

A Cybernetic Approach to Healthcare Finance

Introduction

The widespread sterility of current approaches to healthcare finance reform stems from the same underlying cause: the failure to conceive the problem as a whole, as a system. Healthcare finance and healthcare delivery are not separate problems. They are, rather, related elements of the same problem.

We believe that the ultimately effective solution will (and must) enable a cybernetic, i.e. feedback-based, conceptual approach to the problem. The result of adopting this approach will be the same as always in a free market: the various elements of the system will come together as a natural consequence of explicit, but hitherto unacknowledged linkages that exist between them and the entire system will move monotonically towards a new stable equilibrium. The healthcare system is no exception to this rule. Heretofore the feedback loop has been missing. By way of analogy, think of a heating system operating without a thermostat. It would continue to burn fuel unchecked until it either ran out of fuel or self-destructed.

In what follows, we outline briefly how the US healthcare system may be brought under control slowly and monotonically via the introduction of two simultaneous financial feedback loops; one at the Provider level and one at the Insurer level.

In essence, we are proposing a deliberate evolution to a healthcare financing mechanism with elements of both the FNMA (hospital side) and the Federal Reserve (insurer side) models. Within a decade, the resulting short term securities market, one backed by highly-rated healthcare obligations, would reach an order of magnitude equivalent to today's MBS marketplace.

In the early stages, banks will be providing liquidity while simultaneously reducing their classified loan exposure. In both cases, the providers will enjoy both increased access to ready funds and lower interest costs.

The Current Framework for Healthcare Finance

The current method for the financing of healthcare is deceptively simple. A hospital, physician or other provider performs a service and submits a claim to a payer. In nearly 50% of cases the payer is the US government. The remaining 50% are paid by the insurers and (somewhat problematically) the patients. The billing process is performed with various degrees of efficiency by the provider's billing department or a third-party administrator (TPA) under contract.

However, depending on the billing efficiency of the particular provider, the generation and submission of the bill can take anywhere from days to months from the date of service; reimbursement can take another 30 to 90 days. A percentage of claims will contain mistakes and/or inconsistent data that can cause the claim to be rejected or pended while the errors are corrected. The impact on cash flow is obvious. If the provider is not cash rich, it must borrow

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against expected future payments to create immediate cash flow. In most cases, this is an expensive process. Just how expensive it is depends on the financial condition and credit rating of the provider and the particular financing mechanisms available to them. One might ponder the fact that this is somewhat odd, since payment in the vast majority of cases is coming from the US Treasury or highly-rated healthcare insurance companies.

Healthcare is no different than any other business in one fundamental way: the providers need to collect their receivables quickly while the payers have a strong incentive to pay their claims at a more deliberate, i.e. slow, pace. This hallowed process is exacerbated by the well-known fact that health insurers earn significant returns on the massive float they enjoy from premia received but not yet paid out as claims. Along the way are various intermediaries and factors quite willing to alleviate any provider's liquidity crisis by providing interim financing at lucrative and largely hidden rates, making the problem even more acute and, in the end, merely postponing the ultimate reckoning. One better known such factor was the now defunct Ohio-based National Century Financial Enterprises that, according to certain sources, was charging effective rates between 25% and 35%.

Insurance companies are themselves in the business of "arbitraging" their own claims and earning even more spread income. This spiral can only be forestalled by pumping ever more cash into the system, which cash usually comes from the US taxpayer base, heretofore regarded as an infinite reservoir. At this point, most leaders and administrators agree that the reservoir is in fact finite.

Considered from a cybernetic standpoint, the providers' problem is easily diagnosed. The healthcare crisis is neither a medical nor a technology crisis, but simply a financial crisis. Costs are out of control because the system is open, not closed. It has no feedback loop, a condition that can cause unintended results. Consider a well meaning financial assistance program that increases payment for additional children, thereby encouraging more children. Such is the essence of today's healthcare reimbursement system. There is no feedback loop to keep the expense in control, reward desired behavior and deter undesired behavior. The system is "open". Closing it requires the creation of linkages among the currently independent system participants through a feedback loop that would align their incentives and introduce market discipline *via* price discovery. As every first-year economics student knows, a free good is always abused.

By contrast, the insurer's "problem" is really not a problem but, as discussed above, a basic misalignment of interests that guarantees that healthcare providers will be deprived of the very thing they most need: liquidity. Given the foregoing, the solution is obvious and simply lies in indirectly tying the insurers' float income to the hospitals' liquidity needs in a manner that simultaneously promotes managerial efficiency at the provider level.

A New Approach to Healthcare Finance

As indicated earlier, we are advocating a two-pronged feedback loop approach, one at the hospital level and one at the insurer level that will bring the interests of providers and payers into alignment and create a large liquidity pool that will benefit both interests. We outline each one in turn.

The Hospital Feedback Loop

The desired linkages are to be created first by transferring liquidity risk outside the hospital via a real-time repackaging of medical receivables into pools out of which commercial paper [CP] notes will be issued and sold, thereby constituting the assets of large CP conduits. Although on an individual basis, it is quasi impossible to predict when a particular, individual claim will be reimbursed, or what the reimbursement amount will be, once the amounts involved reach a certain critical mass that depends on the profile of each claim in the target pool, the aggregate statistics of repayment assume distributions with relatively narrow risk measures amenable to analysis *via* the central limit theorem. The latter can be used because each physical claim is reviewed and adjudicated more or less independently. Such tight distributions enable sufficiently large pools of medical claims to be rated at a level consistent with inclusion inside existing CP conduits. The payment profile of a claim corresponds to the value of its expected reimbursable amount and the standard deviation of such amount, along with the same parameters for the reimbursement delay after submission. Once each claim has been associated with its own profile, pooling becomes an exercise in basic statistics.

Although the true securitization of medical receivables has historically been both illegal and unfeasible, recently enacted changes to Chapter 9 of the Uniform Commercial Code and the 1999 passing of the Electronic Commerce Act have enabled the application of structured finance technology to healthcare finance. The pooling of claims and the issuance of CP notes would provide the liquidity required by healthcare providers at effective interest rates reflecting the true quality of the highly-rated underlying obligors instead of that of the lower-rated providers.

Operationally, the following would happen. On a daily basis, a target hospital would satisfy its liquidity needs by selling all of its receivables to a financial intermediary at a price dictated by the hospital's most current reimbursement history, which history would also be updated daily. The hospital would be required to sell all of its receivables and would not be allowed to "cherry pick" individual claims. The intermediary would then transfer that risk to the conduit by issuing commercial paper notes and selling them to willing buyers, something US commercial banks are now doing in bulk. The market for such short-term, liquid paper is already of the order of a trillion dollars

Thanks to the associated same-day funds, hospitals would experience an immediate increase in their liquidity position and would be better able to wait for the actual reimbursement of the claim, at which time they could potentially receive a secondary, back-end distribution after financing fees are taken out. Again, these fees would be based on the credit of the ultimate obligor, either the US government or a highly rated insurance company, not on the relatively poor credit of the hospital itself. Hospitals operating relatively more efficiently than their brethren would soon leverage their own efficiency to further increase their relative cash position with each cash cycle (90 days). Conversely, less efficient hospitals would soon be starved of cash *via* the same process and encouraged to either improve their operations or they, not their creditors, would suffer the consequences.

The valuation algorithm at the heart of the system would re-price claims in real-time by comparing the current advance rate to the hospital's recent reimbursement history in such a way as to maintain the CP investor's risk of default at a constant, pre-determined level, i.e. one consistent with the conduit's Prime-1 rating. This would cause the cash flows of relatively more

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efficient institutions to increase, and that of less efficient ones to decrease. In this manner, the better organizations would soon take over the less efficient hospitals, *via* bankruptcy or not, and the submission and collection efficiency of the entire system would slowly and monotonically increase. This process makes up the first feedback loop.

Obviously, the immediate and palpable cash impact of prompt, error-free claim submission that would attend this new administrative system would encourage, without any coercion or regulation, hospitals to adopt the most efficient means of generating and submitting their claims. Further, once under control, a hospital would stay there since the control loop would remain in place forever and would quickly remind them, within a single day for large hospitals, of any slippage in collection efficiency through the latter's cash flow impact.

Note that in practice, hospitals would be brought under control indirectly through a physical audit mechanism according to which hospital administrators would be able to compare directly and unmistakably the relative cash efficiency of their attending physicians. Those that objectively produce relatively worse outcomes or that experience low recovery rates *via* carelessness or ill-advised practices would be brought firmly under control. This mechanism would be possible thanks to the feedback loop afforded by the claim reimbursement database that would be available to hospital administrators for the first time. This way, market forces would be allowed to operate as they were originally intended.

The Insurer Feedback Loop

An immediate source of buyers for the CP notes issued by the above medical-receivable conduits would be insurance companies looking for relatively high-yield, short-term investments pending claim reimbursement. Since, for obvious reasons, this new class of paper would turn out to be an ideal vehicle for them, the majority of the holders of these medical-backed CP securities would eventually end up being the very insurers that owe the money on the other side. Pretty soon, they would find themselves in the position of having to pay their claims on the one end in order to collect spread income on the other. This implicit linkage represents the insurer feedback loop.

Simultaneously, the normal operation of the CP markets would cause an arbitrage process to take place whereby health insurers would be induced into stopping artificial payment-delay tactics and the loop would close. In addition, CP holders not members of the health insurance cartel would apply their own, not so subtle pressure to protect their spread income. The notion that an insurance company CEO could convince the investment arm of his firm to forego spread income to allow the business side of the same firm to delay payment on its claims is a non-starter. In any event, such tactics could easily be countered by crossing the claims so that any insurance company would only own CP backed by claims of any other insurance company except itself. Since the total number of claims would remain the same in either situation, markets would clear. What would in fact happen is just the opposite, i.e. both sides of the health insurance company would start talking to rationalize the system. In reality, such discussions would be the physical mechanism *via* which the loop would close.

Due to the size of the CP markets, all of this would take some time to unfold in real time because at first, the insurance industry would scarcely notice the increased claim submission efficiency from a few of its customers. By law, all insurers must pay clean medical claims within 45 days of receipt, and they do. Once average hospital efficiency reached a critical level however, it

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would be too late to reverse the trend, since long before that the system would have aligned the interests of the CP investors with that of the hospitals. In effect, the cybernetic impact of the system would naturally rein in any large departure from cash optimality and control insurer behavior without any coercion.

However, the real power of the approach lies not merely in its ability to move the insurance industry into a faster cash cycle. Rather, it rests in the fact that over time, health insurance companies would come to the obvious conclusion that the CP conduit created by this new asset class is an easy method to improve their own liquidity position as well as that of the hospitals. By buying and selling medical-backed CP notes daily, either to invest idle cash or cover claims-related cash needs, they would have accomplished what seemed hitherto impossible, i.e. given birth to a near-perfect asset-liability management tool whereby cash would turn essentially overnight and come right back as spread income the next day. Since they would now hold their own claims as collateral for their investments, using the conduit as commercial banks now use the Federal Reserve would accomplish the same liquidity management objective. If, in addition, enlightened Federal policy were to follow and amend insurance law to allow US health insurers to hold as much as 50% of their claims-paying capital in the form of such CP securities, the significant gain in efficiency associated with this cash management method would increase, not decrease their return on equity. Thus, in the end, both hospitals and insurers would find the system ideal to satisfy the same liquidity management goal and would embrace it.

Obstacles to Implementation

We realize that this is a tall order, but the complexity of the problem requires a radical approach, all others having failed. Although the implementation challenges of our approach are probably obvious to anyone familiar with the current healthcare environment, some of the more obvious ones are as follows:

1. There is always a natural resistance to change. Our early experience, however, leads us to believe that support from the banking industry will be early and strong because the banks will be able to significantly reduce their exposure to classified hospital loans. We believe that commercial banks would rapidly move their hospital and physician borrowers to this type of healthcare credit product simply because it is in their best interest to do so. The problem now is that technology and economics are de-linked. If that were to change, the providers' outlook and opinion of technological change would evolve rather quickly.
2. Some initial, knee-jerk resistance of the insurance industry to this concept is clearly anticipated, but that resistance will be short-term at worst. As we explained above, the industry would soon realize that this approach goes a long way towards offering a permanent solution to its liquidity needs, something that plagues every insurer, healthcare or not. In fact, the insurance industry is probably the most rational part of the system as it currently operates. What needs to happen is a realignment of incentives in the appropriate direction. However, such realignment cannot happen within the existing operational environment because the system is frozen in such a way that any party attempting to move away from its current vantage position will automatically lose out. The only way to achieve any sort of optimality is to make it feasible for all parties to move at the same time. Any attempt to induce one or the

other player to kick-start the process as a “pioneer” is likely to fail simply because we all know how easy it is to recognize the pioneers.

3. But in the end, the most direct impediment to the implementation of the cybernetic approach is the absence of any securitization infrastructure for medical receivables. About \$15 billion out of the ca. \$1 trillion annual volume of US medical claims generated is ever used as collateral for structured finance transactions, and usually at exorbitant rates. Only the best hospitals can take advantage of this financial “engineering”, if the term can be used at all, since all feasible deals are currently not true securitizations, i.e. the lender is really always exposed to the bankruptcy risk of the hospital and not to that of the ultimate obligor.

Such de-linking of the issuer from the issue is the essence of securitization. In other words, those hospitals that could truly benefit from structured finance in the way presented here are completely unable to engage in securitization transactions, while relatively cash rich institutions that can do without it have no trouble accessing the capital markets. The integration of an electronic infrastructure enabling the filing of liens on individual receivables, the real-time creation of pools of independent claims with known statistical payment profiles, the submission and monitoring of the associated claims over the Internet and the trading of the CP notes created from such pools would kick-start the market for medical ABS.

4. As mentioned above when discussing the insurer feedback loop, insurance reform needs to be implemented at the Federal level to allow health insurance companies to hold at least 50% of their claims-paying capital in the form of medical ABS. Given the current state of affairs, the added cash management and tax efficiencies that would attend this type of insurance reform would most likely leave the industry in the same or better ROE position they now hold while improving the situation at the hospital level. It would be difficult for the industry to reject a new economic equilibrium that would leave some better off and everyone else as well off as before. The prospects for such reform are beyond the scope of this policy paper and currently not even on the legislative radar screen.

Conclusions

We believe that a cybernetic approach offers many significant advantages over existing approaches and that it is unique in offering a complete and systematic view of the final equilibrium that imposes on each party the least possible amount of pain. Clearly, a conundrum like the current healthcare finance infrastructure will not be disentangled without ruffling some feathers. The question is not whether some particular individuals will be worse off than before, for the answer to that question is always yes. Rather, the more relevant issue is first whether the current system is sustainable, and the general agreement seems to be that it is not. Next, given that the system must move to a new equilibrium, how that shift ought to be executed and whether the new *status quo* is itself stable.

As far as we can determine, the approach described hereunder is singular in its ability to enforce a stable equilibrium *via* rational market forces whereby stakeholders take ownership and assume their responsibilities, and in showing how the system shall remain under control without

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invoking government fiat. Last but not least, given that all required systems and regulations are already in place, the implementation of this approach does not require any significant expenditure and can be initiated on a minuscule scale when compared to the size of the total healthcare market. As a result, any analytical discrepancy or inefficiency could be detected at the very start and corrected before it propagates to the whole system. Consequently, we conclude that this new system is relatively fault-tolerant, can be phased in on a timetable flexible enough to accommodate all political sensitivities and could never send the nation down an irreversible path that could turn out to be disastrous.