

# Zen and the Art of Hospital Maintenance

Dutch Hospital Study 2008



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We were on a little six-and-one-half-horsepower cycle, way overloaded with luggage and way underloaded with common sense. The machine could do only about forty-five miles per hour wide open against a moderate head wind. It was no touring bike. We reached a large lake in the North Woods the first night and tented amid rainstorms that lasted all night long. I forgot to dig a trench around the tent and at about two in the morning a stream of water came in and soaked both sleeping bags. The next morning we were soggy and depressed and hadn't had much sleep, but I thought that if we just got riding the rain would let up after a while. No such luck. By ten o'clock the sky was so dark all the cars had their headlights on. And then it really came down. We were wearing the ponchos which had served as a tent the night before. Now they spread out like sails and slowed our speed to thirty miles an hour wide open. The water on the road became two inches deep. Lightning bolts came crashing down all around us. I remember a woman's face looking astonished at us from the window of a passing car, wondering what in earth we were doing on a motorcycle in this weather. I'm sure I couldn't have told her.

The cycle slowed down to twenty-five, then twenty. Then it started missing, coughing and popping and sputtering until, barely moving at five or six miles an hour, we found an old run-down filling station by some cutover timberland and pulled in.

At the time, like John, I hadn't bothered to learn much about motorcycle maintenance. I remember holding my poncho over my head to keep the rain from the tank and rocking the cycle between my legs. Gas seemed to be sloshing around inside. I looked at the plugs, and looked at the points, and looked at the carburetor, and pumped the kick starter until I was exhausted. We went into the filling station, which was also a combination beer joint and restaurant, and had a meal of burned-up steak. Then I went back out and tried it again. Chris kept asking questions that started to anger me because he didn't see how serious it was. Finally I saw it was no use, gave it up, and my anger at him disappeared. I explained to him as carefully as I could that it was all over. We weren't going anywhere by cycle on this vacation. Chris suggested things to do like check the gas, which I had done, and find a mechanic. But there weren't any mechanics. Just cutover pine trees and brush and rain.

I sat in the grass with him at the shoulder of the road, defeated, staring into the trees and underbrush. I answered all of Chris's questions patiently and in time they became fewer and fewer. And then Chris finally understood that our cycle trip was really over and began to cry. He was eight then, I think. We hitchhiked back to our own city and rented a trailer and put it on our car and came up and got the cycle, and hauled it back to our own city and then started out all over again by car. But it wasn't the same. And we didn't really enjoy ourselves much.

Two weeks after the vacation was over, one evening after work, I removed the carburetor to see what was wrong but still couldn't find anything. To clean off the grease before replacing it, I turned the stopcock on the tank for a little gas. Nothing came out. The tank was out of gas. I couldn't believe it.

I can still hardly believe it.

I have kicked myself mentally a hundred times for that stupidity and don't think I'll ever really, finally get over it. Evidently what I saw sloshing around was gas in the reserve tank which I had never turned on. I didn't check it carefully because I assumed the rain had caused the engine failure. I didn't understand then how foolish quick assumptions like that are. Now we are on a twenty-eight-horse machine and I take the maintenance of it very seriously.

*(From Zen and the Art of Motorcycle Maintenance, Robert Pirsig)*

What has Bob's classic to do with hospitals? Everything. We need to take hospital maintenance just as seriously as we take the Zen of care giving. Only then will we continue to enjoy the benefits of it like he could on his vacation across the US with his son. It is a way of thinking, doing, and feeling based on facts and emotion.

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## Executive Summary:

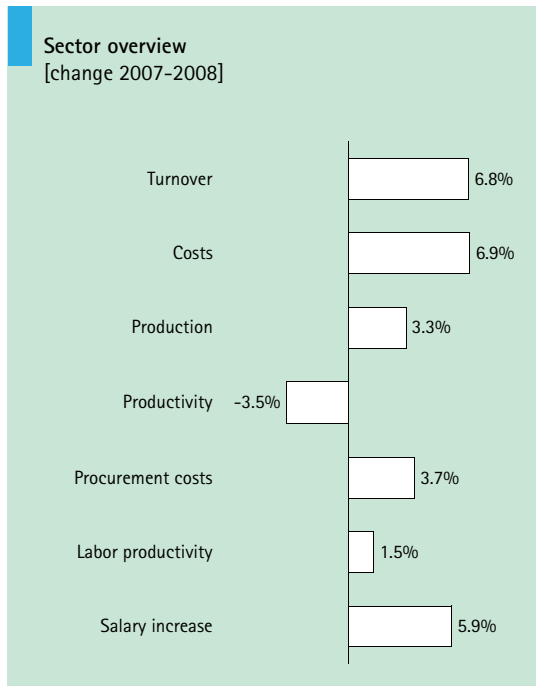
Based on the analyses of the annual reports of hospitals we present our 2008 study of Dutch hospital performance "Zen and the Art of Hospital Maintenance". Hospitals are complex organizations and are undergoing significant changes. These changes bring several risks. One of the new analyses we report in this study is an Early Warning System. The Early Warning helps identify at risk hospitals based on current, concrete risks.

The **Zen** and **Maintenance** aspects of care are two key concepts we emphasize in this report. Care is always about Zen: the complete feeling and healing aspect of our health. But to continue to provide this superior care hospitals need to be tuned in like good mechanics on the running of their operations. Volume, price, revenue, costs, case-mix, profits, debt, equity are all key metrics. Hospital management needs to continuously hear, see, smell, taste and touch this complex care machinery. It needs to be in tune with this engine. Anticipate early signals of malfunctioning. Have the competences and the tool kit at hand to make the necessary adjustments on the fly. And should the malfunctioning be major not hesitate to call in the cavalry. To help hospitals and other stakeholders keep a feel for the functioning of the hospital sector we publish our annual report.

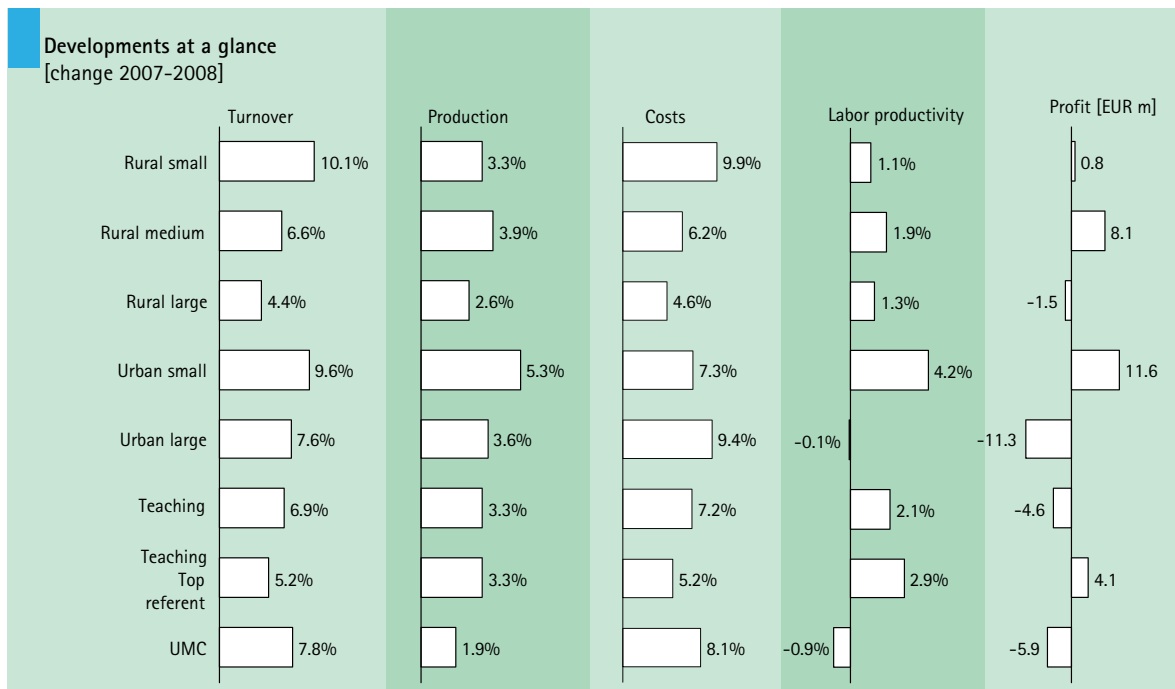
The five key conclusions of this report which cover 2008 are:

- 1) Revenues continue to increase well above economic growth, costs increased just a notch faster
- 2) Productivity of hospitals declined again in 2008
- 3) Labor cost, both salary of own personnel and number of externally hired personnel, saw sharp increase
- 4) Tumbling profits were propped up by bungling transition
- 5) Early Warning System is reported to identify hospitals at risk both due to low operational cash flow and large debt in changed cost of capital regulation regime

E1



E2





**1) Revenues continue to increase well above economic growth, costs increased just a notch faster (Exhibit E1, E2, E3)**

Hospital revenues increased by 6.8% in 2008. The total hospital revenues, excluding doctors not employed by hospitals, independent small clinics and specialty hospitals, was just under EUR 17 billion in 2008 (Exhibit E3). Including other hospital related revenues, the total revenue of hospitals is likely to be above EUR 20 billion in 2008.

The 6.8% growth is lower than the 2006-2007 growth of 7.6%, but higher than the 2002-2008 annual growth rate of 5.8%. The 6.8% however is in line with the long term historical growth of health care since 1972 in the Netherlands of 7% per year.

*3x faster than  
GDP growth*

The 6.8% hospital revenue growth in 2008 was higher than both the Gross Domestic Product (GDP) growth (2%) in 2008 and the general consumer inflation index (2.5%). Hospital revenues thus grew more than three times faster than the economy in the Netherlands. This gap between economic growth and hospital growth shall get bigger in 2009 when the economy will shrink significantly.

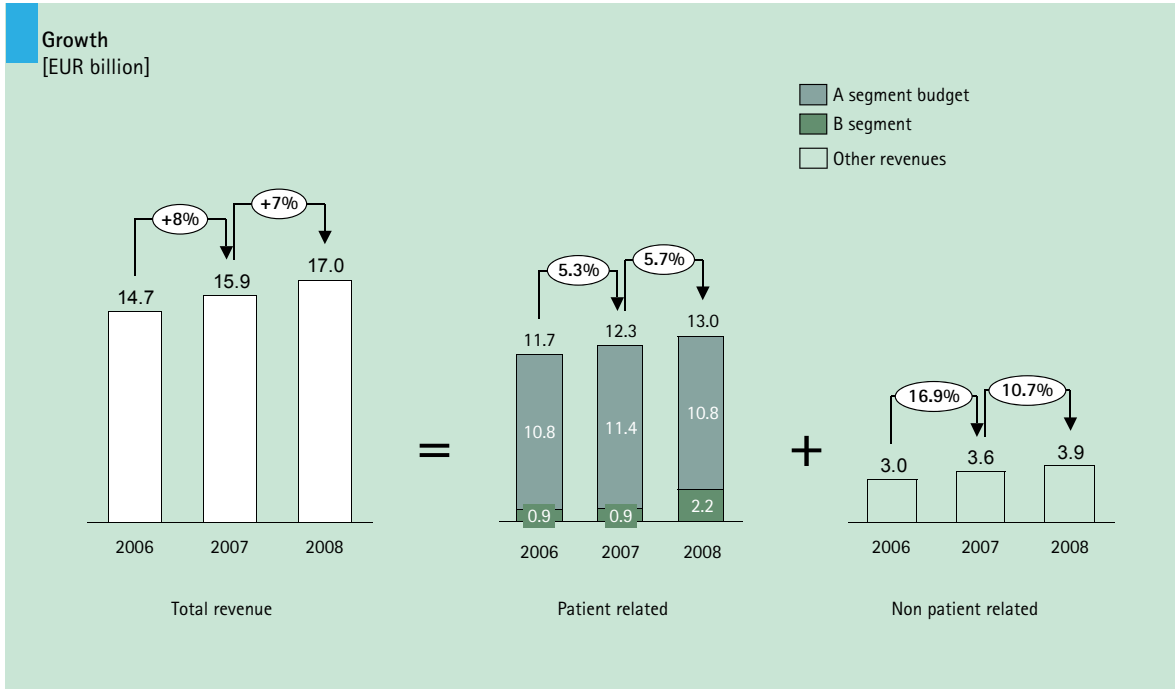
The long term healthcare growth of 7% per year since 1972 had a solid foundation of 5% economic growth per year. With health care becoming a bigger part of the economy, and the gap between economy and health care growth widening, the future sustainability of the current health care system is at considerable risk.

*Costs grew just a  
notch faster than  
revenues*

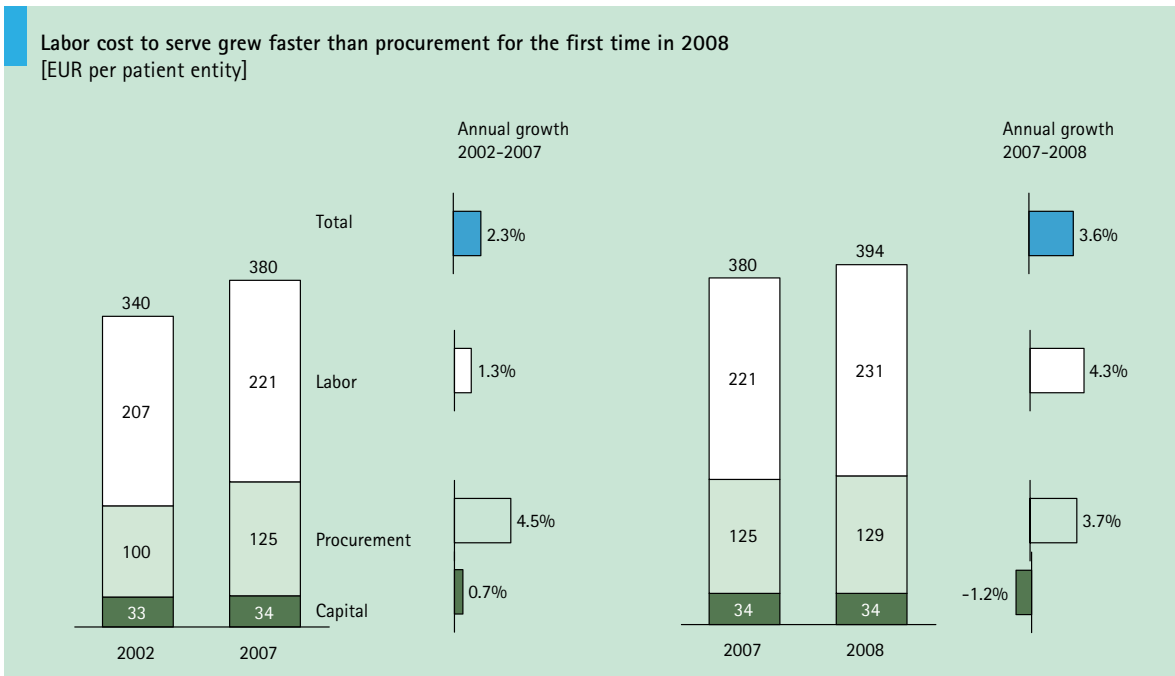
The risk of future hospital growth was further compounded by continued increase in hospital costs in 2008. The hospital costs increased 6.9% in 2008, a tenth of a percent higher than the revenues. In contrast, in 2007 the cost increase was significantly lower than the revenue increase. Large and top care hospitals had a larger cost increase than revenue growth in 2008 (Exhibit E2).

The underlying profitability in 2008 is much lower since a significant portion of the revenue increase is due to uncertainties and mistakes made in estimating the budget correction for expanding the B segment in 2008.

E3



E4



EUR 50-100 mln  
"windfall" due to  
underestimated  
"schoning"

We have estimated that 0.4% of the revenues, or EUR 68 million was the underestimation in the B segment correction, the so called *schoning*. Putting is bluntly: continuing bungling up of the transition to B segment cost EUR 68 million unnecessarily extra. Not all hospitals profited equally from this "windfall". Those that managed to underestimate their B segment and delivered more B volume gained the revenue for the same procedures twice, but there were also hospitals that delivered lower B segment volume than the *schoning*, and thus missed the revenues all together.

B-segment is  
but ~15% after  
expansion in 2008

In 2008 B segment was expanded to a theoretical 20%. We report that the size of the B segment in 2008 was 13% of the total hospital revenue. B segment relative to just the patient related hospital budgets was 17% (Exhibit E3). Looking at it any way B segment is significantly lower than 20% in 2008, just as it was lower than 10% earlier. Despite the emotions B segment evokes it was still but a small part of the total hospital revenues in 2008.

It is not possible to ascertain the growth of B segment for sure due to its expansion in 2008. Based on historical growth of B and A segment and correcting for *schoning* it would appear B segment growth was more or less in line with the A segment growth; both being around 7%.

Historically large  
increase in  
cost-to-serve

## 2) Productivity of hospitals declined again in 2008 (Exhibit E4)

The cost-to-serve of hospitals increased in 2008. Cost-to-serve measures the costs incurred to deliver one patient entity<sup>1</sup>. The cost-to-serve increased by 3.6% in 2007-2008. Cost-to-serve measures the hospital productivity. However since it does not include all cost parameters like expensive medication, it does not necessarily reflect the complete services delivered by a hospital. Nonetheless it does allow for comparison between similar hospitals, our eight peer groups. And it also allows for analyzing long time cost and productivity trends.

The annual cost-to-serve increase in the period 2002-2007 was 2.3%. The 3.6% increase in 2008 is significantly higher than the previous five year period.

Hospitals have failed to make significant productivity gains as a sector. Innovative procedures and medication are of course more expensive. But

<sup>1</sup> Patient entity is a weighted product mix basket of out-patient visits, day treatments, in-patient visits and nursing days.

E5

Less people, earning more

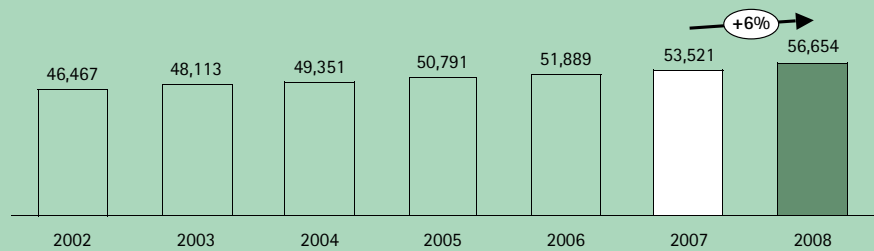
Less People

[change in labor productivity: patient entity/FTE]



Earning more

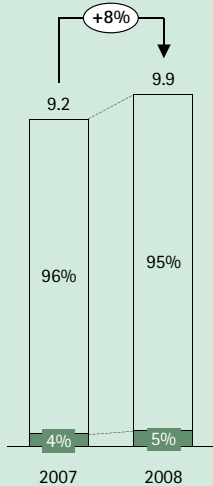
[wages, EUR/FTE]



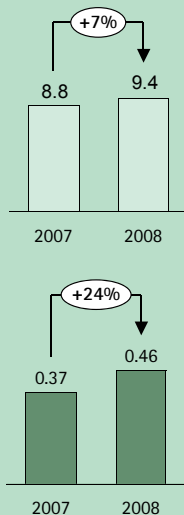
E6

Is attractiveness of PNIL driving labor costs up? [labor costs, EUR m]

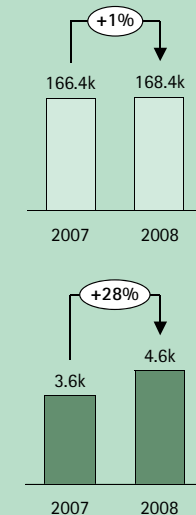
□ PIL (internal salaried)  
 ■ PNIL (external hired)



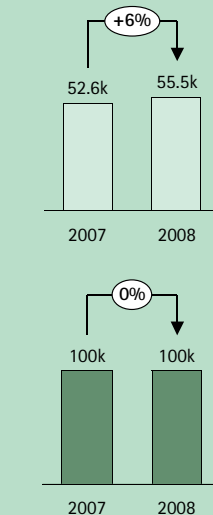
Large total increase in PIL and PNIL costs... [labor costs, EUR m]



...due to large increase in PNIL numbers... [number of fte]



... and increase in salary of own personnel [wages, EUR/fte]



by quantum gains in proven procedures that still constitute the majority of the volume, hospitals can improve productivity significantly. This missing productivity gain aspect of running hospitals is captured in the word maintenance in the title for this study. Such a productivity gain would help both finance new procedures, and make hospitals financially healthier. Importantly it mitigates the hospital revenue growth risk.

However hospitals as a sector have failed to gain this quantum productivity. The 2008 productivity decline is mainly due to explosive growth in personnel costs.

### 3) Labor cost, both salary of own personnel and number of externally hired personnel, saw sharp increase (Exhibit E4, E5, E6)

In 2008 the major cause of loss of productivity was labor salary increase and growth of externally hired personnel. The total cost of hospital labor grew 8% in 2008 to EUR 9.9 billion (Exhibit E6).

*Labor costs main  
cost driver in 2008  
...*

Since 2002 procurement costs have been the main driver of cost increase. The procurement productivity declined 4.5% per year in 2002-2007 while the labor productivity declined 1.3% per year in the same period (Exhibit E4). In 2008 this trend was reversed. In 2008 the labor productivity declined by 4.3% while the procurement productivity loss was 3.8%.

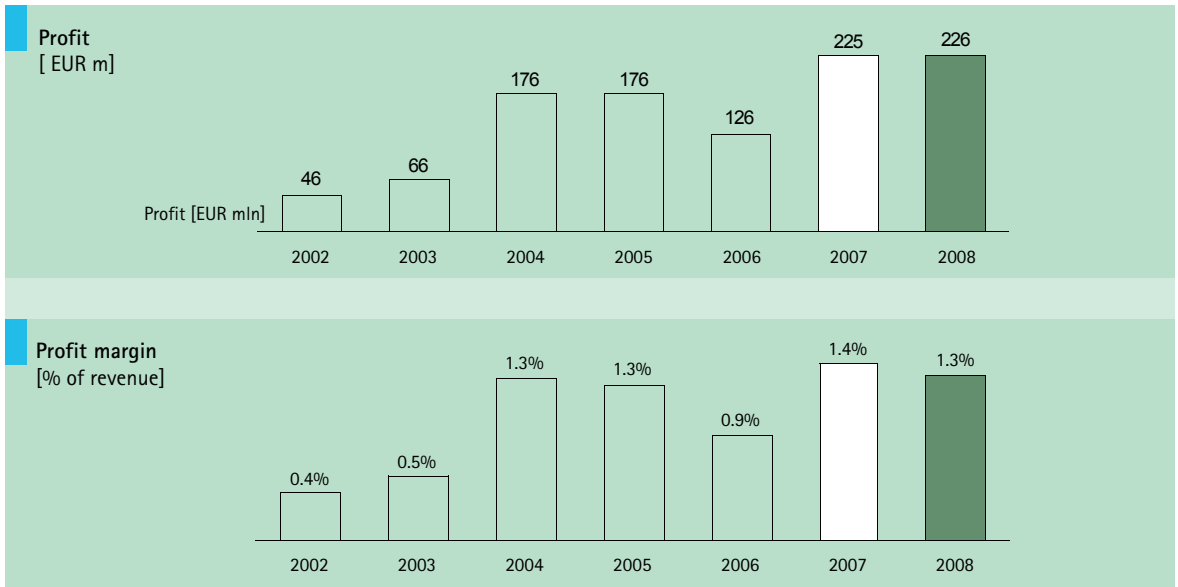
*... mainly due to  
salary increase  
and ...*

We have analyzed the three potential sources of loss of labor productivity: fte productivity, salary increase per fte and outsourcing to external personnel. Fte productivity at hospitals has been improving steadily since 2002. In 2008 it improved again by 1.5% (Exhibit E5). However the salary per fte excluding external personnel grew by 6% in 2008. 6% salary increase is double of the average salary increase in the Netherlands across all sectors in 2008.

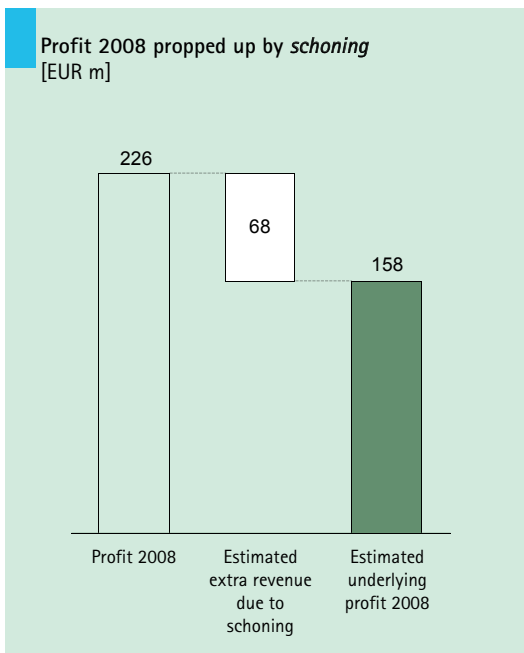
*... more external  
personnel*

The large salary increase was not the only source of labor cost increase. Hospitals also hired many more personnel externally. We have estimated that the external personnel grew by 28% in 2008. External personnel are still a small group of the total labor at hospitals, less than 2%. We estimate that there are about 5000 external personnel or about 50 per hospital. However the average salary of the external personnel is significantly higher than the salary of hospital employed personnel (Exhibit E6).

E7



E8



*The cost of the  
'revolving door'*

This is what one can call the double whammy. Shortage of personnel at key positions allows them to quit their jobs, and get themselves hired back in as external personnel at significantly higher wages. A fair transaction in a fair market place. To stem this tide hospitals agree to higher salary increases. But the salary difference between hospital employed and self employed is so large, that it makes hardly any difference to the growth of the external personnel but does lead nonetheless to higher salaries for own personnel.

*The coming labor  
crunch ...*

Personnel, or talent shortages is likely to be even a bigger issue for hospitals than financing. Even if hospitals continue to grow at twice the GDP rate and constitute 30% of the economy, it can still be a well judged tradeoff people make between different expenses, in which health care is likely to be more important. However delivering care will require personnel. The current level of labor intensity for care delivery is simply not sustainable in the future. Improving labor productivity must thus become a top priority for hospitals.

*... and how to  
address it*

In our work over the years at hospitals we have found significant wastage of labor talent. Activities that are ironically enough both wasteful and also frustrating for personnel: administrative duplications, illogical and unproductive routing, poor planning, clogged up work flows that require endless attention, rectification of own and other's mistakes, etc. By addressing each individual work flow hospitals can significantly improve their labor productivity, enhance quality and at the same time make work more rewarding for their personnel. In health care growth dictates that more personnel are needed than are available. It is therefore imperative that the entire sector take up this labor challenge urgently and seriously.

#### **4) Tumbling profits were propped up by bungling transition (Exhibit E7, E8)**

*On the face of  
it profit in 2008  
unchanged ...*

Hospitals reported a total net profit of EUR 226 million. This was 1.3% of the revenues in 2008. The profit margin in 2008 was slightly lower than the 1.4% in 2007.

EUR 226 million however also reflects the problems in accurately estimating the correction for an expanded B segment. We have estimated that EUR 68





*... but due to  
schoning underlying  
profit lower*

million was paid too much to hospitals in 2008. This has come about because the size of the new B segment was underestimated in 2008. We have calculated that the underestimation was about 7% of the new B segment and about 0.4% of the total hospital revenue. Had the A segment correction been budget neutral than the underlying profit of the hospital would have been 0.9% or EUR 158 million (Exhibit E8).

*Transition appears  
to be the worse of  
both worlds where  
we have landed ...*

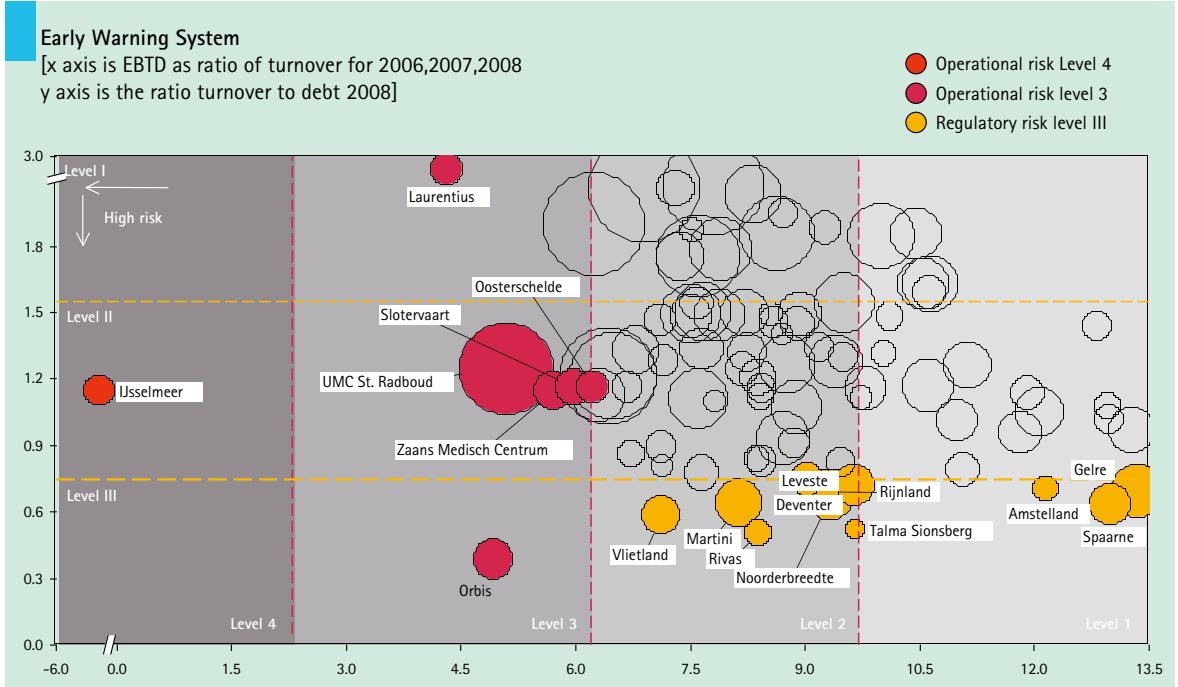
Undoubtedly it is not easy to estimate the correction required. The insurers, NZa and SDO have a major information handicap compared to the hospitals. But stepping aside from the blame question, the *schoning* issue is just one example of the administrative uncertainty and additional cost we have created during the transition of the hospitals to a more transparent and performance driven business model. We seem to have landed in a worse of both world scenarios; we have increased the administrative costs of transition but the full benefits elude us.

*... not by behavior  
alone but mainly  
by DBC language*

The language of the new world, DBC, is no doubt complex, but nobody appears to comprehend it fully. And thus nobody appears to be responsible to ensure it is developed and used as it was intended. The EUR 50-100 million *schoning* underestimation is just one example of this bungling. A similar loss must have occurred in 2005 and will occur again in 2009. The overestimation of doctors' salaries due to changes in DBC structures that apparently nobody can explain adequately since in principle they were meant to be budget neutral, is another glaring example of the unintended consequences of this new DBC structure. And on top of it we must also consider the incurred huge costs of developing this DBC system and maintaining it across the entire spectrum of shareholders.

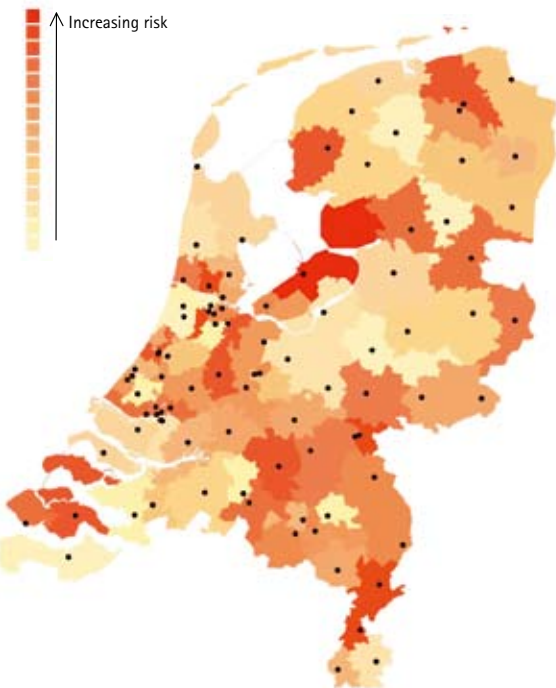
Having recognized the folly of DBC all hope now seems to rest on the DOT improvement. The unfounded hope in DOT is more a reflection of our clueless situation today than a confidence that DOT will correct this insanity. We desperately need to acknowledge the folly of DBC, do a brutally honest risk assessment on DOT, and consider totally new "out of the box" ideas.

E9



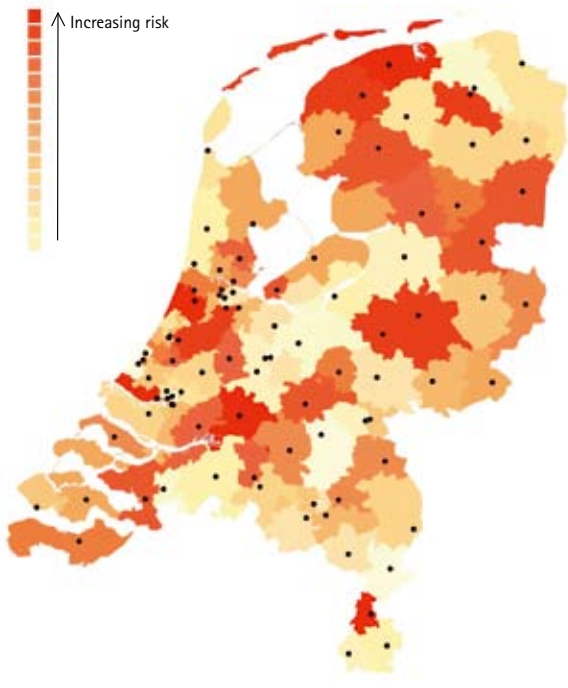
E10

**Early Warning System Dutch landscape**  
[based on EBTD as % of turnover;  
average 2006-2008]



**Early Warning System Dutch landscape**  
[based on debt as multiplier of  
turnover; 2008]

E11



*Is DOT just blind  
faith after the  
unrealistic DBC  
ambition?*

At the same time since B segment is only between 10-20% of the total revenues<sup>2</sup>, we have not been able to gain sufficiently from this performance driven paradigm.

We have thus enhanced the costs but not the full benefits of the performance driven hospital financing we were supposed to have introduced.

It will take a brave person who has sufficient authority to act on what we have been saying for a while now: this emperor is wearing no clothes<sup>3</sup>.

**5) Early Warning System developed to identify hospitals at risk both due to low operational cash flow and large debt in changed cost of capital regulation regime (Exhibit E9, E10, E11)**

We have developed an Early Warning System to identify hospitals at risk. We have used two types of risk both based on current and past hospital performance:

- a) The operational cash flow of hospitals over the last three years. This reflects the amount of free cash available to tide hospitals over in difficult times. We have used earnings before depreciation as share of turnover in 2006-2008<sup>4</sup>. Low EBTDA<sup>5</sup> (2006-2008) identifies hospitals with low cash flow.
- b) The debt of hospital in relation to turnover. This identifies hospitals that have made recent large investments which have so far been covered by the previous cost of capital regime. Should these hospitals receive capital costs in relation to production rather than investments they will be in financial trouble.

We have defined four levels of operational cash flow risk and three levels of debt risk. The hospitals in these highest risk levels (level 4 and 3 for operational cash flow and level III for debt) are shown in Exhibit E9.

*Spotting hospitals  
at risk early ...*

In maps E10 and E11 we show these relative risks on the Dutch maps. The darkest regions reflect the relative higher risk of continuing hospital operations in these regions in the future.

<sup>2</sup> Depends on how revenues are defined. 11% if all hospital revenues are included, 17% if only patient related budget is considered.

<sup>3</sup> See our earlier study *The Twilight* for a discussion on DBC.

<sup>4</sup> Corrected for interest payments in 2008 only.

<sup>5</sup> EBTDA: Earnings Before Tax, Depreciation and Amortization.



*... so that they  
can address it ...*

Hospitals have other future risks: like loss of market share, spiraling out of control costs, future investments, budget cuts, etc. However all of these future risks are also opportunities to strengthen their own position. For each of the high risk hospitals there is a varying potential of improving productivity and gaining market share. In almost all cases these hospitals are in a position to improve their operations and mitigate the identified risks on their own.

*... for it pays to  
mitigate risk early  
than to do damage  
control*

We have quantified the cost of not addressing the risk adequately and on time. Should the risk blow up into a crisis like IJsselmeerziekenhuizen then the cost of the crisis is EUR 300 million for the seven hospitals in operation cash flow risk level 4 and 3. This is 23% of their turnover. The performance improvement required of this group is just EUR 54 million which is 4% of their turnover. Clearly it pays to identify and avert risk sooner (EUR 54 million turnaround) than later (EUR 300 rescue operation).

Not all of these hospitals are at risk of closing operations tomorrow. These risk levels qualify the relative risk among hospitals. In this sense the cutoff between levels is somewhat arbitrary. Hospital performance is a continuous line and we have arbitrarily defined the cutoff to identify different risk levels. The issues we want to emphasize by doing so are:

- Hospitals have different relative risks
- We need a system to continuously monitor hospitals
- We need a clearly laid out program for averting the risk.



## Introduction

Of all the transactions we make in our lives, health care transactions evoke the most intense emotional response. Consider all the transactions we make every day, because at some level life can be viewed as a sum of all transactions. Think of the transaction involved in your first bicycle as birthday gift, your first car or purchasing your first house. Or moving to more personal memories remember the transactional anticipation of your first date, the joy of your marriage, or the miraculous wonder at the birth of your first child. The emotional intensity of these transactions varies as does the economical impact.

*Healthcare  
is more than  
economic utility  
maximization ...*

Health care transactions evoke a massively intense emotional response that is a mixture of uncertainty, anxiety and even fear before the transaction, and gratitude or sadness at the end depending on the outcome. Economical utility defines the contours of normal consumption based transactions. For example, the choice of buying a car is a trade-off between affordability and preferences. Health care based transactions are however less defined by economic ability. Fear and anxiety also sets the limits. Economic theory in health care has long held that insurance encourages over utilization, a concept dubbed as moral hazard. There is however well documented danger of overemphasizing the moral hazard in health care insurance. Unlike claiming fictionally lost sun glasses during vacation, seeking health care comes with serious personal risk and pain. It is hard to see how insured people will become reckless consumers of interventional health care leading to wastage. Quite on the contrary, I know of many people who endlessly and irrationally, and often at the cost of their own health, continue to delay consultation or even intervention. Why would they do so, when the economic cost of it is effectively zero in the Netherlands?

*... for against  
'moral hazard'  
is the risk of  
underutilization ...*

Procrastination in seeking health care has to do with the uncertainty, which leads to anxiety and fear, which most health care interventions evoke. As innovative health care interventions have become standard the risks involved have come down and acceptance has become easier. But risks are certainly there. There is but a chance that the interventions will be successful, just as there is a chance that the interventions could lead to adverse reaction. We do not have endless nightmares about the risks involved by bringing in a stent intravenously but perhaps do lie awake at the thought of it or of undergoing chemotherapy. Most interventions come with risk and our minds and our bodies intuitively recoil from them. Most health care transactions are the last

*... driven  
by anxiety,  
uncertainty  
and fear of  
interventions.*





*Underutilization of hospital care is as much an issue as over-utilization*

resort of the desperate. When there is no other option in sight we agree to the doctor's advice. But to assume that we would recklessly consume health care and that some kind of economic model needs to be in place to limit our health care greed is, to my mind, partially folly. There are patients and doctors who have a lower threshold to initiate interventions, especially of the chronic and elective type. But there are many other patients who do not seek the right advice on time or follow it, leading to poor outcomes. Even without any economic barrier we in the Netherlands have an under utilization issue along with an over utilization in our hospitals. Or in other words under utilization in health care is as much an issue as over utilization.

Access, quality and cost have become the mantra of health care policy goals. But two of these three words are redundant. There are to be exact 65% too many letters, even when I don't count 'and'. Access needs to be the only goal of health care. In access the aspects of quality and cost are already included. Several studies show that poor people seek and consume more health care than the affluent. Only lack of access to the best practice hospitals leads them too often to seek sub-standard care, "quacks" and alternative health care practitioners; lack of accessibility to best practices means repeat visits and extra costs.

*Access already captures the cost and quality constraints and should be the sole policy goal*

That access is by itself the only real health care policy goal is obvious since access is only worthwhile if it is access of the best quality available at a price the patient can pay. All other kinds of access, unlike in other consumption goods, are not acceptable to most patients.

All of this became obvious to me at the hospital where I am writing this report, The Breach Candy Hospital in Mumbai, India. It is one of the more affluent hospitals in India, famous for being the preferred treatment site for many of the Mumbai film stars, rich businessmen and politicians. Despite its rich clientele Breach Candy also has a charitable mission. The hospital proudly displays at its entrance that care to all those earning less than 25,000 Rupees per year is completely free, while those earning between 25,000 en 50,000 Indian Rupees will be charged up to 50% of the fees. Roughly this translates to an income level of EUR 400-800 per year. Despite the large blackboard with these inspiring words at the entrance of the hospital, I did not to my mind saw one patient that could have fitted this income level. India is experiencing massive growth. A quick chat with the attendant fixing the bed revealed that he earns about 40,000 Rupees a year plus fringe benefits, and he has been working in the hospital for nearly



*Access implies both presence of capacity but also perception of it being available*

30 years. I would guess that a sizable majority of this vast city of about 15 million people earns less than a hospital attendant and fall in the low income bracket that this hospital strives to provide with charitable, free care. But given lack of both actual and perceived access, almost nobody was availing this "free" care when I was there for 7 days. The poor in India have often no access to high quality health care. Even in the current example where physical access may be possible, many of the poor do not know or believe that access could be sought and therefore do not seek access to best care.

Cost of the 175 bed Breach Candy Hospital is by Dutch standards very low. The room costs were less than EUR 80 a day and the total charges for an oncological operation of potential growth behind the ear came to about EUR 2500. Unlike the Netherlands about half of this was the fee of the oncology surgeon and the other half hospital fee (on an average the ratio in the Netherlands is 85% hospital and 15% physician fee). But even at these cost levels Breach Candy hospital is not accessible to most Indians.

Access should also mean access to quality. Quality in health care is impossible to judge beforehand. Even after the operation the slew of variables both related to conditions before the operation, as well as patient behavior afterwards, make it high impossible to isolate and rank the operation process and competencies of the care givers. If you smash a car it is often your own behavior or of your fellow road users. In any case the car performance can be fairly well isolated from your driving skills and the condition on the road. But if a tumor grows again, or parts of it remain behind, is it your body or the skills of the operating surgeon?

*Many patients make a conscious and diligently analyzed choice ...*

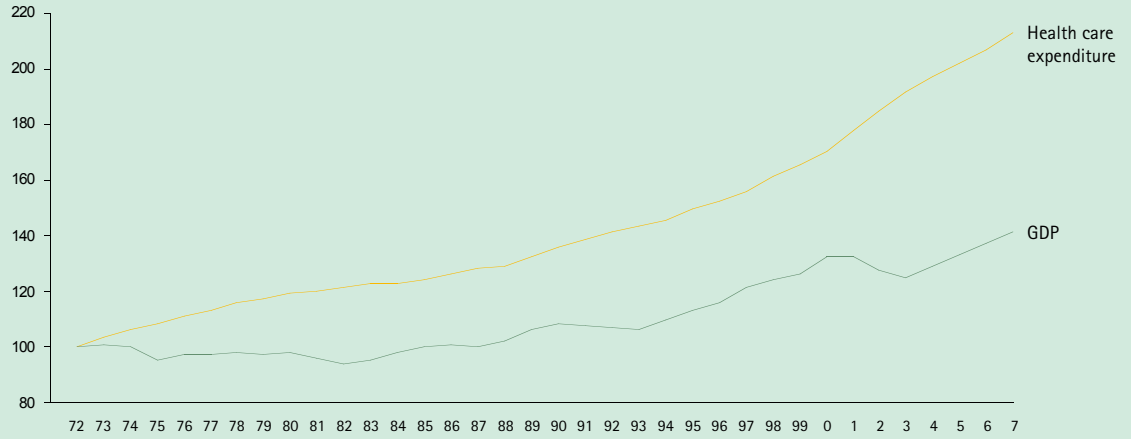
But setting aside this difficult issue, the patients in Breach Candy Hospital are almost all there by a very conscious choice of their doctor and their hospital. For most patients at Breach Candy, as in the Netherlands, cost has not been a decisive factor in choosing their hospital. My mother for example, flew in from Delhi nearly 1500 km to a specific oncology surgeon in Mumbai. Although she had consulted many renowned doctors in Delhi, she felt most comfortable with his surgical skills.

*... but most patients are unaware, unwilling or unable to make a conscious choice*

For my mother access to this doctor and hospital was available. The choice was made through a rather diligent quality consideration in which costs did not play a decisive role. But for most Indians cost and lack of understanding quality precludes this conscious selection. My mother had been regularly getting herself tested for growth behind her ear, it being an earlier diagnosed problem. How many people in India have even access to such testing? Or are even aware that such access must be sought?

11

Health care goes up and up no matter what the GDP does  
 Development health care expenditure and GDP  
 [Index growth with 1972=100, and on constant price basis]



Source: CBS

*In the Netherlands  
we take excellent  
access for  
guaranteed ...*

The central goal of health care comes down to meaningful access. In the Netherlands we take excellent access for guaranteed. Even in IJsselmeerziekenhuizen, which has but a marginal affect on overall access, access was deemed too important to allow the hospital to be closed. And though we know there are quality differences, we don't fully understand how big and specific these are. Given the difficulties with quality we do not often seek access to the "best quality": real or perceived. As a consequence there are surely quality inequities in health care in the Netherlands, but the extent of inequities is not easy to quantify.

*... even though  
there are surely  
large quality  
inequities*

A purpose of this report is to consider the future accessibility from a cost perspective. Cost has not been a determinant for accessibility to health care in the Netherlands for the last half a century. In Exhibit I1 the index growth of health care expenditure per capita, and GDP per capital is plotted from 1972 to 2007 on constant price basis. The economic welfare in the Netherlands has increased steadily by 1% per year on constant price basis. Health care expenditure per capita has increased at twice this rate over a 35 year period going from EUR 1615 per capita in 1972 to EUR 3427 per capita in 2007.

*Cost has not been  
an access limiter*

*Even though  
growing twice as  
fast as GDP ...*

Consider this: over a large time span of 35 years health care expenditure has increased at the twice the rate of the overall economic growth. It is not just that health care grows faster than the general economy, it is that it has done so consistently over a very large time span of 35 years. Since the 2% annual growth on health care was based on a small health care footprint of about 10% of the total economy and the total economic growth was still much larger than health care expenditure this preferential growth was possible without major stress.

*... health care has  
not faced a cost  
crisis so far ...*

It is worth considering what would happen if our children did this again. Extrapolation of GDP growth per capita implies that by the time our children enter pension in 2042 after 35 years of working life behind them the Dutch GDP per capita would be EUR 37803. The health care expenditure would be EUR 7314 per capita. In 2042 health care would then encompass 20% of the total GDP share<sup>6</sup>. If the GDP growth stuttered, then the share of health care could be as much as 30%. If economy continues to grow at the rate of last 40 years then about 1/3 of all new growth would go towards health care.

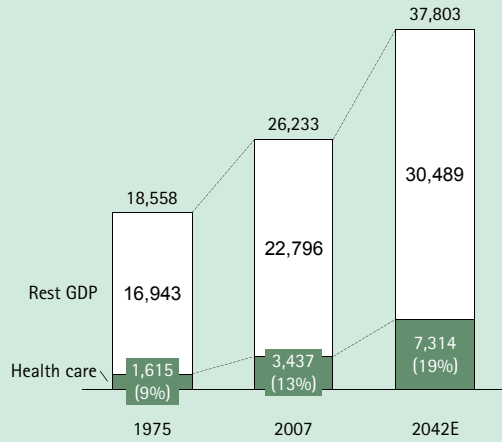
*... but the risk is  
surely growing*

<sup>6</sup> Without accounting for ageing population and innovation.

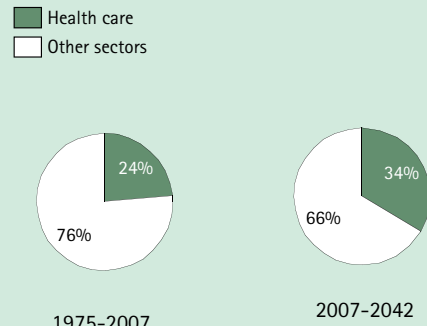
12

**Health care consumes a disproportionately large part of GDP growth**  
 [EUR; on constant price basis]

GDP and health care share



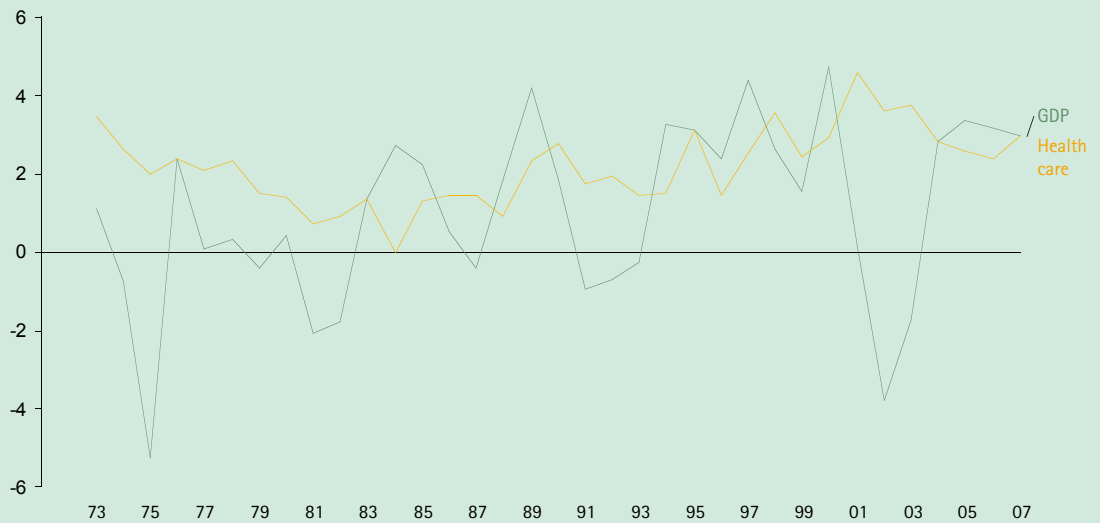
Share of health care appropriation in total GDP growth



Source: CBS

13

**Two out of sync roller coaster rides: health care is a smoother ride**  
 Year on year growth in health care expenditure and GDP  
 [on constant price basis]



Source: CBS

*Every EUR  
GDP growth to  
healthcare?*

Or in other words if economy growth in the coming 40 years is only about a third of what we witnessed in the previous 40 years, than every EUR of growth would need to be spend on health care (Exhibit I2).

*Healthcare  
expenditure has  
never declined ...*

Two other subtle features of health care growth stand out. The first feature is that healthcare expenditure has never declined in the last 35 years. We have had three periods of sharp decline in GDP per capita in the last 35 years; in 74-75, in 81-82 and in 2001-2003. However, rain or sunshine, health care expenditure keeps going up. In 80's and early part of this century the relative health care growth was slower, but still positive. There has not been a single year of negative growth in health care in the period of 35 years from 1972 to 2007.

*... but suffers  
wild fluctuations  
in year-to-year  
growth ...*

The second feature of health care is the roller coaster ride its growth rate has taken over the 35 year period. Health care costs have consistently gone up; but the rate of change of the growth rate has been anything but smooth. For the mathematicians the first derivative has always been positive, but the second rate of change has been both massively positive and massively negative (see Exhibit I3 and I4) over different periods.

*... that are not  
linked to an even  
wilder economy  
roller coaster*

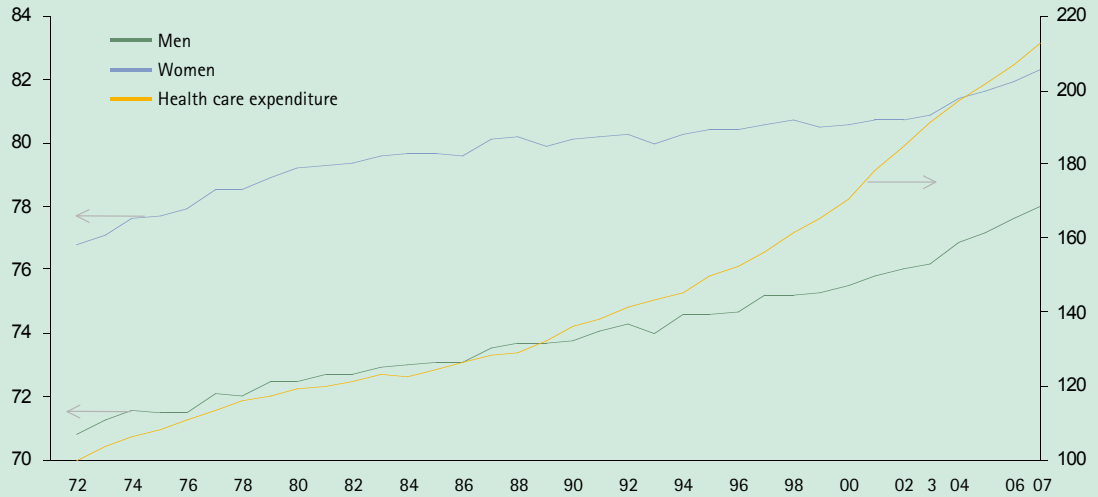
Let us see if like Robert Pirsig's approach to his motorcycle journey there is any logic to the growth of health care expenditure. A mechanical approach to deciding health care expenditure could argue for cyclical or anti-cyclical growth rate. Exhibit I2 shows the growth of health care is not cyclical with GDP: in 2000-2003 but also in 81-83 health care expenditures grew while the economy contracted. But neither has the health care growth been anti-cyclical. There are those that claim that since health care is collectively financed governments can rationally allow for anti-cyclical behavior, spending more on health care in difficult times to climb out of the dip. Specifically in periods in 74-75, 88-90 and 93-95 health care expenditure was not anti-cyclical, whereas 74-75 did see the economy shrink. Health care expenditure appears not linked to the economy in a consistent way, except the general idea of it always increasing.

Having concluded that health care expenditure is not entirely rational, let us consider if it is Zen. Health care is such good value that one might just as well go with the Zen feeling of letting it grow. Health care is good for us: the growth in health care among other factors has improved life expectation at birth by 7.2 years for men and by 5.5 years for women between 1972 and 2007 (Exhibit I4). Despite this benefit the growth

14

**Higher spending on health has gained years of life**

[Life expectancy at birth in years[left] and health expenditure development on constant price basis [right] index growth with 1972 = 100]

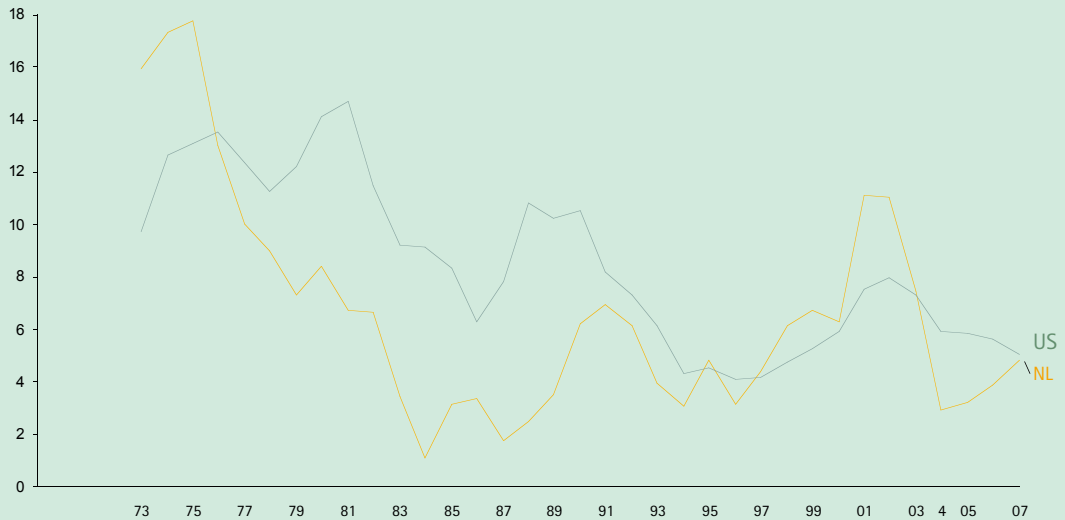


Source: CBS

15

**In step with each other**

Annual growth in health care expenditure in NL and US



Source: CBS, CMS



of healthcare has not been a smooth ride. Health care growth has been far from either logical or romantic.

With lack of both a rational and a romantic approach hospital growth has become a muddled business. This muddling through may have worked so far. But I think we owe it to the coming generations to take a more Robert Prisig approach to health care policy. We need to have a mechanical basis: based on founded reasoning: where and when is health care funding good value for money. And we need to have a Zen or romantic basis: since economy alone will never dictate health care needs at any given moment fully. We need both doing and undoing.

*US has spent  
2% a year more  
for 35 years on  
healthcare ...*

For those that think that the Netherlands maybe an exception we have also compared growth in the Dutch with the American health care expenditure over the period 1972-2007 in Exhibit I5. Both growth curves are eerily similar. I think not that the Congressional Budget leaders in Washington check with their counter parts in Den Haag before opening the valve to inject more oxygen money into health care or choking it off. But both departments across the ocean appear to move more or less in sync. It would be worth seeking the underlying logic for this similar behavior. For now the only difference in the two is that the US curve is 2% points above the Dutch curve (average Dutch growth has been 7%, average US growth has been 9%). The current US crisis in health care from this perspective can be seen as an early warning for the impending Dutch crisis. The universal insurance issue that the US faces is a mammoth challenge. But insurance issue can be solved by throwing more money at it. The real challenge in the US as in the Netherlands is the same: how to manage costs. To manage costs we need to claim the necessary ground of the rational and the romantic, the holistic approach of mixing the maintenance part with the Zen part of enjoying a motorcycle ride.

*... but the US  
pattern of growth  
is eerily similar to  
the Netherlands*

This study looks at developments in 2008. 2008 was year in which the economy took a nose-dive. Yet it was a year in which hospitals grew nearly 7%. The ever widening gap will have to be funded in the coming years. The inability to do so will affect hospital capacity, an issue we detail further in the report in our Early Warning System analyses.



## Methodology and Metrics

The methodology and metrics used for our hospital performance monitor are identical to those used in our previous year reports. We refer the reader to these earlier studies for full details. A brief summary is provided here for the first time reader and as refresher for the returning audience. We report results at three levels:

- 1) **Hospital Sector or Cure:** These include 91 hospitals in the Netherlands that publish their results in the annual reports. Specialized hospitals like AVL and SMK are excluded because no direct comparison with peers is possible. Also small private clinics (ZBC's) are not included.
  
- 2) **Peer groups:** We have divided the 91 hospitals in a set of 8 peer groups. The peer groups are meant to reflect relatively comparable hospital profile. Three considerations have been used to arrive at the peer groups:
  - a. size of hospital
    - i. large
    - ii. medium
    - iii. small
  - b. location of the hospital
    - i. urban, competitive (ample choice for patients)
    - ii. rural, non-competitive (limited choice for patients)
  - c. Cure profile
    - i. General hospitals
    - ii. Teaching hospitals (STZ, with limited top reference care)
    - iii. Hospitals with large component of top reference (WBMV) care
    - iv. University Hospitals (UMC)

As we have reported previously peer groups have comparable cost-to-serve (EUR per patient entity served). All except the UMC group have a cost-to-serve standard deviation of less than 10%. For UMC the standard deviation is nearly twice as much (18%, 2007) reflecting perhaps the rather different cost structure due to different degree of care intensity and specialization.



- 3) **Individual Hospital:** Hospital specific performance and ranking of each of 91 hospitals analyzed.

For each of these three aggregation levels we analyze three different metric dimensions:

- 1) **Market Performance:** Here we analyze the performance of the hospitals in their markets:
- a. Turnover
    - i. Total turnover
    - ii. A segment
    - iii. B segment
  - b. Market score: A measure that reflects the market share of a hospital. It is normatively set at 1.00 based on travel time preferences
    - i. Overall score based on EPB (A+B segment)
    - ii. B segment based on turnover

The market scores have been updated this year based on three new parameters: new travel times to hospitals, new or closed hospital locations, corrections reported by hospitals in their historical production. Finally we have updated our travel time based algorithm for assigning markets to hospitals based on new insights that have become available to us. These changes have been implemented retrospectively and therefore the historical market scores of some hospitals have also undergone adjustment. But this allows for year-to-year comparison.

- 2) **Operational Performance:** Here we analyze the process and cost operational performance:
- a. Cost-to-serve
    - i. Labor cost-to-serve
      - 1. Labor productivity
      - 2. Labor costs
    - ii. Procurement cost-to-serve
    - iii. Capital cost-to-serve
  - b. Patient entity mix: outpatient, inpatient, average length of stay and day treatments



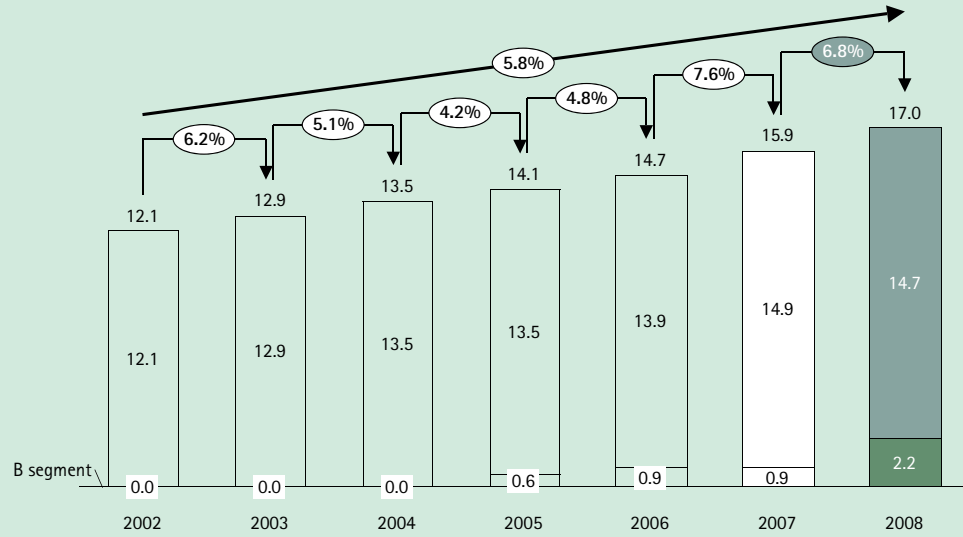
### 3) Financial Performance:

- a. Profitability
- b. Equity
- c. Debt

Based on these metrics we analyze the performance of all the 91 hospitals within their peer groups. This is the basis for the rank of an individual hospital relative to its peers in one of the three categories: outperformers, on-par performers, and underperformers.

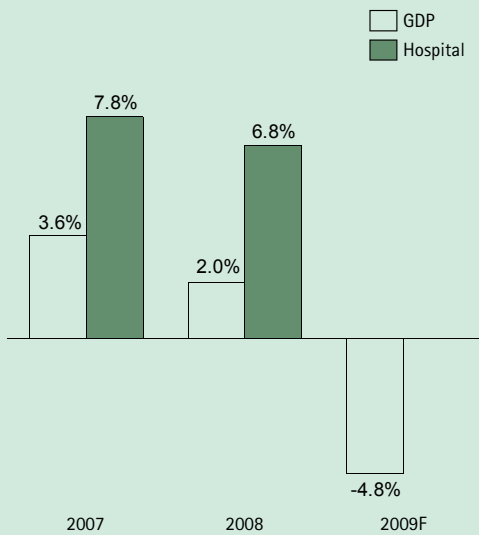
M1

**Another bumper year**  
Hospital turnover  
[EUR billion]



M2

**Well ahead of GDP**  
Hospital turnover and GDP growth



Source: CBS



## Market Developments:

### Ever faster: continued sharp increase in hospital turnover

*Historically large revenue growth ...*

The turnover of the cure sector grew 7% in 2008 to reach a total of EUR 17 billion, up from EUR 15.9 billion in 2007 (see Exhibit M1). 7% is lower than the growth of 8% in 2006-2007, but well above the 6 year average annual growth of 6%. Growth of the hospital sector relative to the total economy (GDP growth) shows a total disconnect. We have earlier seen that the 35 year average growth of total healthcare is not connected, either cyclically or anti-cyclically to the GDP growth. The only sensible conclusion is that health care grew a full percentage point higher than GDP for 35 years on constant price basis (see Exhibit I3). In 2008 GDP grew 2% in the Netherlands, hospital turnover grew 6.8% (Exhibit M2).

It will be interesting to see how big the growth in the hospital sector will be in 2009 when the economy is expected to shrink nearly 5%. Such a large shrinkage has only happened twice before in the last 35 years. In 1975 the Dutch economy shrank by 5% while health care grew by 2%. In 2002 the Dutch economy shrank 4%, while the health care continued to grow by 4% on constant price basis.

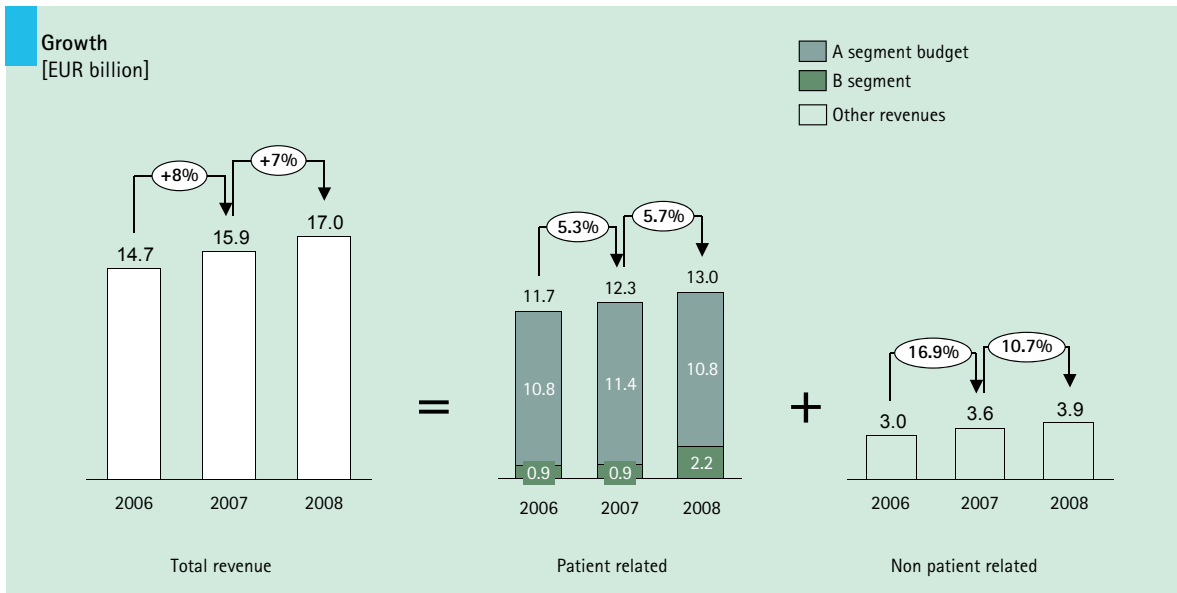
*... that outpaced both GDP and consumer price index growth*

The consumer price index grew 2.5% in the Netherlands in 2008. The Dutch hospital sector grew nearly three times as fast as the consumer price index at 6.8%. Hospital growth outpaces both consumer price index and macro-economic growth.

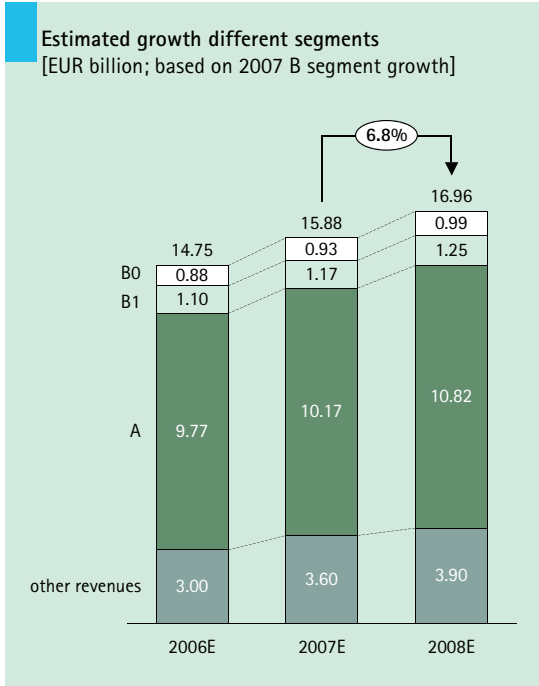
The largest turnover gains were realized by the urban hospitals and the small rural hospitals (Exhibit E2). This is not particularly noteworthy since in 2007 these were the hospitals with the smallest revenue gains. It would appear that they are catching up. UMCs stand out since they grew faster than average in both years, 11.5% in 2007 and 7.8% in 2008.

The non budget related revenues of hospitals have been growing faster than the budget related revenues (Exhibit M3). The A and B segment together constituted EUR 13 billion of the hospital revenue and grew 5.7% in 2008.

M3



M4



## To B or not to B

*B segment about  
13% in size after  
expansion*

In 2008 the B segment was expanded to a theoretically 20% of the turnover. As % of total hospital turnover, that is including all not budget items, B segment was just under 6% in 2007. In 2008 B segment was 13% or EUR 2.2 billion on a total turnover of EUR 17 billion. At least as % of total hospital turnover we never hit 10% in 2007 and are nowhere close to 20% in 2008.

Even after correcting for non budget and patient related revenue, B segment is always considerably lower than the endlessly and erroneously repeated figure of 10%, 20% or 34% (see Exhibit M4, M5).

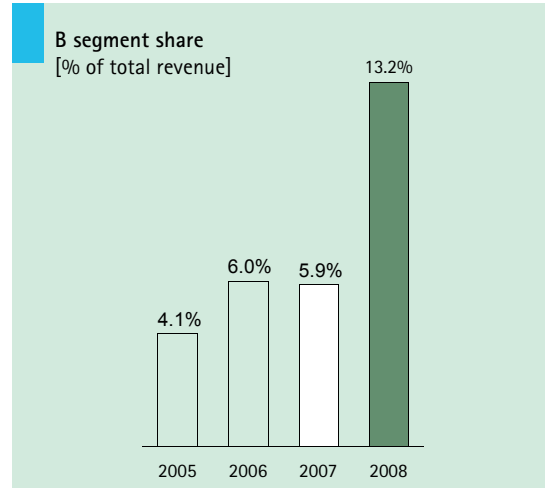
*No credible  
evidence that B  
is growing faster  
than A*

Unraveling B segment growth has important policy implications. What part of 2008 B segment is due expansion of B segment and what part is growth of the old B segment? Growth in B-segment excites much health economics imagination. Freedom to develop own price and volume brings with it the risk of large, unfettered growth. It has been argued that greed of specialists and hospital organizations could lead to unnecessary expenditure of public funds. Earlier studies, have presented evidence for and against this "greed" argument which has increasingly gained currency in these times. However based on our own studies, once corrected for the issues in the introduction year 2005, growth in B segment has not been above the historical growth for the interventions in old B segment till 2007.

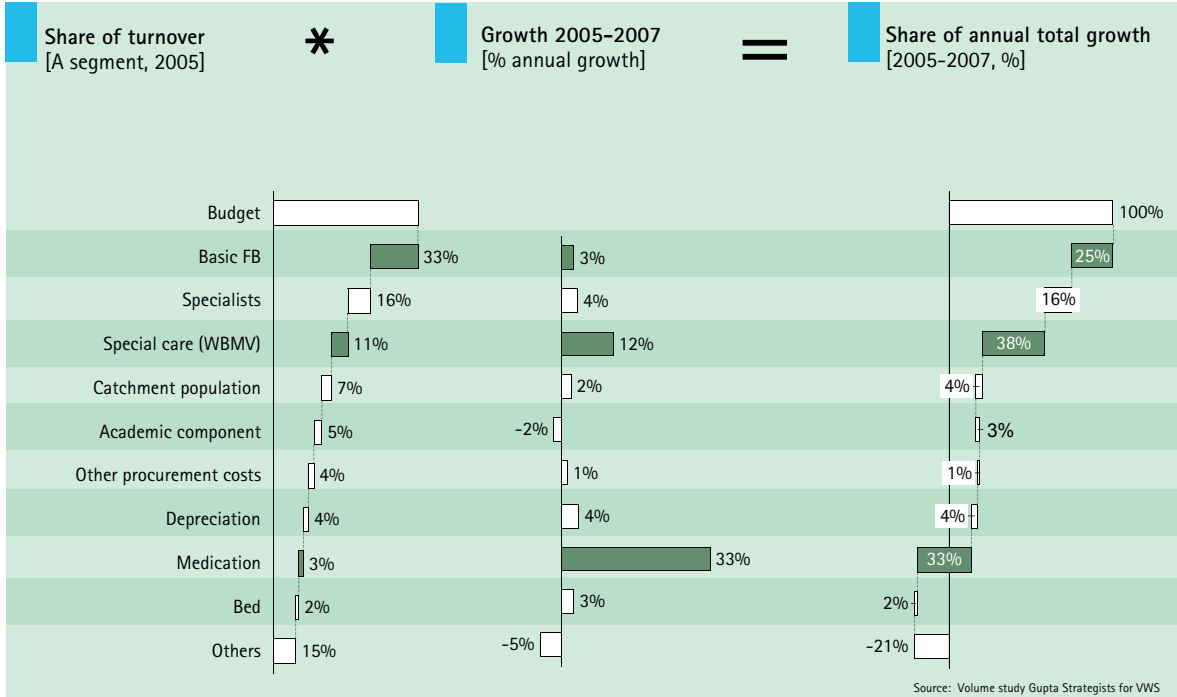
There is no reason *a priori* to assume that the growth of hospital turnover by 6.8% in 2008 has to do with B segment growth. There are number of reasons for this:

- 1) The turnover growth of 6.8% is not significantly higher than the historical growth. The long term annual growth of all health care expenditure since 1972 in the Netherlands is 7%.
- 2) In 2006-2007 the total hospital growth was 7.8%. Thus at 6.8% the 2008 growth is lower and not particularly high. Further in 2006-2007 the B segment growth was lower than the overall growth. B segment grew 6.7% while overall growth was 7.8%. There is no credible evidence that B segment drove the 2008 growth.

M5



M6



- 3) *Schoning* can work both ways. It can lead to additional growth, if opportunistic behavior of hospitals wins, or suppress growth if the opportunistic behavior of insurers wins<sup>7</sup>. Indeed while some hospitals have implemented NZa *schoning* others have worked with an estimate that could be corrected in the coming years. On paper since there is a countervailing power it is not natural that *schoning* issues would work only to overestimate 2008 turnover. However in reality hospitals have disproportionately better information. We have estimated (see below) that due to structurally lower *schoning* hospitals managed to increase their turnover with 0.4% which is about EUR 50-100 million. Not all hospitals however profited equally. In any case this has little effect on the B segment growth.
- 4) Recent work we have done on volume development in A segment shows that top referent care (WBMV) and expensive medication have undergone explosive growth in 2005-2007. The growth of WBMV was 12%, while that of expensive medication was 33%. In comparison the value of the basic 4 FB parameters grew only 3%. While the size of WBMV and medication is still small, their explosive growth has contributed significantly to the large A segment growth (see Exhibit M6)

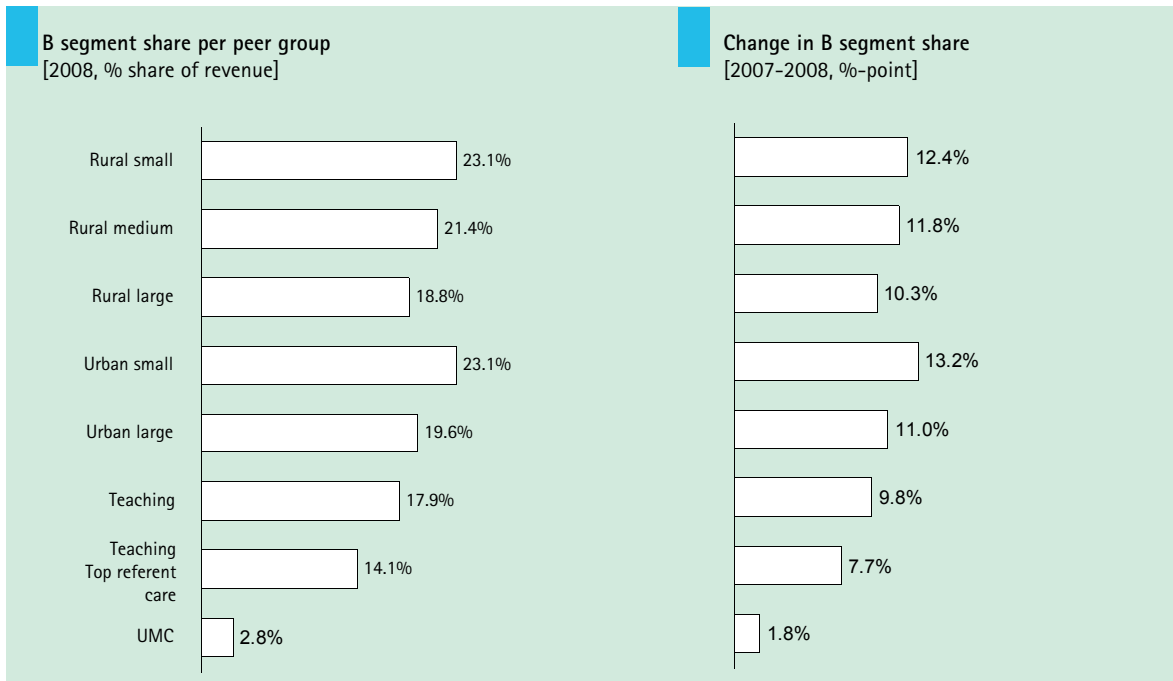
Consider a simple analysis. If old B segment grew at the same rate in 2008 as in 2007 than it would be of a size of EUR 990 million in 2008. If the new B segment was also growing at the same size it would have grown to EUR 1.25 billion up from EUR 1.17 billion 2007. Since the overall growth in 2007-2008 is 6.8% this implies that A segment grew by 5.8% in 2008 (see Exhibit M5). Based on 2007 extrapolation B segment grew slightly faster than A segment in 2008.

*Remains unclear  
if B segment grew  
faster or slower  
than A segment in  
2008*

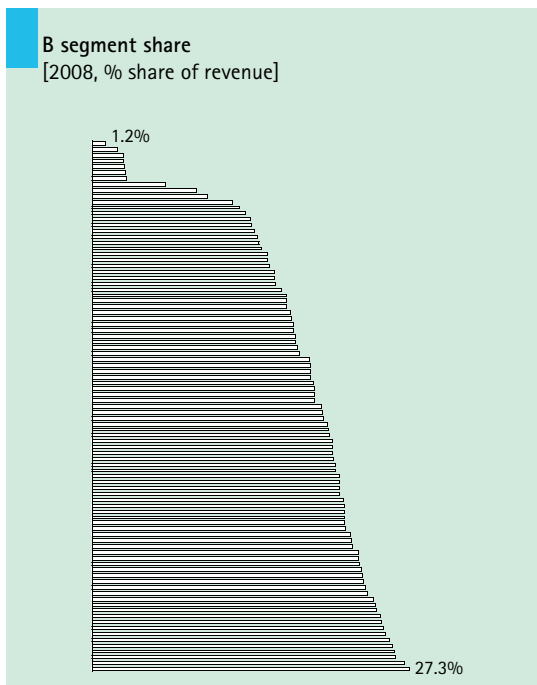
Another way to look at the growth is to use the 2002-2007 cumulative annual average growth as estimate of the A segment growth in 2008. This would put the total B segment growth to 13% in 2008. Which may or may not be high depending on the underlying growth rates of the intervention, issues around *schoning* and other corrections. In short it is not possible to estimate B segment growth in 2008, and since B segment was expanded again in 2009 it will be impossible to estimate it again next year.

<sup>7</sup> Insurers' choices are more subtle: since B segment is fully for own risk, whereas A segment is shared. In an opportunistic world, a world wisely insurer would also work to underestimate A segment. Thus it could shift the unreasonably large A segment collectively on all insurers. At the same time it would agree with its hospitals to limit the B segment growth, and share the "extra" bit with each other.

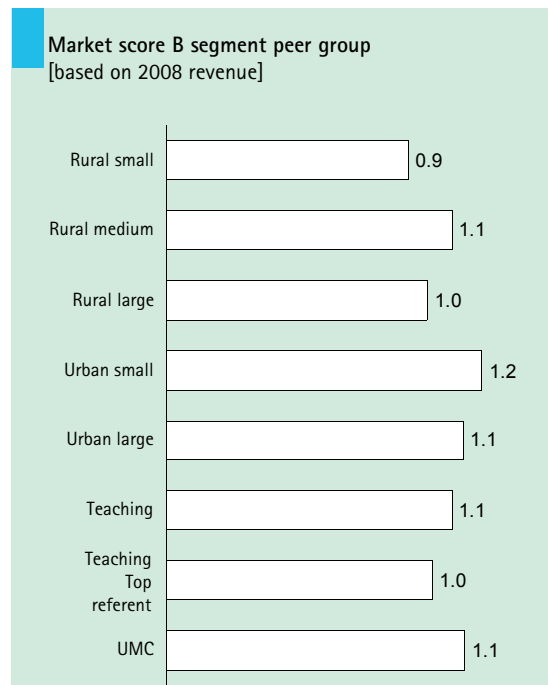
M7



M8



M9



There are two recommendations made to policy makers and the sector to develop a fact basis on this important question:

- 1) If the annual reports were to provide the breakdown of the B segment B-2005, B-2008 and B-2009, then we could analyze these separately.
- 2) Or as we did previously for NVZ one would need to look at the individual interventions, including the time line to determine the individual growth rates

For now the expansion of B segment has been set on hold. It would be fallacy to assume that unreasonable, greed driven growth in B segment is the motivator for putting it on hold. If it needs to be on hold to better understand the uncertainties and manage the administrative process during the transition that is reasonable. Due to schoning issues and very different underlying growth rates it is not possible to draw any definite conclusion about growth of B segment in 2008.

*Large variation in B segment size across hospitals*

Dependence of hospital revenue on B segment (importance) varies per hospital as does hospital performance in its care region. University hospitals have the least dependence of B segment. B segment is less than 3% of their revenue (Exhibit M7). In contrast for small hospitals B segment is more important, being 20% and more of the turnover. The change in dependence in 2008 has followed the same line of importance as in 2007, as one would expect. The small hospitals posted the largest gain in B segment turnover in 2008, the UMC and the WBMV group the smallest. The smallest dependence to the largest varies from 1% to 27% (Exhibit M8).

*Despite small dependency UMC have strong market presence in B segment*

However importance of B segment measured internally as the share of revenue is not a fair reflection of the external performance of a hospital in its markets. We reported a B segment market score or performance measure last year. It measures, normatively, the size of a hospital's B segment compared to what is to be expected based on travel time preferences of patients to different hospitals. Market score thus measures the external performance of a hospital. UMC have a market score of 1.1 which is above expectation. Despite their small dependence on B segment the market performance of the UMC in B segment is above the norm. Small rural hospitals have a market score of 0.9, which is under the norm, despite the large share of B segment in their total revenues (Exhibit M9).





## Schoning blues

To correct for total turnover in a piecemeal liberalization process, each time B segment is expanded, size of A segment needs to be theoretically corrected for the estimated size of the new B segment (a process referred to as *schoning* in Dutch, or cleaning up). There is no reliable way to estimate the size of the new B segment in EUR beforehand. Opportunistic behavior would encourage hospitals to keep *schoning* amount small so that but a smaller than actual part of A segment turnover is subtracted. Since B segment is free, they could then theoretically charge the same turnover twice, once in A segment and again in B segment; a bonus that would work year on year. Insurers and perhaps NZa if they felt sufficiently responsible for limiting budgets would like to overestimate *schoning* for the same reasons of limiting costs.

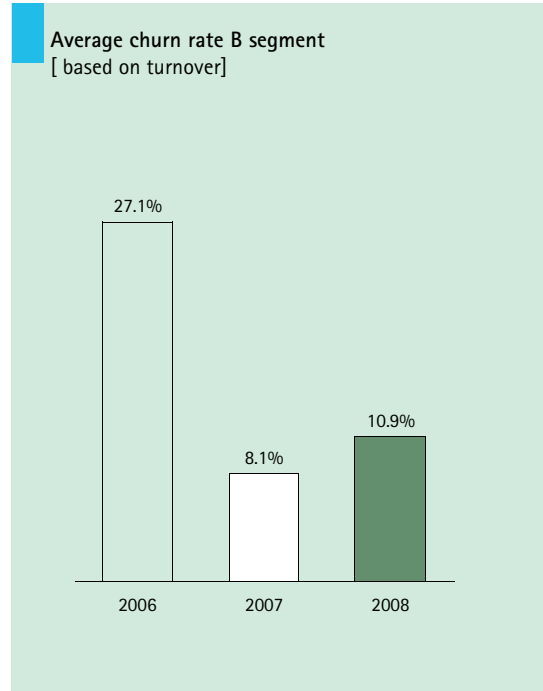
It is the actual production in relation to *schoning* amount that is important. To cash in on an opportunistic behavior of underestimating its *schoning* a hospital would need to first deliver much more than the theoretically estimated volume in B segment. A hospital that manages to deliver higher volume than the theoretical estimate makes an "unfair" profit. By the same token a hospital that plays fair and accepts its theoretical *schoning* amount based on 2007 but fails to meet the production in 2008 would lose revenues and thus be penalized unfairly.

We have estimated that the sector got 0.4% extra turnover, or the *schoning* was underestimated by 0.4%. This on a total turnover of EUR 17 billion is EUR 68 million. Given the uncertainty in the adjustment we estimate the *schoning* underestimation was EUR 50-100 million in 2008.

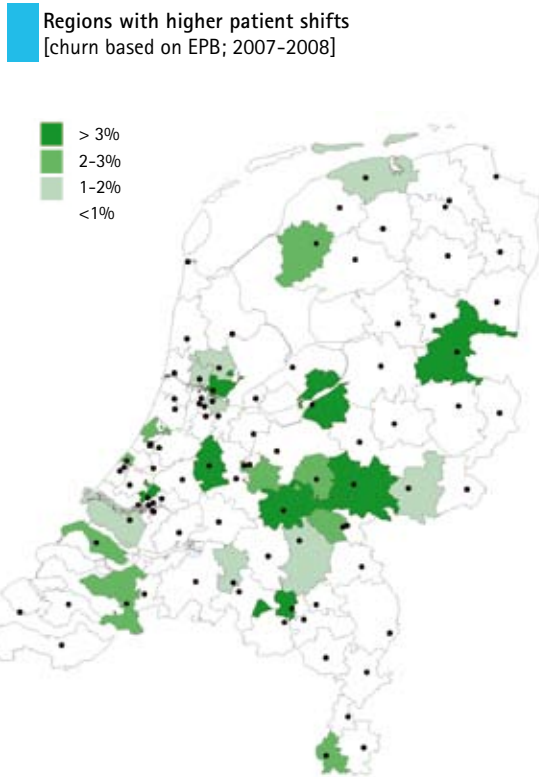
*It is not misuse  
of trust but  
administrative  
complexity that is  
muddling up the  
sector*

In an ideal world *schoning* makes no difference and can be implemented budget neutrally. But since none of the involved parties have the correct information to determine *schoning* while all the involved parties have a vested interest, there is sufficient room for chaos and manipulation. *Schoning* has indeed created chaos in 2008, as it did in 2005 and is doing in 2009. *Schoning* is just one more example of how DBC structure, regulation confusion, lack of up-to-date and sufficient price and volume information, and piecemeal liberalization have created serious issues and cost overruns. It is not misuse of trust but administrative complexity that is muddling up the sector.

M10

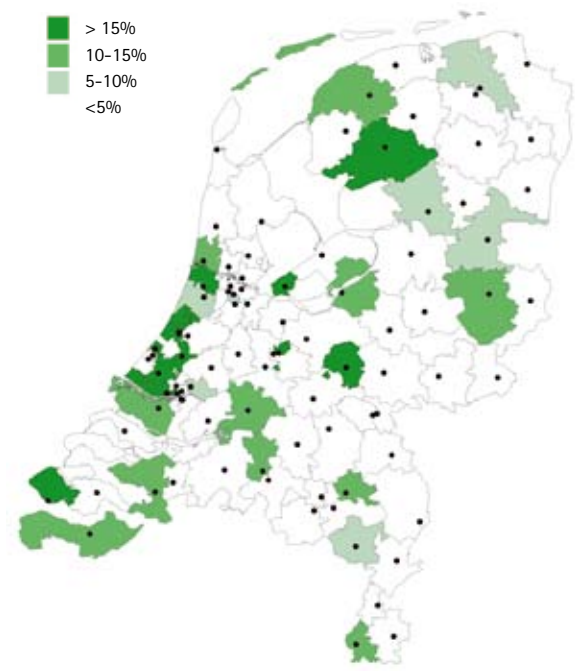


M11



**Regions with B segment shifts**  
[churn based on B turnover;  
2007- 2008]

M12



## B segment paper centrifuge

Hospitals gain and lose market shares, act and are rewarded or punished like normal companies in a market. The change in market share is a fair measure of the performance of a hospital. By using a consistent travel time preferences based definition we can simulate the market behavior.

*B segment turnover shows large year-to-year shifts ...*

The B segment market performance of hospitals has a much rougher dynamic than the total care and thus by definition also A segment<sup>8</sup>. The average change in turnover, or B turnover churn, was above 10% in 2008. In comparison the total EPB based switching was less than 2% in 2008. 2008 was a transition year for B segment. But even in 2007 the churn was 8% in B segment. Yet it is not possible to definitely conclude if patients are willing to switch more in B segment than A segment.

*... but due to price, billing and transition B churn need not reflect only patient preferences*

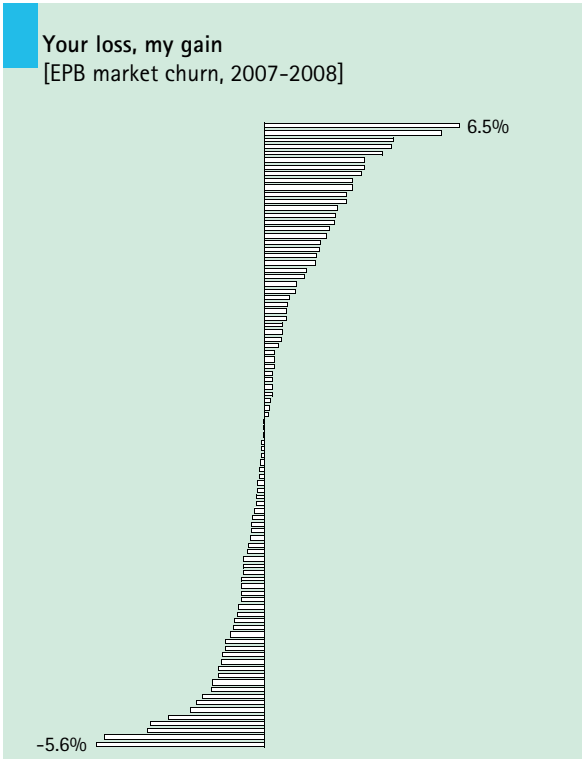
The total preference based switching even before introduction of B segment was about 2% and has been fairly stable (Exhibit M10, M11). B segment turnover based switching is a much rougher ride, more like a centrifuge with 10% average shifts in a single year (Exhibit M10, M12). Individual hospitals lose and gain about 5% in total EPB care. But for B segment it appears that they win or lose as much as 50% of their turnover compared to the previous year (Exhibit M12, M13). If we were to translate this into a volume based churn than by itself B segment would account for the complete EPB turnover. Since we know that irrespective of B segment EPB switching is around 2%, this cannot be true. Thus a significant part of the observed B segment churn has to do with price changes, billing speed and in these transition years also *schoning*. On basis of available data it is not possible to conclude if patients are more willing to shift their hospital of choice in B segment.

*Significant churn in EPB confirms a dynamic hospital market*

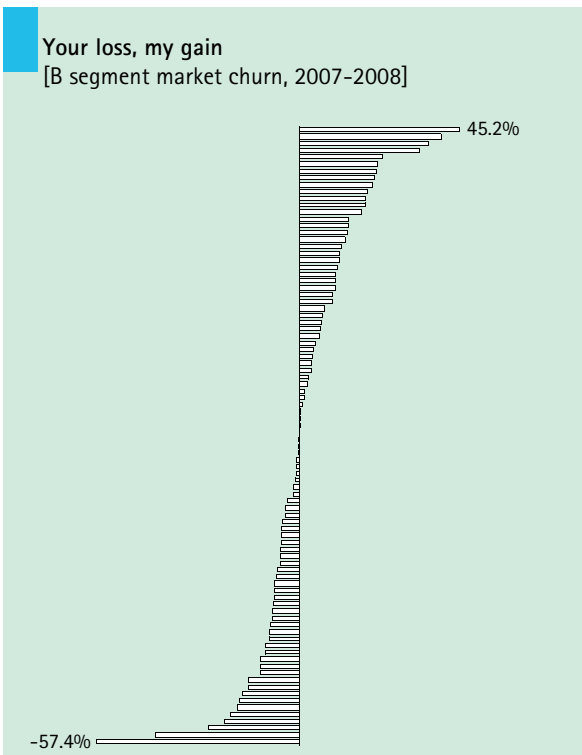
Nonetheless the observed total EPB churn is significant, especially since for individual hospitals it means gaining or losing more than 5% of the production of last year. On average EPB grew by 3.1% in 2008. In comparison 5 hospitals had a churn of less than 3% and 8 of more than 3% (Exhibit M12). Therefore even hospitals that lose market share tend not to see a decline in growth.

<sup>8</sup> Total churn is based on EPB volume, B segment is based on turnover O.

M12



M13



Gaining market position is one sure way to improve performance. However it needs to come with an efficient work flow, which means a higher productivity which in turn means a lower cost-to-serve. In the next section we examine the operations of hospitals and present the productivity results for 2008.

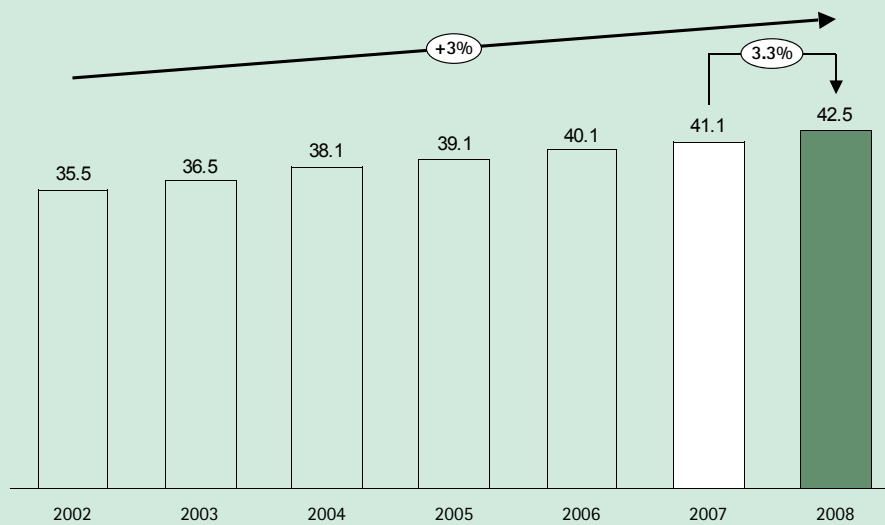
01

Losing productivity  
[Year to year change in cost to serve, EUR per patient entities]



02

Patient entities based production grew in line with historical growth  
[Patient entities in million]



## Operational Performance

In this section we look at the case mix developments and cost and productivity developments.

### Hospitals can and must improve productivity to remain affordable

The cost of the hospital sector grew just a notch higher than the turnover at 6.9% (Exhibit E1). Large and top care, including university hospitals, saw costs rise faster than turnover and as a result saw profitability decline in 2008 (Exhibit E2). The small hospitals, specifically urban small hospitals, managed to rein in costs the best, and combined with an above average turnover increase posted, the largest increase in productivity.

*Cost-to-serve increased in 2008 ...*

The efficiency metric we have introduced in our studies, cost-to-serve, measures the EUR costs incurred in delivering one weighted patient entity. The cost-to-serve increased by 3.6% in 2008 (Exhibit O1). The patient entity production measure increased 3.3% which is a consistent growth line over the years (Exhibit O2). On cost-to-serve as an efficiency measure hospitals lost productivity again in 2008. Except for 2004 hospitals have consistently lost productivity on this measure. The lost productivity in 2008 was significantly higher than in the five years previously. In 2002-2007 cost-to-serve increased by 2.3% per year, in 2007-2008 it had gone up to 3.6% (Exhibit O3). Hospitals have been steadily losing EUR value productivity, a situation that got worse in 2008.

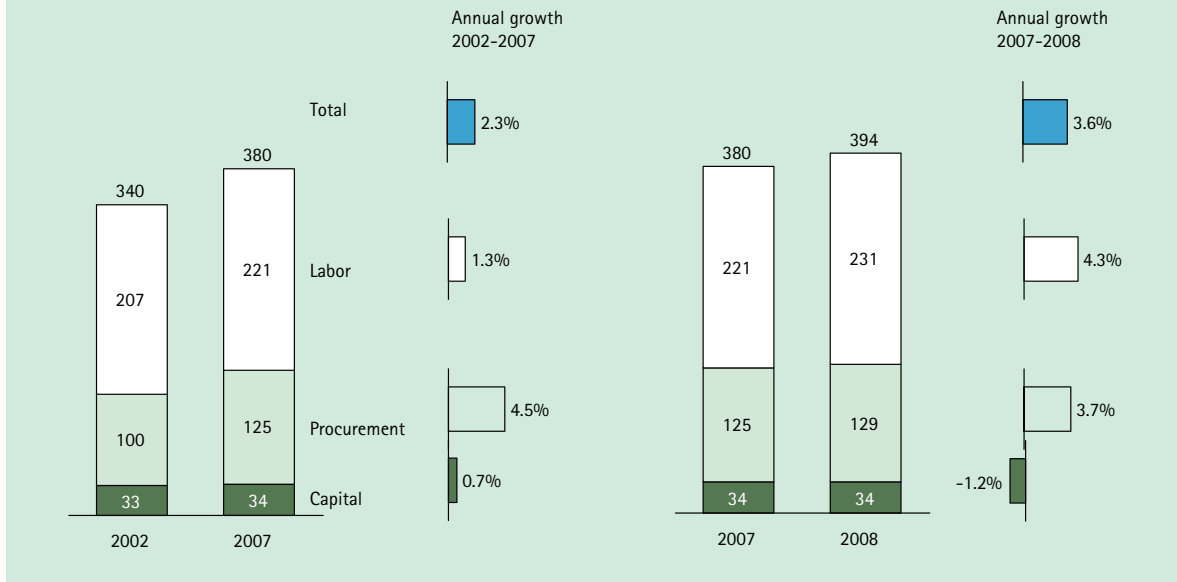
*... hospitals lost productivity*

*Cost increase could be justified given growth of expensive medication and top-referent interventions*

Of course since the budget is based only but for a part on the four patient entity constituting parameters, patient entities do not fully reflect the turnover side of the equation. In Exhibit M6 we show that the patient entities cover only about 33% of the budget and the budget component for these four parameters has been growing at 3% a year. The other two main budget growth parameters have been medication and top referent care. In as much as these require specific extra costs they are also responsible for the rise in cost-to-serve. Specifically expensive medication have been a small part of the total budgets and costs, but have risen dramatically in recent years, and account for a significant part of the total cost increase. It is possible to make both a profit and a loss on expensive medication depending on the procurement price, but a significant part of these are clearly directly incurred as costs. Considering expensive medication alone, one would be inclined to conclude that the overall productivity of hospitals has not

03

Labor cost to serve grew faster than procurement for the first time in 2008  
 [EUR per patient entity]





declined as much as one would be led to believe on the basis of patient entities alone. The definition we use in our studies for measuring production is a weighted mix of all four FB parameters. It does not reflect all care that hospitals deliver, but we address this by benchmarking hospitals within a set of peers with similar profile. To do this we have defined a set of 8 peer groups. In our hospital work we find time and again that this methodology is a fair indicator of the efficiency of a hospital. A higher cost-to-serve means larger potential for productivity gains.

The answer to the question: is a better measure of productivity possible is surely yes. But not on a macro level and at a reasonable administrative price that will help us make better decisions. The answer to the question have hospitals gained or lost productivity: our conclusion is that hospitals have lost productivity since 2002 except in 2004.

*Need to move on ...* The fundamental concern should no longer be a debate on definitions and past performance but whether there is room for productivity improvement in the future. Anybody who has worked in a hospital or has been a patient will know from firsthand experience that there is a tremendous potential to improve productivity on all three fronts: labor, procurement, and utilization of space and equipment. Of these three cost drivers, hospital procurement has tended to be the least professional, and has potentially the largest savings potential. Consider for example that medical transaction costs alone have been estimated to be as much as 25%. But labor by sheer size has the largest absolute savings potential. While labor productivity has been steadily albeit slowly improving over the last years, higher wages have meant that costs continue to increase faster than productivity. Since costs increase in line with turnover, or even faster, and turnover increases well above collective GDP growth, hospital financing is and remains an issue. There are two solution pathways:

*... stop arguing about definitions...*

- Improve productivity
- Willingness to spend more on healthcare

*... acknowledge potential and help achieve productivity gains*

Of the two solutions, the first solution is in the hospital's own hands and requires them to find ways to improve their productivity. Sufficient diligence and productivity gains are essential to justify and facilitate paying more for health care in the future.

*There are ways to improve productivity...* Hospitals have several means to improve productivity: higher labor productivity, substitution to cheaper labor, better procurement prices, better utilization of equipment, elimination of waste, etc. Improved productivity would allow for lower budgets to deliver the same or better care. Lower budgets would put a halt to the ever growing share of



*... and it is important ...*

health care of the total economy. In 2008 once again hospital budgets continued to increase, costs increased just a notch faster than budgets, and continued inability of hospitals to gain sufficient productivity means that the health care financing crisis, got just nearer. We have recently analyzed the impact of the current economic crisis on health care financing in our report Code Red.

*... therefore seek solutions not more subtle definitions of the problem*

It is high time we step out of the endless methodological discussion of how exactly to measure productivity and whether hospitals have improved or not. It is a waste of time and our creative energies. For the sake of our children and ourselves we need to be constructive and seek solutions not more subtle definitions of the problem. In any case it is important to recognize the two fundamental challenges:

- 1) Financing hospitals of the future
- 2) Improving hospital productivity

And it is these challenges where we should be spending our valuable energy and creativity.

## Huge labor cost increase in 2008

*Historically procurement has driven cost increases ...*

Over the years procurement costs have been the dominant driver of cost increase. Of the total cost increase of EUR 3.8 billion in 2002-2007, 42% or EUR 1.6 billion went towards procurement costs, whereas procurement was still only 32% of all costs in 2007. In terms of EUR productivity procurement cost-to-serve increased 26% while labor cost-to-serve grew 8% in 2002-2007. Expensive medication, medical devices and other new technologies contribute to this vast increase. But the lack of a professional procurement organization and too much waste is just as much at fault. In 2008 total costs increased at 6.9%, but the major contributor to the cost increase was not procurement but labor (Exhibit O3).

*... in 2008 labor was the main cost driver*

The yearly growth in labor cost-to-serve in 2002-2007 was 1.3%. Procurement cost-to-serve increased in the same period three times faster at 4.5% increase per year. Thus the share of procurement in the hospital budgets has been steadily growing. In 2008 for the first time we saw a reverse in this trend. Labor cost-to-serve increased faster than procurement cost-to-serve (Exhibit O3, O4). Labor cost-to-serve growth was 4.3% in 2008, while procurement cost increased 3.7%.

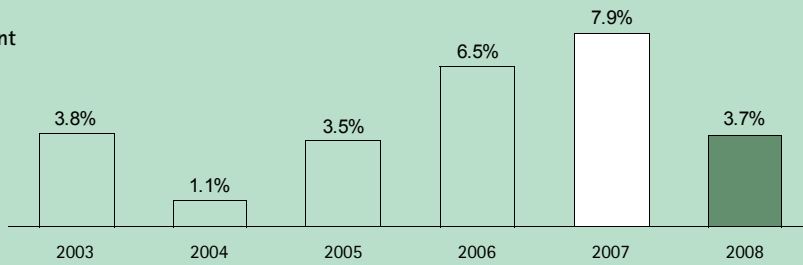
04

Labor cost to serve grew faster than procurement for the first time in 2008  
 [EUR per patient entity]

Labor



Procurement

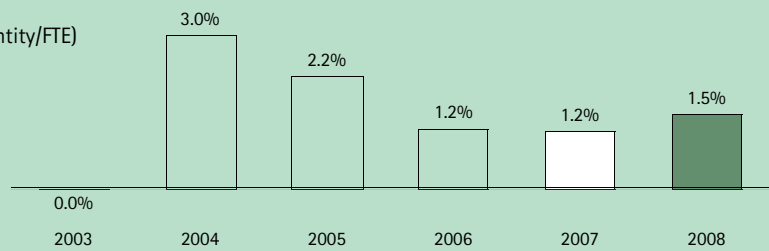


05

Less people, earning more

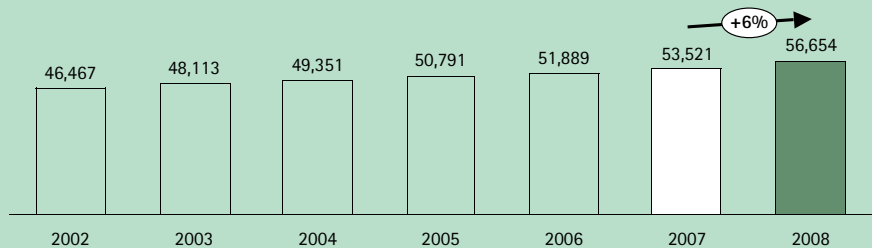
Less People

[change in labor productivity: patient entity/FTE]



Earning more

[wages, EUR/FTE]



## Root causes of labor cost increase: the double whammy of explosive growth of external personnel and salary increases for own personnel

The labor cost increase can be driven by three factors:

- a) More personnel, that is, more fte for the same amount of care
- b) Paying the personnel more for the same care
- c) Engaging more external personnel which are more expensive than own personnel

*Labor productivity improved again in 2008...*

We have looked at each of these three possible drivers for labor cost increase in 2008. The labor productivity measured as patient entities delivered per fte improved for the fifth year in a row in 2008. The labor productivity improvement was 1.5% in 2008 (Exhibit O5). Since 2004 the labor productivity has improved by nearly 10% which translates in cost savings term to around EUR one billion. At least on this measure hospitals have been consistently improving, even if ever so slowly.

*... but higher salaries...*

However despite this large gain, the other two factors salary increase and large use of extra personnel meant that the total labor cost, EUR per patient entity increased in 2008 by 4.3% (Exhibit O4). In fact the increase of 4.3% is the largest ever in the last six years.

*... meant EUR value productivity of own personnel declined*

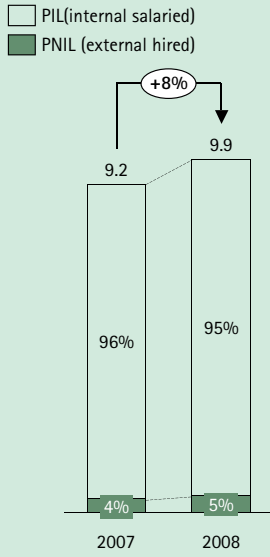
The average cost of a hospital employee increased 6% in 2008 to reach nearly EUR 57,000<sup>9</sup>. The average salary of a working Dutch is EUR 31,000. Even after accounting for employee contribution, hospitals are a better paying employer than average in the Netherlands. The salary increase across all Dutch sectors was 3.25% in 2008. The hospital employee salary is significantly higher than the average Dutch salary and increased faster than the Dutch average in 2008.

Hospitals spent EUR 700 million extra on personnel in 2008 compared to 2007. Most of this was due to salary increase. EUR 500 million of the EUR 700 million was salary increase of hospital employees (Exhibit O6). Why are hospitals inclined to pay more to their employees than the average economy?

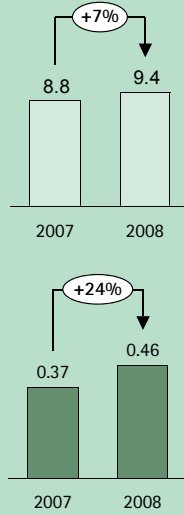
<sup>9</sup> Excluding doctors with own practice

06

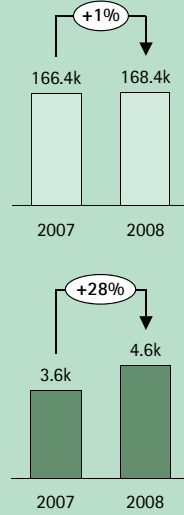
Is attractiveness of PNIL driving labor costs up?  
[labor costs, EUR m]



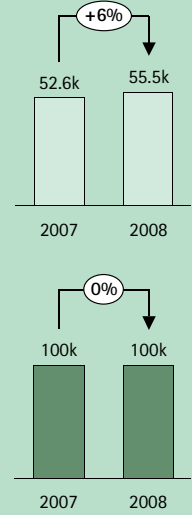
Large total increase in PIL and PNIL costs...  
[labor costs, EUR m]



...due to large increase in PNIL numbers...  
[number of fte]



... and increase in salary of own personnel  
[wages, EUR/fte]



*Hospitals hired more external personnel ...* The competition amongst hospitals for scarce personnel on many key positions could be one main reason. From our analyses we can at least conclude that there has been an explosive growth of externally hired personnel at hospitals. Since external personnel cost much more growth of externally hired personnel is one of the two main drivers for total cost increase (Exhibit O6).

*... external personnel cost more and ...* The total size of the external personnel is still relatively small at 5% or EUR 460 million. However it is growing very fast. We have estimated that 1000 external personnel were hired more in 2008 than in 2007, a growth of 28%. External personnel cost significantly more than own personnel<sup>10</sup>. The total cost due to externalizing of labor is EUR 46 million or about 5% of the total labor costs at a hospital. Or in other words an average hospital could save a maximum of EUR 5 million if it ever could eliminate use of all external personnel. Of course some external personnel will always be required. More of concern is the explosive growth of external personnel in 2008.

*... drive wages of own personnel up ...*

*... but setting up 'own shop' remains attractive* In comparison to the 28% growth of the external personnel own employee growth was 1% against a production growth of 3.3%. The main driver behind the explosive growth of external personnel appears to be the large salary difference. Salary difference of EUR 100,000 if hired externally versus EUR 55,500 on an average if employed by the hospital is simply too big.

This is a double whammy for the hospitals. It forces the hospital management to agree to largish salary increases to stem this externalizing. The 6% salary increase in 2008 was nearly twice the Dutch income increase. But since the difference between internal and external salaries is still very large even a 6% increase does not close the gap between external and internal wages. Thus the externalizing process continues. So the hospitals have it rough two ways. They need to increase salaries, and yet no matter how much better they pay the growth of externally hired personnel continues.

<sup>10</sup> We have estimated the cost of external personnel is EUR 100,000 based on limited data reported by five hospitals on both the total value and volume of external personnel.





*There is more to working at a hospital than salary*

Salary of course is not the only motivator. Hospitals provide many other opportunities, including career development perspectives, further education, a cohort of own peers and an interesting and rewarding place to work. But at the same time hospitals with their size-induced lethargy and rigidity can be also be frustrating places to work. For many employees working individually with clearly defined responsibilities and without the administrative burden could be too tempting an option, not to mention the large salary gain.

The challenge of retaining and developing hospital employee is only going to get tougher the coming years. We have developed a culture in hospitals where the individual job has become more and more specific. There is an ingrained culture of difficult professions, with more specialization and specificity. At the same time the care needs are growing and the number of Dutch employees is shrinking. With shrinking number of available employees, that on top of it are at least in the perception highly professional and specific, the labor challenge in hospitals is no mystery.

*Hospitals must take employees seriously...*

Tackling this at least partially self created problem is not impossible. Most of the care delivery processes are generic and not specific. The entire back office that constitutes 40-50% of the hospital labor is substitutable with other industries. Even for care personnel like nursing, a significant part of the job is generic and not specific. The challenge is to encourage interchangeability. To emphasize rotation of jobs and to develop multi-skilled work force. At the same time there needs to be a culture of NO WASTE. No waste not just in terms of misuse or no use of equipment and disposals, but most importantly no waste of 'my time'. We need to sweep away the entire train of steadily evolved processes in hospitals with endless cycles of waste and repetition.

*... by taking labor time and talent seriously*

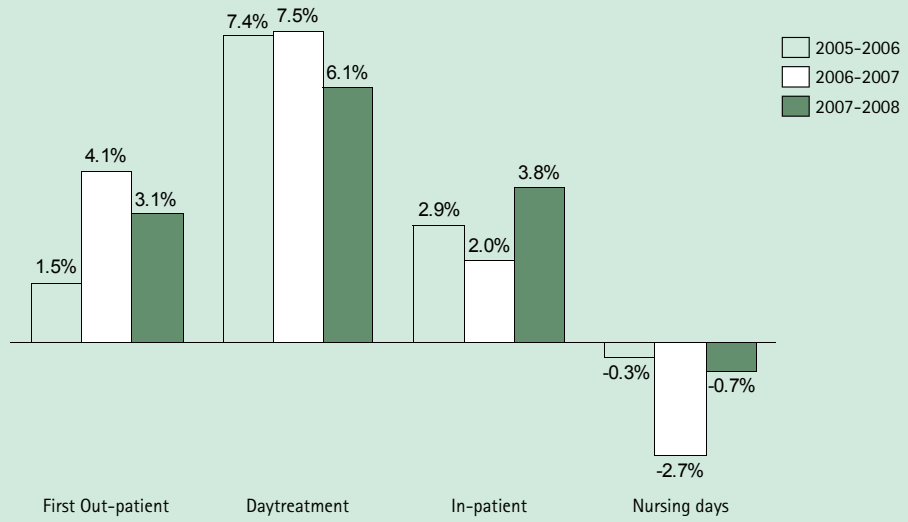
To refer to the title of our study this year: care givers have a lot of Zen energy about them. Focusing on the Zen part of the care giving, care givers have little time or appetite to review the actual nitty gritty of how they go about delivering care in the first place, what we can call the work flow. Often work flow is structured in an arbitrary way because that is the way the care givers have inherited it and endlessly tweaked them along, compromise after compromise.

*Care givers focus on giving care ...*

Care is a very human interaction. It must continue to involve the bond and the understanding between the giver and the taker. This is what we can call the Zen of care giving. But this element of Zen has often come at the risk of not understanding the work

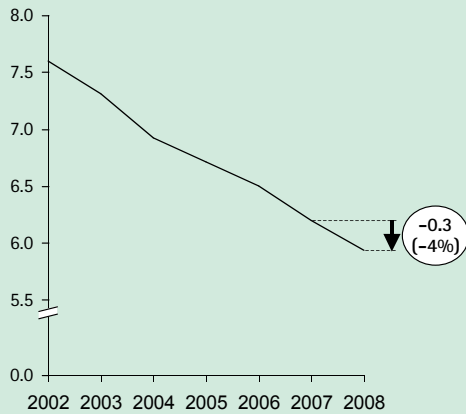
07

**Continued shift of care profile to day care and shorter stays**  
 [Annual growth in the four FB parameters]



08

**Yet quicker out of the hospitals**  
 [Average length of stay in days]



*... and have learned  
to work around  
obstacles and  
illogical routes ...*

*... but they must  
also become good  
mechanics to fix their  
own workflow*

flow rigorously enough for its affectivity. Hospitals need to be just as serious about the "mechanics" of their work flow as about the "Zen" of the care giving. Care giving also requires a strong ethos of maintenance. In the quote we use in the beginning of the study Robert thought that rain had something to do with his motorcycle not working. Yet it was because he had simply run out of gas and had mistaken the sloshing in the reserve tank as evidence of sufficient gas. It is a very simple but very relevant analogy. Care givers focus of giving care, working tirelessly around obstacles instead of working to eliminate them. But as a consequence of this focus care givers are also often blind or just plain wrong in their diagnosis of their work flow logic. Hospitals must hold up their work flow for review periodically. And they must not hesitate to sweep away dead wood, eliminate unnecessary duplications and wastage. To understand how a motorcycle works, to be able to repair it yourself for most simple needs on a journey with your son, is the key to be able to enjoy your holidays with your son. To understand and weigh the value of each step you take as a care giver is essential for you to be able to provide good care. We need a culture of continuous improvement in hospitals. We require continuous improvement culture that is not driven by external drivers but by the care givers themselves so that they can enjoy their work much more. However this requires that hospitals create opportunities for care givers to actively get involved in reviewing their work flows, redesigning their work flows and improving both quality of care, productivity and work satisfaction. There is abundant human capital in the hospitals, what is needed are the opportunities and tool kits to get them involved.

## Shorter care cycles

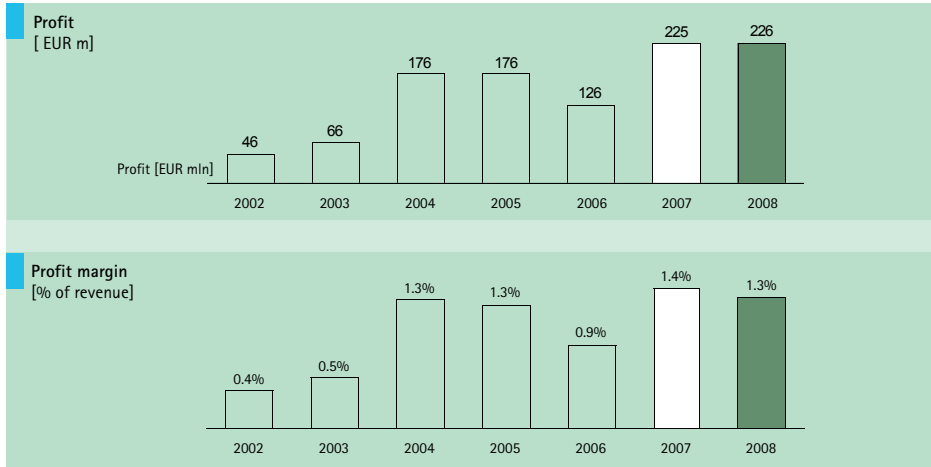
The care delivery profile continued its long term trend in 2008. Day treatments grew faster than in-patients and average length of stay declined (Exhibit O7, O8). While the rate of shift to shorter care cycles was slower in 2008 than in 2007, the long term line of shorter stays and more care in out-patient setting and in day treatments is unmistakable.

A shorter care cycle, that is the growth of day treatments and reduction of average nursing days, implies that the care delivery processes have become increasingly efficient. However the actual efficiency must be cashed by a concomitant reduction in delivery costs. If one only considers the shift in care mix, one can conclude that the hospital productivity has improved. To measure productivity however one must also

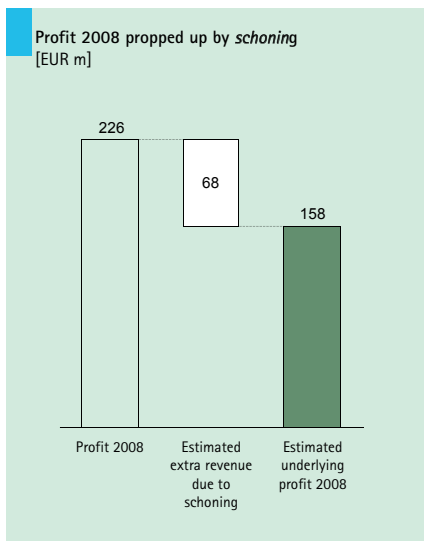


*Shorter care cycles have not resulted in productivity gain* consider the costs incurred in delivering the less intense care mix. It is when both the case mix and costs are considered, not on like to like basis but on actual to actual basis, one realizes that the less intense case mix has not come about with sufficiently lower costs. Thus despite efficiency gains in care delivery hospitals have lost productivity.

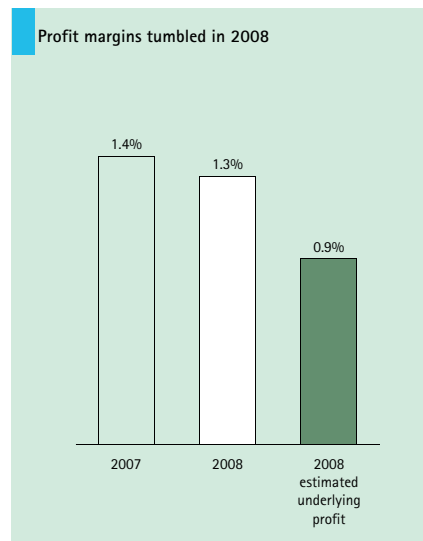
F1



F2



F3



F4



## Financial performance:

### Tumbling profits propped up by bungling transition

*Profits margins appear to be stable ...*

The profitability of the hospitals was nearly constant in 2007-2008. The total net result reported by hospitals was EUR 226 million which is 1.3% margin (Exhibit F1). The profits margins in 2008 were higher than the average since 2002 and comparable to 2007 when the margin was 1.4%.

However the profits in 2008 had two unique characteristics. Firstly IJsselmeerziekenhuizen reported a loss of EUR 27 million which is an exceptionally high loss of 34% of the turnover. Most of these losses are likely to be a one off costs or write-offs. Nonetheless while IJsselmeer itself may be unique in 2008, it is probable that in coming years other similar cases will emerge in the Netherlands.

2008 was also a year in which B segment was expanded to 13% from 6% of the total hospital revenues. Transition brought with it uncertainty of how to correct the remaining A segment. We have estimated that the correction (*schoning*) was not budget neutral. We believe many hospitals succeeded in underestimating the corrections to their A segment budgets and managed to produce sufficiently more in B segment. This allowed posting the same revenue twice, once in A and again in B. If this affect remains than they would have achieved structurally higher revenues and profits.

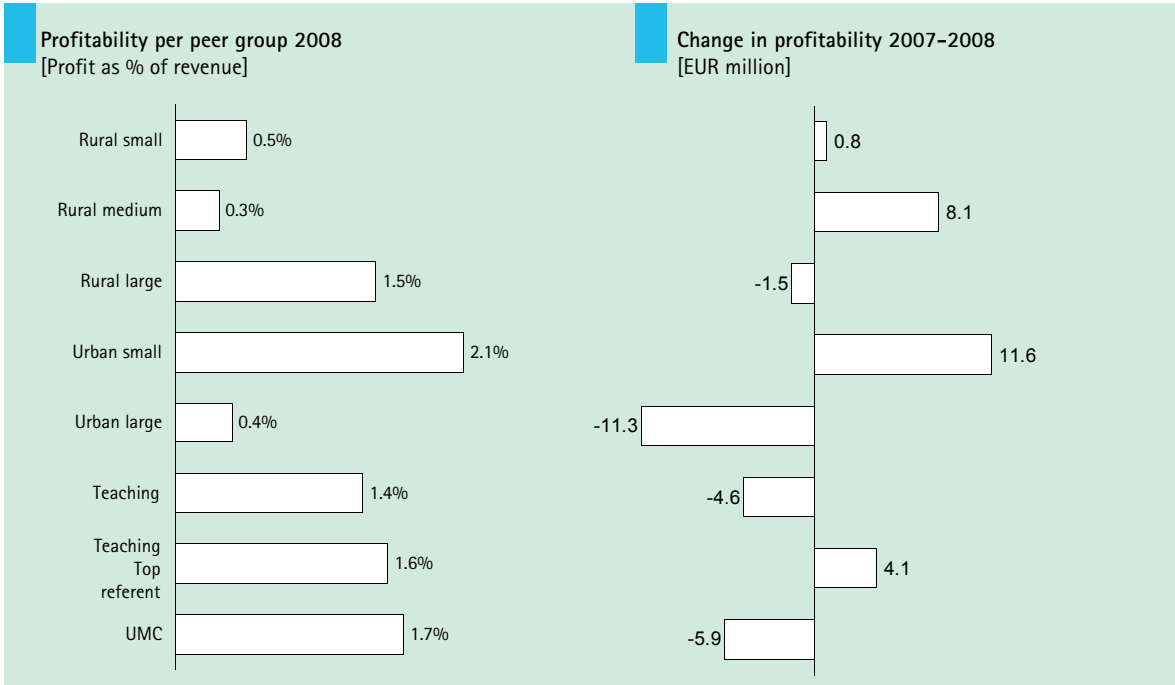
But not all hospitals profited from this artificial gain. Several hospitals had lower production than estimated and thus due to higher *schoning* lost a part of their revenue.

*... but were actually significantly lower in 2008 due to schoning underestimation*

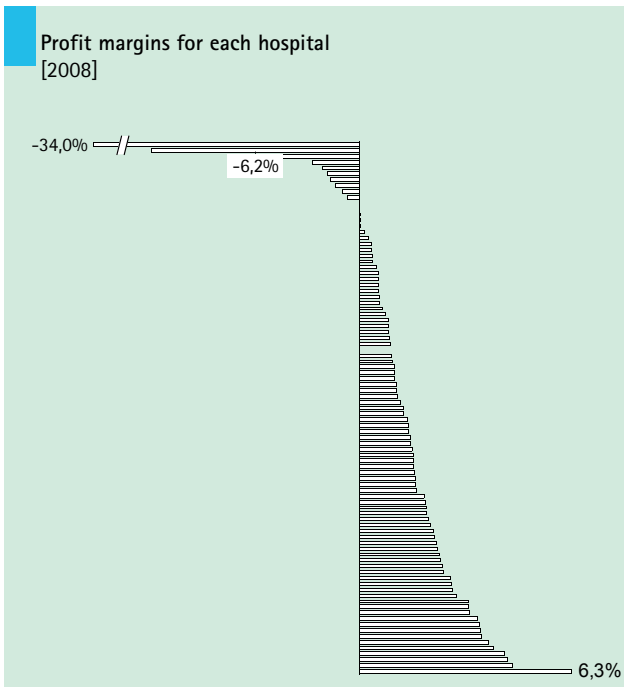
We have estimated<sup>11</sup> that the profit margin due to *schoning* was 0.4% lower or EUR 68 million. In other words administrative issues cost an unnecessary and avoidable EUR 68 million. Equally importantly since the sum was unfairly and unequally shared amongst hospitals some hospitals gained, others lost (Exhibit F4).

<sup>11</sup> The estimation of how big the *schoning* effect is based on comparing the actual size of *schoning* as reported by hospitals in their annual reports with the estimated size of B segment based on FB parameters. Hospitals are sorted in groups based on turnover increase per patient entity and for each group an estimation is made of actual production, costs. Based on turnover deviation from the actual production an estimate is made of under and over compensation for *schoning* (Exhibit F4)

F5



F6





If we correct for this artificial affect then the underlying profitability of the hospitals was 0.9% which is in line with the long term average since 2002 of 1% profit margins (Exhibit F1).

The variation in profit margin is fairly large. The profit range for each of the eight peers is shown in Exhibit F5. In Exhibit F6 we show the margins for all hospitals. The urban small hospitals had the highest profitability as well as improvement in margins. The urban large hospitals the largest drop. The rural small hospitals have also low profitability. Profitability or rather cash flow is a measure of the ability of the hospital to survive difficult situations. If this happens in regions with limited choice for patients, it brings the additional risk on the public funds that may be required to help these hospitals survive; an issue we will come to in the final section: Early Warning System. Across hospitals profitability varies from -6% loss to +6% profit. There was of course one exception last year which booked 34% losses; a case that we would do well to expect again.

*Fewer hospitals  
made losses in  
2008*

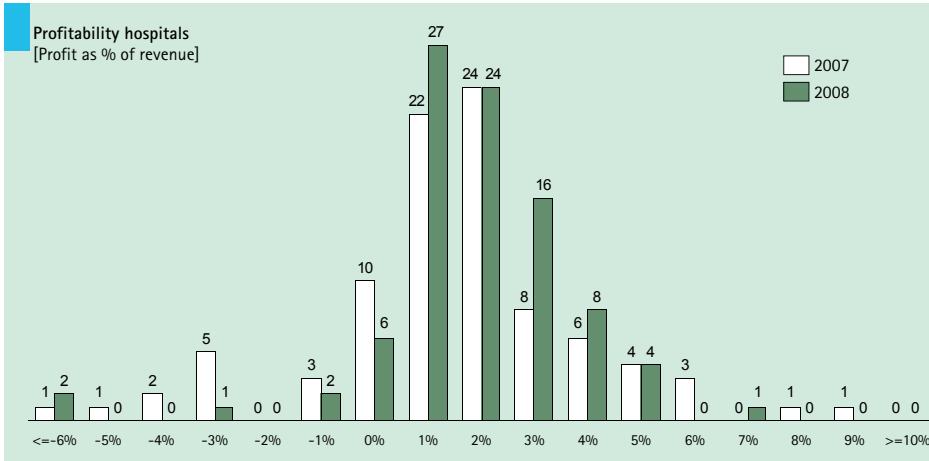
Due to continued profitability the total vulnerability of all hospitals decreased somewhat in 2008. The average profit margin was not much different in 2008, but the median was however much better. That is on an average there were less loss making hospitals in 2008 than in 2007. In 2007 we had twelve loss making hospitals; in 2008 the number of loss making hospitals had declined to five (Exhibit F7).

## Equity growth too slow

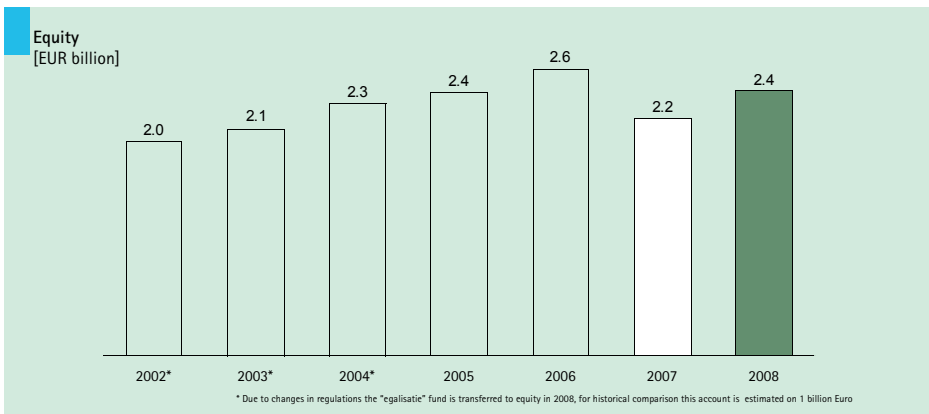
*Hospital equity  
has grown ...  
  
... hospitals have  
lower equity as  
share of turnover  
in 2008 than in  
2002*

Given the profit of EUR 226 million, the total equity of the hospitals improved from EUR 2.2 billion to EUR 2.4 billion (Exhibit F8). Total equity is less interesting, the equity in comparison to turnover provides a better feel for the financial health of hospitals. Since the turnover also increased from EUR 15.9 billion to EUR 17 billion, equity as share of turnover improved marginally from 13.8% in 2007 to 14.1% in 2008. Moreover, compared to 2002 the equity position of hospitals has actually declined. Despite having added EUR 400 million to their equity in this period, due to increase in turnover, the equity as share of turnover has declined from 16.5% in 2002 to 14.1% in 2008. Or in other words hospitals have become financially more vulnerable.

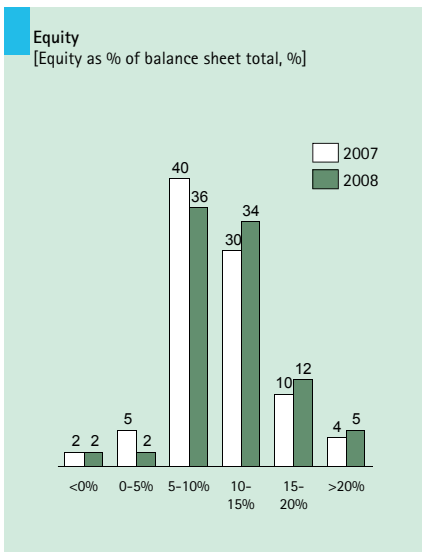
F7



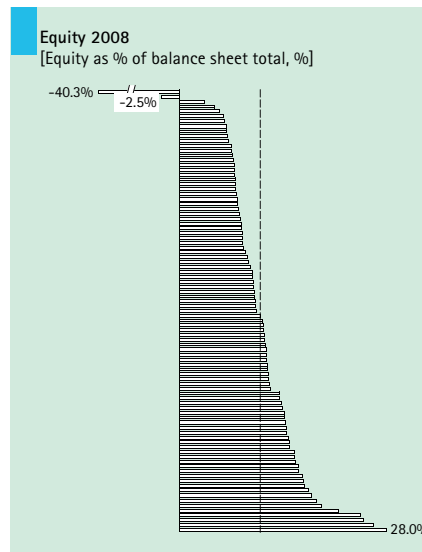
F8



F9



F10



Despite the marginal improvement in equity there are several hospitals with limited buffers. More so the risk is larger since equity as buffer cannot be completely, easily or quickly be turned into cash if needed. In 2008 2 hospitals had negative equity; in both regions patients have limited choice of other hospitals. Another five hospitals had equity of less than 5% of their balance (Exhibit F9, F10).

## Debt loaded hospitals may get increasingly starved for new financing

*Current debt levels are high ...*

Dutch hospitals are mainly financed by debt. The total outstanding debt of hospitals in 2008 was EUR 13.6 billion which was 81% of the turnover (Exhibit F11). Of this EUR 6.6 billion is short term debt which is 39% of the turnover. In comparison hospital equity is just 14% of the turnover.

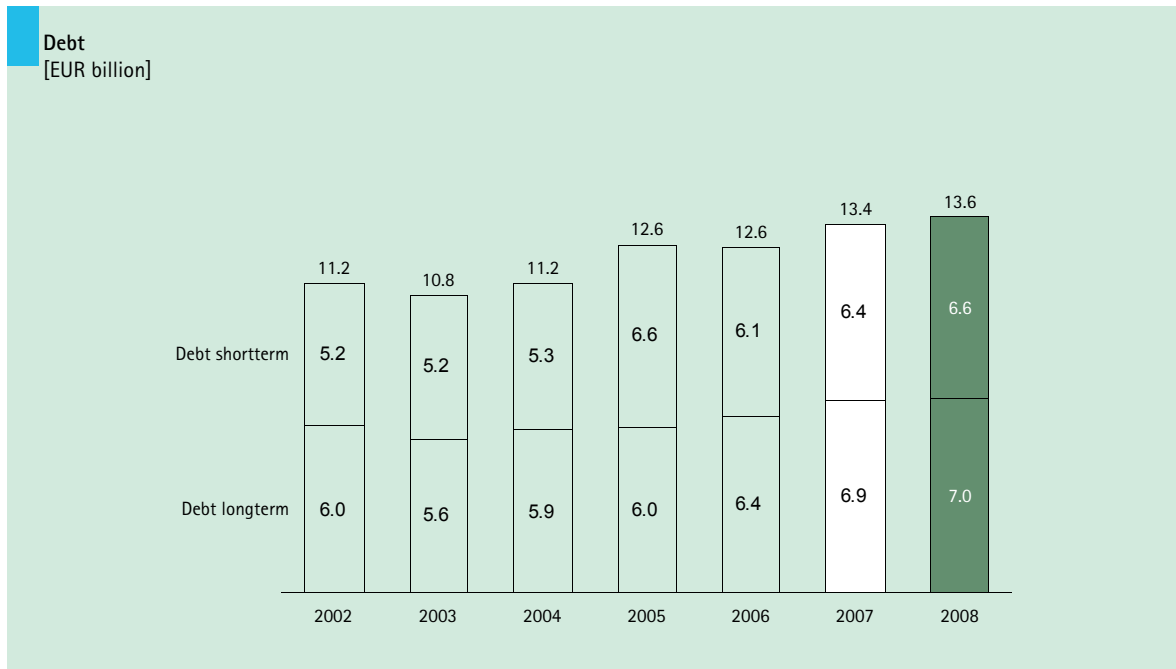
Debt financing by itself is not an issue provided the underlying cash flow from the operations is healthy and capable of servicing the debt and future needs. The interest payments have declined significantly at hospitals from EUR 425 million to EUR 288 million (Exhibit F12). However to put the debt burden in perspective the total interest payments are always large than the net profits.

The debt burden on operations has become smaller since hospitals have reduced their debt as share of turnover (from 92% in 2002 to 81% in 2008). Furthermore the interest rates have also come down.

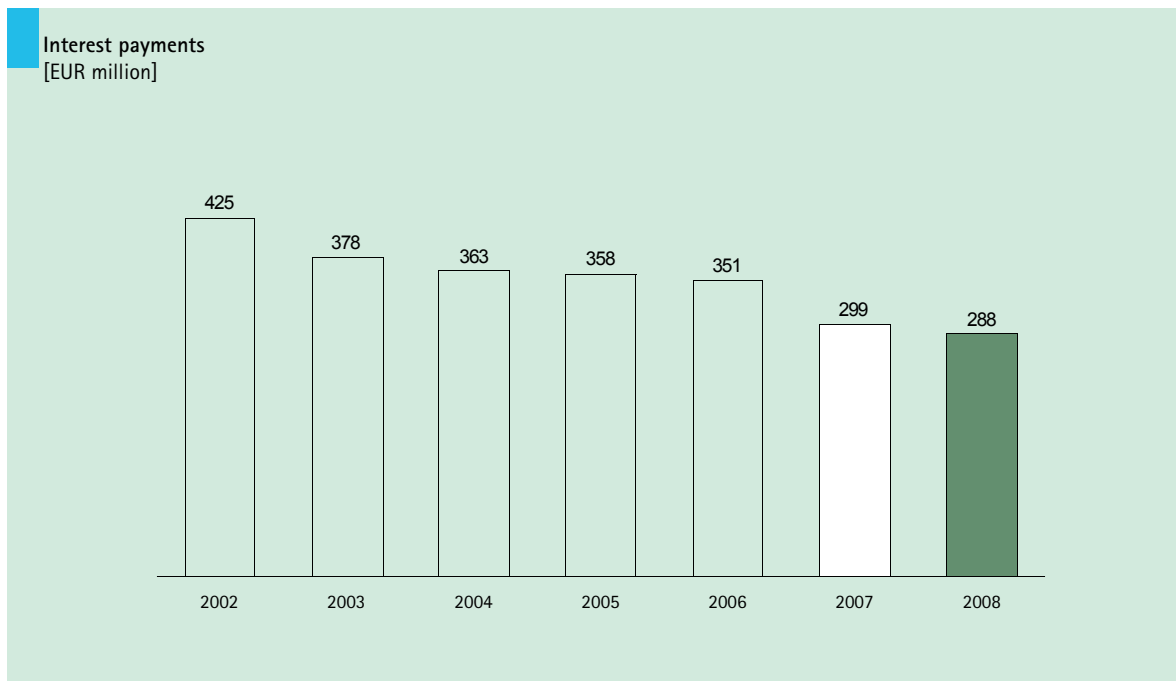
*... future needs are high too*

Despite this improvement, debt of hospitals is an issue. Investment needs of hospitals, both for housing and equipment remain high. Specifically several hospitals need substantial new financing for their location. The ability to obtain new financing depends on the risks in the market and operational performance of the hospitals. With already large debt levels, limited equity, low profitability, and higher market risk the large financing needs of the hospitals of the future are an issue. It is not obvious that financial institutions, themselves increasingly averse to new risks because of toxic assets on their books, would be willing to finance the hospitals of the future. But it is not clear either if shareholder equity is readily available considering the very low cash flow generated by hospitals. An era of finance starved hospitals may be before us.

F11



F12



## Early Warning System

The trends in the hospital sector we mentioned above:

- 1) Increased market risks leading to loss of volume and revenue
- 2) Inability to improve productivity leading to unnecessarily high costs
- 3) Low profitability
- 4) Low equity
- 5) Large debt

*Hospitals are  
vulnerable ...*

In combination with the continued hospital expectation and ambition imply that managing, maintaining and enhancing hospital facilities will become an increasing challenge. In addition there are large and widening performance gaps. Several hospitals across the country both in rural and urban setting have significantly under par performance and thus larger than average risk and vulnerability.

*... therefore it is  
important to  
address risks now*

Risk is a moving danger. Risk must be identified on time and addressed successfully. If risk is allowed to get out of hand, a risk can balloon into a disaster. Cost of disaster management is an order of magnitude larger than risk mitigation costs.

*Risk mitigation  
costs a magnitude  
less than disaster  
management*

We can look at nature for analogies: consider global warming. There are several estimates of the cost of allowing global warming to go unchecked. If we ignore the risk of the earth getting warmer it could become a disaster. The Stern report estimates that global warming disaster would shave off 5-20% of world's total economic (GDP) value. The IPCC or Intergovernmental Panel on Climate Change has also calculated the cost of addressing global warming now and through to 2030. Their estimate is that to avoid the risk of an increasingly warm earth we would need to spend in total about 1-3% of the world GDP. Thus to avoid the risk we need to spend 1-3% of the GDP, ignoring the risk and allowing it to become a disaster would cost 5 to 20 times more or 5-20% of the world GDP.

This example of a gigantic problem with a gigantic solution running into trillions is much like many other risk avoidance or disaster acceptance analogies. Something much simpler like topping up oil in your motor (managing the risk) or letting the motor burn itself out (courting disaster) has similar cost ratio of early risk avoidance and too late disaster.



Global warming is a useful analogy for many reasons. For years, if not decades there has been no consensus on the reality of the problem. Many countries, especially the major contributors like US, have lived in denial. If you don't consider it to be a risk, there is no need to take action. But even once consensus starts to emerge, like now, the path to risk management is never easy. Each country has a very different position both in terms of past and future contribution to the risk. Therefore each country tries to balance off its own judgment how big the risk is, how it will affect it individually, and what kind of sacrifices are required now. This trade off based only on your own prerogatives and not considering the global implications leads nowhere. The trade-off must also involve a collective responsibility based on a trust that all countries are equally contributing both to the risk assessment as well as the risk solution. This trust and sense of equally shared urgency is of course missing for many countries. Sweden does better than required on CO2 emissions, US has been and continues to be an extreme contributor to global warming, and the emerging countries like China and India feel that they are being pressured unfairly to sacrifice their economic dreams for somebody else's sins of the past.

*Global warming as a useful analogy for hospital risk management ...*

This country based difficulty of addressing global warming now versus plunging ahead to a disaster in 2030 is very much like the position of Dutch hospitals and the survival risk that comes with them. We have barely started the debate on what constitutes risk for hospitals. In this report we present the risk ranking of hospitals: Early Warning System. No doubt this first attempt will be a welcome source of discussion, denials and deviations. Consensus building takes time. But even once there is consensus the path to action is still much more difficult.

*... both for the difficulty of managing risks and benefits of succeeding*

By understanding the risk of hospitals now and addressing them effectively we can avoid a future disaster. In the hospital case of course the word disaster is definitely an exaggeration. Disaster here means little more than the disappearance of a facility in a region. But even the risk of losing a regional hospital can be avoided if we can identify the risk early enough and have the tools in place to rectify the hospital performance early on. The sooner we are convinced that there is a risk and the sooner we embark on an improvement path, the lower are the costs. The longer we wait, argue if it is a risk or not, who should pay the price of improvement, and even whether it is needed at all, the larger will the price tag of maintaining the hospital in the future.





*A five step  
program to  
manage hospitals  
at risk*

IJsselmeer hospitals are a good example. Had the issue of the hospital performance been identified and adequately addressed early on, the current financial cost could have been avoided. In order to avoid extreme future costs of maintaining poorly performing hospitals we propose a five step approach:

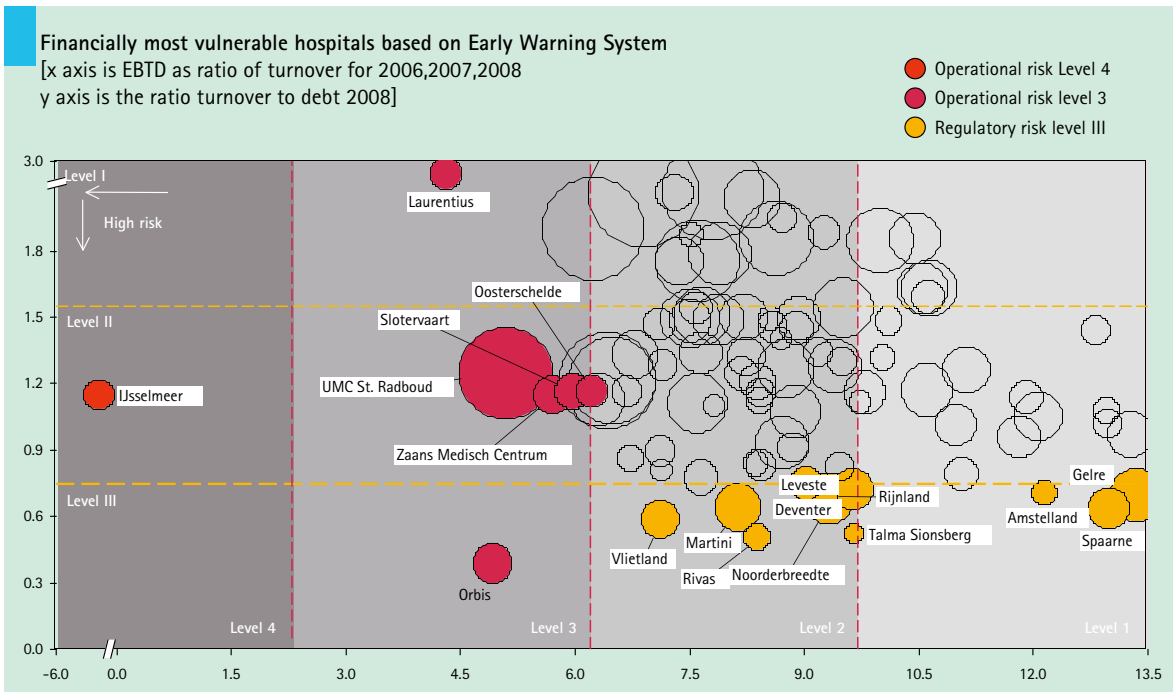
- 1) There must be a system in place to identify risky hospitals: Let's call it: An Early Warning System (EWS). The EWS must be objective and the methodology must be accepted by different shareholders.
- 2) There must be clear responsibility assigned to an independent, trusted third party to periodically run, update and signal the EWS results. Given the changes in the regulation, and the pace of change in care, the EWS results are likely to be fairly dynamic. The methodology must thus consider long term metrics.
- 3) The owner of the risk problem must be clear. It must be clear who is responsible for reacting to the EWS. Is it the hospital itself, the insurer, the specialists, NZa, VWS? The financial and management responsibilities for such a system must be in place before the crisis.
- 4) The potential responses to an Early Warning must be chalked out beforehand. Such responses could include, change of management, a proven improvement program, special status etc. Just as in an emergency there must be a plan of action ready if a warning signal is detected. The EWS signal must trigger an adequate response.
- 5) Once the risk is averted and the hospital is out of danger, its path back to normalcy out of the special status must also be clear

*The first step is an  
Early Warning  
System...*

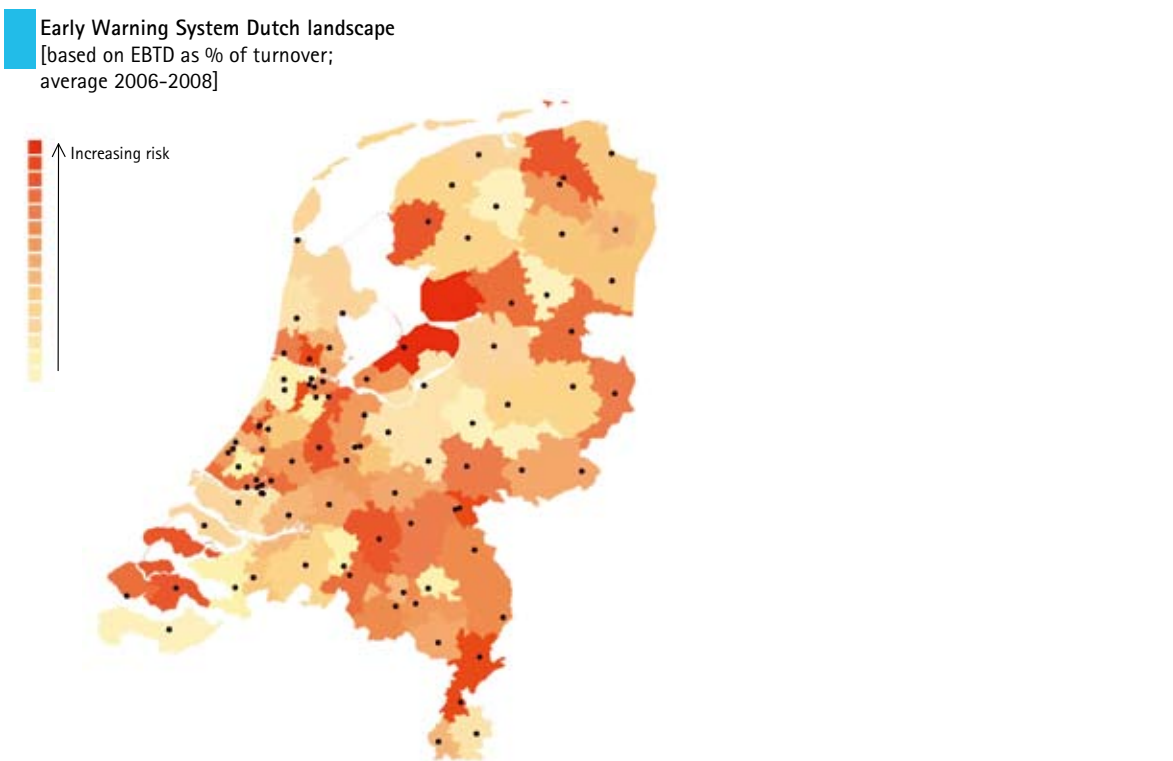
An Early Warning System sounds very sensible but one sees right away how difficult it is to put it in place. To begin with it is not clear when a hospital really is at risk. In this report we present our first Early Warning System. Assume therefore that we have a good system in place to identify the at risk hospitals. What happens then? Do we expect the hospitals themselves to take affective action? That is not reasonable in many cases. It is however not possible for other parties to take action by themselves without the cooperation of the hospital. We would need new laws to allow other parties to take the necessary action once a hospital has been identified as being seriously at risk. At what should the action be? Clearly putting a working EWS in place is a significant exercise that requires serious effort and changes to the current system.

*... other steps  
require further  
action*

EWS1



EWS2



We are not presenting a comprehensive solution to all the action steps required. We focus here on the Early Warning System itself. We have developed a methodology to identify the at risk hospitals, and quantify the risk involved. It is a first step in developing a risk management strategy.

The EWS we present here considers the financial position of Dutch hospitals based on two metrics:

- 1) Earnings before tax and depreciation on a three year moving average
- 2) Amount of debt hospitals have in relation to their turnover

*Hospital's ability to meet their obligations as a measure of risk*

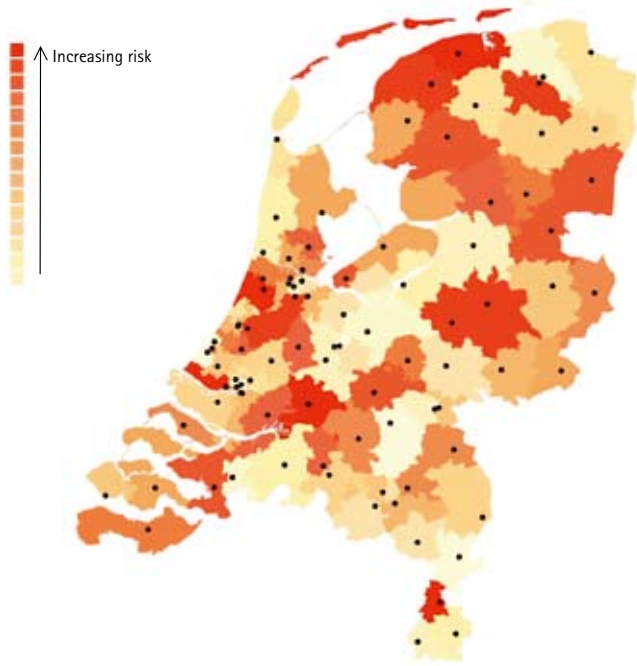
Earnings Before Tax and Depreciation (EBTD) over the last three years 2006-2008 is a measure of the earnings that a hospital has after meeting all cash obligations. It reflects a hospital's ability to meet potential cash needs on a short term. To compensate for potential year on year difference we have considered the average EBTD over revenue over a three year period. The interest has been considered only for the last year 2008 because it reflects the latest obligation. This measure (EBTD over three years, Interest for 2008 as a share of turnover) was 8.7% on an average. We can call this is the current operational risk. On this basis we have grouped hospitals in 4 different risk levels, levels 4 to level 1, where level 4 has the highest risk. There is just one hospital in the highest risk level 4, IJsselmeerziekenhuizen. There are 6 hospitals in the next risk level, level 3 (Exhibit EWS1). The operational cash flow based early warning map of the Netherlands is shown in Exhibit EWS2.

*Hospital's debt as a measure of risk in new cost of capital regime*

In addition to the underlying operational cash flow of the hospital, hospitals have other risks. The second risk we have considered here is the changes in the cost of capital regime. We call it the current regulatory risk. Since the changes have already been implemented it is an actual risk, rather than a future risk. The risk affects those hospitals that have recently made significant investments, and have therefore a large debt position compared to their turnover. In the old regime, and in the A segment in the current regime, the cost of capital for these investments was guaranteed. Therefore these hospitals have a good cash flow position. But since after the regulatory change the cost of capital is no longer based on investment but on production, these hospitals have no guarantee for the capital costs in the future. We call these the regulatory risk hospitals. Several hospitals in the Netherlands have a large debt to turnover ratio. However except Orbis all of these hospitals have a good cash flow position. This reflects that they have so far managed to include their cost of capital in B segment prices. Since

EWS3

Early Warning System Dutch landscape  
[based on debt as multiplier of turnover, 2008]



this may change we highlight these hospitals as well in our EWS. But these regulatory risk hospitals have a different kind of risk than the operational cash flow risk hospitals. Based on the cost of capital regulatory risk we have categorized hospitals in three levels, level III to level I, where level III has the highest risk. There are twelve hospitals in the highest debt risk level, level III (Exhibit EWS1). The debt based early warning map of the Netherlands is shown in Exhibit EWS3.

Orbis is the only hospital that has both a relatively low cash flow (level 3 risk) and high regulatory risk (level III risk) (see Exhibit EWS1).

Business of deciding what is a sensible cut-off for defining risk levels is always arbitrary. There is continuous gradation of hospitals from one side of the spectrum to the other side, for both types of risks. While one could argue about the cutoff we have used in defining the different risk levels, the point is not so much the cutoff, but the fact that several hospitals have relatively large risks. The maps EWS2 and EWS 4 reflect this with their gradually shifting color coding from high (dark) to low (light) risk.

These are other risks than the two we have used to develop our EWS:

*Market, operational and regulatory risks are also opportunities to improve performance*

- 1) **Market risks:** Should the price in B segment of hospitals decline, or should NZa decrease tariffs for specifically lucrative interventions in A segment, or insurers manage to limit volume, other hospitals would emerge as potentially risky as they would suffer on revenues
- 2) **Operational risks:** Should hospitals allow their operations to become inefficient their costs would increase, and their cash flow positions deteriorate. Or should hospitals undertake large investments in housing or equipment their debt and interest burden would increase and they may become financially vulnerable
- 3) **Future Regulatory risks:** Due to future changes in the regulatory regime, for example budget cuts, yardstick competition etc., new risks could emerge for other hospitals

We have not considered these "risks", because in reality these are opportunities for hospitals to improve their position. Hospitals can reduce their costs by increasing their productivity, they can gain market share and improve their turnover or negotiate better prices in B segment, or hospitals can become more prudent in future investments. At the same time the government together with the sector can mitigate regulatory risks. These three risks are thus options that can be part of the solution rather than the first two risks which are already part of the problem.



The ability to address this financial vulnerability varies per hospital, but we see three potential routes:

- 1) Hospitals that have sufficiently large and cashable equity could use part of it to tide them over difficult times.
- 2) Hospitals that have lower than expected market performance can grow, but importantly this growth needs to be profitable. Profitable growth requires:
  - a. The cost-to-serve is already low, and the hospital can grow at marginal costs, thus enhancing its profit margin
  - b. The cost-to-serve of the hospitals is high. This requires that the hospital first improve its productivity. Growth at lower cost-to-serve, but at the current turnover per patient entity would allow these hospitals to improve their profit margin

*EUR 54 million  
performance  
improvement to  
avert risk  
EUR 300 million  
if risk not  
addressed*

Of the seven hospitals we have highlighted from an operational cash flow perspective in levels 4 and 3 the improvement required in total is EUR 54 million which is just 4% of their revenues. In contrast should these blow up into full fledged issues like IJsselmeer hospitals then the cost of rescue would be EUR 300 million or 23% of revenues. As always risk management is better than disaster control.

Are any of these hospitals indispensable "system" hospitals? It is not clear what the definition of a "system" hospital should be. In terms of choice IJsselmeer and Oosterschelde hospitals will have the largest impact since in all other cases relatively more hospital choices are available.

Are these hospitals inefficient? Only three of these hospitals have potential to improve their productivity compared to the average of their peers. Four of these are better than the average. Finally in terms of growth potential only UMC Nijmegen and Orbis have a larger than expected market score. All other five hospitals have growth potential, provided their costs have been reduced to grow out of their current financial problems.

In summary we have presented an Early Warning System based on two measures: the three year average operational cash flow (EBTD) and on the current regulatory risk based on the changes in the cost of capital regime. We have identified seven hospitals at risk due to low operational cash flow (risk level 4 and 3) and twelve due to regulatory changes (risk level III), with one overlap: Orbis. The required performance improvement





for the operational cash flow group of seven hospitals is rather modest and quite easily achievable. Failing to do so brings much bigger risk in the future.

The Early Warning System given the dynamics in the sector must become a continuous exercise. We expect it to undergo significant changes in the coming years. And we shall report these in our future studies.

R1

	Outperformers 2008	On-par performers 2008	Underperformers 2008
Rural, small	Ruwaard Van Putten Ziekenhuis Refaja Ziekenhuis Van Weel-Bethesda Ziekenhuis	Pantein St. Jans Gasthuis	Saxenburgh Groep Talma Sionsberg
Rural, average	Antonius Ziekenhuis Elkerliek Ziekenhuis Franciscus Ziekenhuis Nij Smellinghe St. Jansdal	Flevoziekenhuis Rivas zorggroep Slingeland Ziekenhuis Streekziekenhuis Koningin Beatrix Waterlandziekenhuis Wilhelmina Ziekenhuis Assen Ziekenhuis Bernhoven Ziekenhuis Lievensberg Ziekenhuis Rivierenland Ziekenhuis Zeeuws-Vlaanderen Zuwe Hofpoort	De Tjongerschans Gemini Ziekenhuis IJsselmeer Ziekenhuizen Laurentius Ziekenhuis Leveste Ommelander ziekenhuisgroep Oosterscheldeziekenhuizen Rode Kruis Ziekenhuis Zaans Medisch Centrum Ziekenhuis Bethesda Ziekenhuis Walcheren Zorgcombinatie Noorderboog
Rural, large	Gelre Ziekenhuizen Kennemer Gasthuis Tergooiziekenhuizen Ziekenhuis De Gelderse Vallei	Groene Hart Ziekenhuis Orbis Medisch en Zorgconcern Westfries Gasthuis Ziekenhuisgroep Twente	Albert Schweitzer Ziekenhuis
Urban, small	Bronovo-Nebo Ikazia Ziekenhuis Ziekenhuis Amstelland	't Lange Land Ziekenhuis BovenIJ Ziekenhuis St. Anna Zorggroep	Diaconessenhuis Leiden Havenziekenhuis
Urban, large	Diakonessenhuis Utrecht/Zeist	IJsselland Ziekenhuis Rijnland Ziekenhuis TweeSteden ziekenhuis	Slotervaartziekenhuis Vlietland-Ziekenhuis
STZ	Canisius-Wilhelmina Ziekenhuis Medisch Centrum Haaglanden Spaarne Ziekenhuis St. Elisabeth Ziekenhuis St. Franciscus Gasthuis	Atrium Medisch Centrum Deventer Ziekenhuisgroep Jeroen Bosch Ziekenhuis Meander Medisch Centrum VieCuri Medisch Centrum	Martini Ziekenhuis Máxima Medisch Centrum Reinier de Graaf Groep St. Lucas Andreas Ziekenhuis
WBMV	Medisch Centrum Alkmaar St. Antonius Ziekenhuis Zorggroep Noorderbreedte	Amphia ziekenhuis Catharina-ziekenhuis HagaZiekenhuis Isala Klinieken Maasstad	Alysis Zorggroep Medisch Spectrum Twente Onze Lieve Vrouwe Gasthuis
UMC	Erasmus Medisch Centrum UMC St. Radboud UMC Utrecht	Academisch Ziekenhuis Maastricht Leids Universitair Medisch Centrum VU Medisch Centrum	Academisch Medisch Centrum UMC Groningen

## Rank

Exhibit R1 presents the rank of each of the 91 hospitals in the 2008 study in their peer groups. The ranking is based on the same metrics as in previous years, to allow for comparison.

## Zen and the Art of Hospital Maintenance

We would like to wrap up this year's study by going back to Robert Pirsig's 1974 classic. We believe he captured a very important concept in his book. A concept that is equally relevant for hospitals today.

Robert Pirsig took a disarmingly mundane and down to earth route in describing his philosophical approach in the book "*Zen and the Art of Motorcycle Maintenance*". While travelling across the US on his motorcycle he ruminates over life and his approach to it. In essence he talks about the need to combine a mechanical approach capable of anticipating and solving problems with a romantic approach capable to enjoying the presented scenes. The combination of doing and not doing, of maintenance and Zen. The rational approach requires the writer to be tuned to slight changes in the performance of his motor, be it the change of altitude or plugging of the valves, and being able to trace the sources of the change and implement mechanical adjustments as required. The romantic or Zen attitude allows him to let go and enjoy things as they unfold; to feel the joy on seeing a red-winged blackbird. When his son, Chris, does not share his elation at spotting the blackbird, Robert Pirsig is "Zen" and "Mechanical" enough to realize that you need to be much older than eleven to get excited about a red winged blackbird and pointing it out to your travelling companion. Robert Pirsig notes that with time this urge will come to his son as well.

We need to "maintain" our hospitals. Maintenance means addressing the future financing of hospitals. Maintenance means addressing the developing labor shortage. More importantly yet maintenance means ensuring that the wonderful medical innovations coming our way are not choked off due lack of resources.

So far hospitals have addressed these problems but marginally. We have seen slight labor productivity improvement but despite it there have been large cost overruns. Tweaking operations as we have in the past will no longer be sufficient. We need quantum breakthrough. But there is no way to force a quantum breakthrough. The path to improvement will be evolutionary and must involve the stamina and intelligence of the human capital working in our hospitals. The culture we need is the culture propounded by Robert Pirsig in his book. We need each hospital worker to become an expert mechanic of her own work flow. To continuously and constantly review her work flow, and by redesigning it, improve it. But along with the mechanical readjustments, the care giver must primarily continue with the Zen of care giving. After all the main aim of Robert Pirsig was not to continuously repair his motorcycle, but to enjoy his vacation with his son.





For further information please refer to:

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