country.
- Benefits from the advantages given to locally produced drugs.
- Diverse manufacturing presence, including antibiotics, vitamins and OTC pharmaceuticals, consumer, generic and healthcare products, as well as vaccines.

Weaknesses

- Government drug-pricing policy.
- Low purchasing power of the majority of the population.

Opportunities

- Demand for branded products to rise with sector modernisation and regional harmonisation.
- Positive economic performance – with an increase in spending power – to underpin the development of pharmaceutical demand.
- Developing the potential of the generic sector to open up commercial opportunities for Novartis.
- Plans for a major overhaul of the domestic pharmaceutical regulatory environment, with a focus on increasing the level of foreign investment.
- Country remains heavily reliant on imported drugs.

Threats

- Government resistance to aligning patent law fully with international standards.
- As a part of its plan to overhaul the pharmaceutical sector, the government is planning to increase intervention and protect local companies through legal trade barriers, potentially affecting margins.
- Vietnam's susceptibility to economic fluctuations, with currency depreciation recently forcing price rises.
- Legalisation of parallel imports negatively affecting performance of patented drugs.

Company Overview

Novartis Vietnam was established following the merger of Sandoz and Ciba-Geigy in 1997. The company is active in the distribution of speciality pharmaceuticals, consumer healthcare and generics.

Product Portfolio

Novartis' portfolio includes medicines in transplantation and immunology, cardiovascular diseases, diseases of the central nervous system, Parkinson's disease, skin allergies, OTC and ophthalmic medications. The following Novartis products maintain a leadership position in their respective segments: *Lamisil* (terbinafine), *Clozaril* (clozapine), *Diovan* (valsartan), *Lescol* (fluvastatin), *Aredia* (pamidronate), *Navoban* (tropisetron), *Sandostatin* (octreotide), *Neoral* (cyclosporine), *Simulect* (basiliximab), *Femara* (letrozole), *Sandoglobulin* (immune globulin), *Miacalcic* (calcitonin) and *Lentaron* (formestane).

Company Address

- Novartis Pharma
  3rd Floor E-Town 2 364 Cong Hoa St 13 Ward Tan Binh District
  Ho Chi Minh City, Vietnam
- Tel: +84 8 3810 1111
- Fax: +84 8 3812 5801
- www.novartis.com

Merck & Co

Strengths

- One of the leading global producers of medicines.
- Considerable product portfolio, including consumer medicines.
- Merger with Schering-Plough will further strengthen MSD's presence in Vietnam.

Weaknesses

- Difficult IP environment, including counterfeit drug trade and lax patent protection.
- No direct manufacturing or R&D presence in the country.

Opportunities

- Rising demand for branded products following healthcare sector modernisation.
- Pending overhaul of the regulatory climate, aiming to boost foreign investment.
- Strong regional experience and connections.

Threats

- Legal trade barriers protecting local players and disadvantaging multinationals.
- Country susceptible to economic fluctuations, with Merck recently forced to hike drug prices due to currency depreciation.
- Legalisation of parallel imports negatively impacting performance of branded drugs.

Company Overview

The US drug major Merck & Co operates in Vietnam through its regional division, Merck, Sharp & Dohme (MSD) Asia Pacific, which was established in Vietnam in 1994. The company employs around 100 staff, who are mostly engaged in sales and marketing activities. Merck does not operate any manufacturing or R&D activities in Vietnam.

The company is affected by regulations in Vietnam that require all state companies wishing to import foreign pharmaceutical products to apply for annual quotas. These activities are set to be phased out under the US-Vietnam Bilateral Trade Agreement.

Recent Activities

In March 2009, MSD said it regretted a label mistake on its measles, mumps and rubella vaccine. *MMRII* was labelled with instructions saying 'for intramuscular injection' rather than 'for subcutaneous injections'. No adverse reaction had been reported.

MSD's cervical cancer vaccine *Gardasil* has been approved in Vietnam. Its competitor, GSK's *Cervarix*, also received approval in 2009.

At the end of May 2009, distributor Diethelm Vietnam Corp increased the prices of 14 speciality drugs – manufactured by US-based Merck – by 7.3%-10%. Local distributors claim that they had no choice as the prices of imported drugs have been increasing as a result of currency depreciation and the growing price of raw materials.

Company Address

- Merck, Sharp & Dohme (MSD) Asia Vietnam Branch
  8th Floor, R.810 Sun Wah Tower, 115 Nguyen Hue Boulevard
  District 1, Ho Chi Minh City, Vietnam
- Tel: +84 8 382 78100
- Fax: +84 8 3827 8101
- www.msd-vietnam.com

GlaxoSmithKline (GSK)

Strengths
- One of the leading global producers of medicines.
- Considerable product portfolio, including consumer medicines and vaccines.

Weaknesses
- Difficult IP environment.
- No direct manufacturing or R&D presence in the country.
- Counterfeiting remains a problem.

Opportunities
- Rising demand for branded products following healthcare sector modernisation.
- Pending overhaul of the regulatory climate, aiming to boost foreign investment.
- Strong regional experience and connections.

Threats
- Legal trade barriers protecting local players and disadvantaging multinationals.
- Country susceptible to economic and currency fluctuations.
- Legalisation of parallel imports negatively impacting performance of branded drugs.

Company Overview

Glaxo began operating in Vietnam in 1994, with a staff of only seven. In the following years, Glaxo merged with Wellcome, and became GSK Vietnam. The company offers a range of prescription medicines, although not all of its products are covered by public insurance, as is the case with *Advair/Seretide* (fluticasone + salmeterol).

Product Portfolio

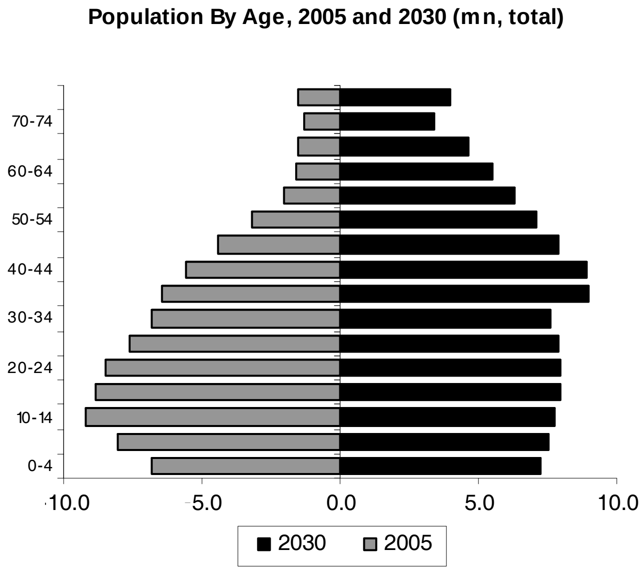
In March 2010, the US Food and Drug Administration (FDA) voiced concerns over GSK's *Rotarix* vaccine. It is thought that the live oral preventative has been contaminated with a benign pig virus, known as porcine circovirus type 1 (PCV-1). The US FDA has consequently recommended that any use of the vaccine be temporarily suspended. The DVA has also requested documents from GSK verifying the safety of the vaccine.

GSK's cervical cancer vaccine *Cervarix* has been approved in Vietnam. Its competitor, MSD's *Gardasil*, also received approval in 2009. The government agency has also ordered 10,000 packets of GSK's *Relenza* (zanamivir) for *Tamiflu*-resistant patients. In late 2009, GSK's *Augmentin*'s retail price rose from VND14,000 to VND15,000 per pack.

Company Address
- GlaxoSmithKline Vietnam
  The Metropolitan, Unit 701, 235 Dong Khoi St, District 1
  HoChiMinh City Vietnam
- Tel: +84 8 3824 8744
- Fax: +84 8 3824 8742
- www.gsk.com/worldwide/vn.htm

Country Snapshot: Vietnam Demographic Data

Section 1: Population



Source: UN Population Division

Table: Demographic Indicators, 2005-2030

	2005	2010f	2020f	2030f
Dependent population, % of total	34.1	29.9	30.4	31.2
Dependent population, total, '000	28,318	26,225	30,950	34,499
Active population, % of total	65.8	70.0	69.5	68.7
Active population, total, '000	54,650	61,263	70,706	75,927
Youth population*, % of total	28.8	25.0	23.4	20.3
Youth population*, total, '000	23,972	21,887	23,807	22,508
Pensionable population, % of total	5.2	4.9	7.0	10.8
Pensionable population, total, '000	4,346	4,338	7,143	11,991

*f = forecast. * Youth = under 15. Source: UN Population Division*

Table: Rural/Urban Breakdown, 2005-2030

	2005	2010f	2020f	2030f
Urban population, % of total	26.7	29.4	34.7	41.8
Rural population, % of total	73.3	70.6	65.3	58.2
Urban population, total, '000	22,509	26,395	35230	46,123
Rural population, total, '000	61,729	63,323	66426	64,306
Total population, '000	84,238	89,718	101,656	110,429

f = forecast. Source: UN Population Division

Section 2: Education And Healthcare

Table: Education, 2002-2005

	2002/2003	2004/2005
Gross enrolment, primary	98	93
Gross enrolment, secondary	73	75
Gross enrolment, tertiary	10	16
Adult literacy, male, %	na	93.9
Adult literacy, female, %	na	86.9

Gross enrolment is the number of pupils enrolled in a given level of education regardless of age expressed as a percentage of the population in the theoretical age group for that level of education. na = not available. Source: UNESCO

Table: Vital Statistics, 2005-2030

	2005	2010f	2020f	2030f
Life expectancy at birth, males (years)	68.4	69.9	74.2	75.8
Life expectancy at birth, females (years)	72.4	73.9	78.4	80.0

Life expectancy estimated at 2005. f = forecast. Source: UNESCO

Section 3: Labour Market And Spending Power

Table: Employment Indicators, 1999-2004

	1999	2000	2001	2002	2003	2004
Employment, '000	38,120	38,368	39,000	40,162	41,176	42,316
– % change y-o-y	3.1	0.6	1.6	2.9	2.5	2.7
– male	19,029	19,292	19,744	20,356	20,959	21,649
– female	19,091	19,076	19,257	19,807	20,217	20,666
— female, % of total	50.0	49.7	49.3	49.3	49.1	48.8
Unemployment, '000	909	886	1,107	871	949	926
– male	439	468	458	398	402	410
– female	470	418	650	473	547	517
– unemployment rate, %	2.3	2.2	2.7	2.1	2.2	2.1

Source: ILO

Table: Consumer Expenditure, 2000-2012 (US$)

	2000	2007	2008	2009e	2010f	2012f
Consumer expenditure per capita	110	265	301	368	386	427
Poorest 20%, expenditure per capita	49	119	136	166	174	192
Richest 20%, expenditure per capita	243	587	668	815	855	946
Richest 10%, expenditure per capita	316	763	868	1,060	1,112	1,230
Middle 60%, expenditure per capita	85	206	235	286	301	332
Purchasing power parity						
Consumer expenditure per capita	556	1,196	1,297	na	na	na
Poorest 20%, expenditure per capita	250	538	583	na	na	na
Richest 20%, expenditure per capita	1,231	2,649	2,872	na	na	na
Richest 10%, expenditure per capita	1,600	3,444	3,734	na	na	na
Middle 60%, expenditure per capita	433	931	1,009	na	na	na

e/f = BMI estimate/forecast. na = not available. Source: World Bank, Country data; BMI calculation

BMI Methodology

How We Generate Our Pharmaceutical Industry Forecasts

Pharmaceutical sub-sector forecasts are generated using a top-down approach from **BMI**'s Drug Expenditure Forecast Model. The semi-automated tool incorporates historic trends, macroeconomic variables, epidemiological forecasts and analyst input, which are weighted by relevance to each market. The following elements are fed into the model:

- **BMI**'s historic pharmaceutical market data, which has been collected from a range of sources including:
  – regulatory agencies;
  – pharmaceutical trade associations;
  – company press releases and annual reports;
  – subscription information providers;
  – local news sources;
  – information from market research firms that is in the public domain.

- Data that has been validated by **BMI**'s pharmaceutical and healthcare analysts using a composite approach, which scores data sources by reliability in order to ensure accuracy and consistency of historic data.

- Five key macroeconomic and demographic variables, which have been demonstrated, through regression analysis, to have the greatest influence on the pharmaceutical market. These have been forecast by **BMI**'s Country Risk analysts using an in-house econometric model.

- The burden of disease in a country. This is forecast in disability-adjusted life years (DALYs) using **BMI**'s *Burden of Disease Database*, which is based on the World Health Organization's burden of disease projections and incorporates World Bank and IMF data.

- Subjective input and validation by **BMI**'s pharmaceutical and healthcare analysts to take into account key events that have affected the pharmaceutical market in the recent past or that are expected to have an impact on the country's pharmaceutical market over the next five years. These may include policy/reimbursement decisions, new product launches or increased competition from generics.

Pharmaceuticals Business Environment Ratings

Risk/Reward Ratings Methodology

BMI's approach in assessing the risk/reward balance for Pharmaceutical & Healthcare Industry investors globally is fourfold. First, we identify factors (in terms of current industry/country trends and forecast industry/country growth) representing opportunities to would-be investors. Second, we identify country and industry-specific traits which pose or could pose operational risks to would-be investors. Third, we attempt, where possible, to identify objective indicators that may serve as proxies for issues/trends to avoid subjectivity. Finally, we use **BMI's** proprietary Country Risk Ratings (CRR), ensuring that only the aspects most relevant to the Pharmaceutical & Healthcare Industry are incorporated. Overall, the system offers an industry-leading, comparative insight into the opportunities and risks for companies across the globe.

Ratings Overview

Ratings System

Conceptually, the ratings system divides into two distinct areas:

Rewards: Evaluation of the sector's size and growth potential in each state, as well as broader industry/state characteristics that may inhibit its development.

Risks: Evaluation of industry-specific dangers and those emanating from a state's political/economic profile that call into question the likelihood of anticipated returns being realised over the assessed time period.

Indicators

The following indicators have been used. Overall, the ratings use three subjectively measured indicators and 41 separate indicators/datasets.

Table: Pharmaceutical Business Environment Indicators

Indicator	Rationale
Rewards	
Industry Rewards	
Market expenditure, US$bn	Denotes breadth of pharmaceutical market. Large markets score higher than smaller ones
Market expenditure per capita, US$	Denotes depth of pharmaceutical market. High value markets score better than low value ones
Sector value growth, % y-o-y	Denotes sector dynamism. Scores based on annual average growth over five-year forecast period
Country Rewards	
Urban-rural split	Urbanisation is used as a proxy for development of medical facilities. Predominantly rural states score lower
Pensionable population, % of total	Proportion of the population over 65 years of age. States with ageing populations tend to have higher per-capita expenditure
Population growth, 2003-2015	Fast-growing states suggest better long-term trend growth for all industries
Overall score for *Country Structure* is also affected by the coverage of the power transmission network across the state	
Risks	
Industry Risks	
Intellectual property (IP) laws	Markets with fair and enforced IP regulations score higher than those with endemic counterfeiting
Policy/reimbursements	Markets with full and equitable access to modern medicines score higher than those with minimal state support
Approvals process	High scores awarded to markets with a swift appraisal system. Those that are weighted in favour of local industry or are corrupt score lower
Country Risks	
Economic structure	Rating from CRR evaluates the structural balance of the economy, noting issues such as reliance on single sectors for exports/growth, and past economic volatility
Policy continuity	Rating from CRR evaluates the risk of a sharp change in the broad direction of government policy
Bureaucracy	Rating from CRR denotes ease of conducting business in the state
Legal framework	Rating from CRR denotes the strength of legal institutions in each state. Security of investment can be a key risk in some emerging markets
Corruption	Rating from CRR denotes the risk of additional illegal costs/possibility of opacity in tendering/business operations affecting companies' ability to compete

Source: BMI

Weighting

Given the number of indicators/datasets used, it would be inappropriate to give all sub-components equal weight. Consequently, the following weight has been adopted.

Table: Weighting Of Components

Component	Weighting
Rewards	*60%*
– Industry Rewards	– 75%
– Country Rewards	– 25%
Risks	*40%*
– Industry Risks	– 60%
– Country Risks	– 40%

Source: BMI

Sources

Sources used include national industry associations, government ministries, global health organisations, officially released pharmaceutical company results and international and national news agencies.

Table: Vietnam Pharmaceutical Expenditure Indicators, Historical Data and Forecasts

	2005	2006	2007	2008	2009f	2010f	2011f	2012f	2013f	2014f	2015f	2016f	2017f	2018f	2019f
Drug market expenditure (US$bn)	0.840	0.956	1.114	1.400	1.538	1.689	1.924	2.229	2.628	3.067	3.538	4.042	4.571	5.103	5.610
Drug market expenditure (VNDbn)	13,315	15,284	17,908	23,004	27,351	32,426	38,002	44,014	50,593	57,515	64,561	71,753	78,843	85,478	91,166
Per capita drug market expenditure (US$)	10.11	11.37	13.08	16.24	17.62	19.10	21.55	24.71	28.85	33.34	38.12	43.14	48.32	53.49	58.26
Drug expenditure % GDP	1.59	1.57	1.57	1.56	1.66	1.76	1.78	1.90	2.00	2.10	2.18	2.24	2.29	2.30	2.28

f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI

Table: Vietnam Healthcare Expenditure Indicators, Historical Data and Forecasts

	2005	2006	2007	2008	2009f	2010f	2011f	2012f	2013f	2014f
Health expenditure (US$bn)	3.16	3.99	5.05	6.36	6.89	7.52	8.87	10.08	11.78	13.65
Health expenditure (VNDbn)	50,056	63,810	81,205	104,440	122,548	144,363	175,178	198,995	226,669	255,966
Health expenditure (% GDP)	5.97	6.55	7.10	7.08	7.46	7.84	8.22	8.60	8.97	9.33
Health expenditure per capita (US$)	38.0	47.5	59.3	73.7	78.9	85.1	99.3	111.7	129.3	148.4
Public sector health expenditure (US$bn)	0.82	1.29	1.99	2.28	2.67	3.14	3.98	4.84	6.02	7.40
Public sector health expenditure (%)	25.90	32.33	39.32	35.85	38.80	41.82	44.90	48.01	51.13	54.23

f = forecast. Source: World Health Organization (WHO), BMI

Table: Prescription Drug Market Indicators, Historical Data and Forecasts

	2005	2006	2007	2008	2009f	2010f	2011f	2012f	2013f	2014f	2015f	2016f	2017f	2018f	2019f
Prescription drug market (US$bn)	0.596	0.684	0.801	1.012	1.117	1.229	1.405	1.629	1.924	2.250	2.599	2.976	3.370	3.770	4.152
Prescription drug market (VNDbn)	9,454	10,928	12,876	16,632	19,857	23,606	27,741	32,174	37,034	42,187	47,439	52,817	58,139	63,142	67,463
Prescription drug market as % total	71.0	71.5	71.9	72.3	72.6	72.8	73.0	73.1	73.2	73.4	73.5	73.6	73.7	73.9	74.0

f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI

Table: Prescription Drug Market Indicators, Historical Data and Forecasts (US$mn unless stated)

	2005	2006	2007	2008	2009f	2010f	2011f	2012f	2013f	2014f
Alimentary tract and metabolism drug sales	68.9	79.0	92.6	117.0	129.1	142.1	162.4	188.3	222.4	260.1
Blood and blood forming organ drug sales	56.4	64.6	75.7	95.7	105.5	116.2	132.8	154.0	181.8	212.6
Cardiovascular system drug sales	116.9	133.9	156.9	198.3	218.8	240.9	275.2	319.2	377.0	440.9
Dermatological drug sales	14.5	16.7	19.5	24.7	27.2	30.0	34.2	39.7	46.9	54.8
Genito-urinary system and sex hormone sales	23.4	26.8	31.4	39.7	43.8	48.2	55.0	63.8	75.4	88.2
Systemic hormonal preparation, excluding sex hormones and insulins, sales	15.7	18.0	21.1	26.6	29.4	32.4	37.0	42.9	50.6	59.2
Anti-infective for systemic use sales	64.4	73.8	86.5	109.3	120.6	132.8	151.7	176.0	207.8	243.0
Antineoplastic and immunomodulating agent sales	57.2	65.6	76.8	97.1	107.1	117.9	134.7	156.3	184.6	215.8
Musculoskeletal system drug sales	29.4	33.7	39.4	49.8	55.0	60.5	69.2	80.2	94.7	110.8
Nervous system drug sales	83.4	95.5	112.0	141.5	156.1	171.9	196.3	227.7	268.9	314.5
Antiparasitic product, insecticide and repellent sales	0.7	0.8	1.0	1.2	1.4	1.5	1.7	2.0	2.3	2.7
Respiratory system drug sales	47.0	53.9	63.2	79.8	88.1	97.0	110.8	128.5	151.7	177.5
Sensory organ drug sales	9.7	11.2	13.1	16.5	18.3	20.1	23.0	26.6	31.4	36.8
Other prescription drug sales	8.8	10.0	11.8	14.9	16.4	18.1	20.6	23.9	28.3	33.1

f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI

Table: Patented Product Market Indicators, Historical Data and Forecasts

	2005	2006	2007	2008	2009f	2010f	2011f	2012f	2013f	2014f	2015f	2016f	2017f	2018f	2019f
Patented market (US$bn)	0.202	0.232	0.272	0.337	0.366	0.396	0.443	0.502	0.579	0.661	0.744	0.829	0.913	0.991	1.057
Patented market (VNDbn)	13,315	15,284	17,908	23,004	27,351	32,426	38,002	44,014	50,593	57,515	64,561	71,753	78,843	85,478	91,166
Patented market as % total market	24.1	24.3	24.4	24.1	23.8	23.4	23.0	22.5	22.0	21.5	21.0	20.5	20.0	19.4	18.8

f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI

Table: Generic Drug Market Indicators, Historical Data and Forecasts

	2005	2006	2007	2008	2009f	2010f	2011f	2012f	2013f	2014f	2015f	2016f	2017f	2018f	2019f
Generics market (US$bn)	0.394	0.451	0.529	0.675	0.751	0.834	0.961	1.127	1.345	1.589	1.855	2.146	2.458	2.779	3.094
Generics market (VNDbn)	6,245	7,214	8,506	11,088	13,347	16,010	18,986	22,254	25,891	29,794	33,857	38,099	42,392	46,544	50,280
Generics market as % total market	46.9	47.2	47.5	48.2	48.8	49.4	50.0	50.6	51.2	51.8	52.4	53.1	53.8	54.5	55.2

f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI

Table: OTC Medicine Market Indicators, Historical Data and Forecasts

	2005	2006	2007	2008	2009f	2010f	2011f	2012f	2013f	2014f	2015f	2016f	2017f	2018f	2019f
OTC market (US$bn)	0.244	0.272	0.313	0.388	0.421	0.459	0.520	0.599	0.704	0.817	0.938	1.067	1.200	1.333	1.459
OTC market (VNDbn)	3,861	4,356	5,032	6,372	7,494	8,820	10,261	11,840	13,559	15,328	17,122	18,936	20,704	22,335	23,703
OTC market as % total market	29.0	28.5	28.1	27.7	27.4	27.2	27.0	26.9	26.8	26.7	26.5	26.4	26.3	26.1	26.0

f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI

Table: Vietnam – OTC Market Indicators, Historical Data And Forecasts (US$mn)

	2005	2006	2007	2008	2009f	2010f	2011f	2012f	2013f	2014f
Analgesics	60.2	67.4	77.4	95.9	104.2	113.6	128.5	148.2	174.2	202.1
Cough & cold	45.5	50.9	58.4	72.4	78.7	85.7	97.0	111.9	131.5	152.6
Digestives	47.3	52.9	60.8	75.3	81.9	89.2	100.9	116.4	136.8	158.8
Skin treatments	35.9	40.2	46.2	57.2	62.2	67.8	76.6	88.4	103.9	120.6
Vitamins and minerals	42.5	47.5	54.6	67.6	73.5	80.1	90.6	104.5	122.8	142.5
Other OTCs	12.2	13.6	15.7	19.4	21.1	23.0	26.0	30.0	35.2	40.9

f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI

Table: Medical Device Market Indicators, Historical Data and Forecasts

	2005	2006	2007	2008	2009f	2010f	2011f	2012f	2013f	2014f
Medical device market (US$bn)	na	0.181	0.200	0.221	0.243	0.268	0.296	0.327	0.361	0.390
Medical device market (VNDbn)	na	2,904	3,209	3,642	4,259	4,699	4,888	5,065	5,048	5,048
Medical device market as % of total healthcare market	na	4.54	3.96	3.47	3.53	3.57	3.34	3.24	3.06	2.85

na = not available. f = forecast. Source: Vietnam Ministry of Health, International Trade Administration, US Commercial Service, BMI

Table: Pharmaceutical Trade Indicators, Historical Data and Forecasts (US$mn)

	2005	2006	2007	2008	2009f	2010f	2011f	2012f	2013f	2014f
Imports	475.5	531.1	682.6	866.1	1,100.0	1,008.5	1,181.3	1,386.5	1,630.7	1,921.6
Exports	15.0	17.5	19.1	23.6	28.8	34.8	41.6	49.1	57.4	66.2
Balance	-460.5	-513.6	-663.5	-842.5	-1,071.2	-973.6	-1,139.7	-1,337.4	-1,573.3	-1,855.4

f = forecast. Source: International Trade Centre (ITC), BMI

Table: Taiwan – Other Healthcare Indicators, Historical Data And Forecasts

	2005	2006	2007	2008	2009f	2010f	2011f	2012f	2013f	2014f
Hospitals	878	903	956	974	1,008	1,043	1,077	1,111	1,144	1,177
Beds per 000 population	1.53	1.56	1.67	1.75	1.83	1.93	2.02	2.12	2.23	2.34
Hospital admissions per 000 population	-	-	-	-	-	-	-	-	-	-
Doctors per 000 population	0.62	0.63	0.64	0.66	0.68	0.69	0.71	0.73	0.75	0.77
Births per 000 population	16.8	16.7	16.7	16.5	16.4	16.4	16.3	16.1	15.9	15.7
Other OTCs (US$mn)	6.12	6.14	6.16	6.18	6.20	6.22	6.24	6.26	6.28	6.30

f = forecast. Source: Drug Administration of Vietnam (DAV), Vietnam Ministry of Health, BMI