Value of Farm Data: Proving Damages Based on Trade Secret Protections

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http://www.agmanager.info/crops/prodecon/precision/Damages.pdf

Last month, Ashley Ellixson and I described potential damages that farmers may claim in the event of a data breach if farm data were considered a trade secret. We (more specifically Ashley) discussed that legal protections for trade secrets include 1) actual damages, 2) reasonable royalty, and 3) unjust enrichment. Over the last couple weeks since posting our publication, I have been contemplating which protection will most likely be utilized in practice. When the farm data, i.e. the trade secret, is used without permission from the farmer or farm data owner, a disclosure of the data results and it is assumed that damages can be claimed. Specifically when a data breach occurs, or the data are disclosed, the farmer or group of farmers desire to seek legal action and determine which protection would return the greatest compensation to them.

I approach the issue such that I were retained to serve as an expert witness to deliver testimony. In this scenario, I would perform forensic economics to compare the relative value that the farmer would realize under each of the three protections in the event that farm data were considered to be a trade secret of the farm (Ellixson and Griffin, 2016). Ashely defines the three damages regarding trade secret protections as:

> *Damages may be one of three types:*
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> *1. Actual damages may include lost profits, which are typically calculated as net profits (meaning gross profits minus overhead and expenses required to run the business).*
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> *2. Reasonable royalty rate is determined by constructing a hypothetical negotiation for licensing the trade secret, or farm data, between the parties at the time misappropriation began. The law assumes this hypothetical negotiation occurred and that the farmer, who ordinarily would not license his trade secret to the misappropriator, did so willingly for a bargained-for price.*
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> *3. Unjust enrichment seeks to return the benefit the misappropriator gained from his actions to the farmer.*

First, before addressing the three sources of damages it is important to review how the different players benefit from the big data system in agriculture. In our definition, the big data system is a network of many farms' data combined into a community dataset. In this community, the economics of networks are important. In the short term, the aggregator(s) attempt to entice as many farmers to submit as many acres of data as they can (remember than in the short run there are many aggregators vying to become a monopoly but in the long run

there will be very few or only one aggregator). In the long run, the aggregator who controls the flow of data enjoys the lion's share of the value of the data system. The individual farmer-members of the network benefit less than the aggregator; and the other players who offer analytic services are somewhere in the middle. In the following scenarios, I make the assumption that individual farmers have already captured the vast majority of any potential farm-level benefits from their farm data (such as communications with landowners, creation of variable rate prescriptions, compliance reporting, directed scouting, etc.); and the damages only apply to the data being disclosed to others, i.e. the farm still has access to the data. It can also be assumed that the data disclosure or breach has occurred intentionally from the farmers' perspective. I've also avoided any discussion of class action and have only evaluated these damages at the individual farm level. The expert witness for the misappropriator would most likely take the opposite approach than the one taken here.

Review of network effects

When I'm presenting on farm data issues I compare the data communities to classic networks such as the telephone and modern pop culture examples like Twitter or Facebook. The value of the system depends on how many other people consume or participate in the system. The value of the telephone system was zero when there were only one telephone (who are you going to call?). The value of the system, or community, is greater than the sums of the individual benefits each member receives in the long run. Multiple farms' data in the aggregate are more valuable than one individual farm's data. Given this characteristic of 'network effects' where the value of the system is a function of the number of members of the system, the aggregator enjoys much greater benefits than any individual in the long run. However, in the short run aggregators would attempt to entice farms to join the network up to the point that a critical number of farms were in the system. Once the data community has a critical mass of farms, i.e. the long run, farmers' bargaining power with the data aggregator is greatly reduced. That being said, it is not expected that farm data would be misappropriated until a critical mass of data were available, so I'm only evaluating the mature data system for now.

Actual damages

Actual damages may be a viable option for the expert witness to testify about especially when considering 'data as a resource' and 'excludability'. Excludability no longer exists when data are shared with a third-party, i.e. in this case a data disclosure breach. If resource-based theory (see Grant, 1991 for basic description and Griffin et al., 2016, for more farm data details) applies to disclosure of farm data such that the excludability of that data were adversely impacted, then competitive advantage with respect to local bargaining power may be lost (Griffin et al., 2016). In this case, an individual farmer may lose real or perceived local negotiating power with landowners and agricultural retailers; these losses could be quantified and are expected to be substantive. In many regions of the USA, the competition for farmland is fierce and some farmers fear that they may not successfully win a bid for rented land if their data were disclosed. Another example may be in negotiation ability with ag retailers could be diminished. Loss of farmland acreage and lack of discounts on input purchases are

quantifiable. These losses are the 'actual damages' that the expert witness would estimate using net present value of subsequent changes in farm revenue.

Reasonable royalty

Reasonable royalty will not likely be the damages sought by individual farms because the hypothetical negotiation is expected to arrive at an impasse. In this scenario, the farmer and aggregator enter into a hypothetical negotiation where the farmers' bargained-for price of data were determined. Again, we look to the economic theory of networks to examine how this hypothetical negotiation turned out. Economic theory suggests that, in the long run, the aggregator places very little value on data from any individual farm and therefore would not negotiate beyond $0. The farmer who values farm data as a good, i.e. positive value, would not accept the $0 offered by the aggregator. Farmers' reservation prices, or willingness-to-accept for their farm data, starkly differ from the price that aggregators are willing to pay. From the perspective of the aggregator, it makes very little difference whether any given farmer participates in the network. This is where the estimation becomes tricky. We know that the value to the aggregator is greater than the summation of all the individual benefits; however we also know that any given farmer can withdraw from the network without causing the aggregator to lose value with respect to the network once a critical number of farms are in the system. Therein lies the problem of determining the bargained-for price; the aggregator can argue that the value of any given farm is $0 to the aggregator. Since the parties are not likely to converge on an agreed upon price, the 'reasonable royalty' would be the most difficult of the three damages to defend. As the expert witness for the farmer, I would avoid attempting to prove a 'reasonable royalty' since the testimony would be based on an individual farm's losses.

Unjust enrichment

As the expert witness, 'unjust enrichment' is the damage that my testimony would be easiest to prove and therefore the most likely candidate for farmers to claim damages. Given that the marginal value to an individual farm is relatively small, the misappropriator has the opportunity to disproportionately benefit or enjoy some sort of "unjust enrichment." Even for well-meaning aggregators who initially would not disclose data to others for a profit, the temptation may become too large to ignore. For these reasons, 'unjust enrichment' is a logical damage to seek. At the community level, farm data has value to the aggregator and other third parties for commodity marketing manipulation, supply chain management, improvement of products, and so on. Although the preceding examples are not malicious on their own, we'll proceed assuming that the agreement between the farm and aggregator precluded these examples. In this case, the misappropriator has opportunity to disproportionately gain from the unauthorized use or sale of community farm data. However, a value to the misappropriator may be in the millions of dollars but would equate to only pennies on the acre to the farmer.

Conclusion

Given the three potential damages of trade secret disclosure, I would avoid attempting to prove 'reasonable royalty' in the long run and focus on a combination of 'actual damages' and 'unjust enrichment'. I expect the per farm value for 'actual damages' to be greater than from 'unjust enrichment' however will also require more effort on the part of the expert witness to prove. In the short term when there are relatively few farms in the big data system, the farmer would have a relatively better chance at 'reasonable royalty' although the forensic economics would still be relatively more difficult to estimate substantial damages. The largest per acre damages that a farmer could claim would come from 'actual damages' if data were treated as a resource. The second largest per acre damages that a farmer could claim come from unjust enrichment. As an expert witness, I would attempt to claim both 'actual damages' and 'unjust enrichment'. Proving 'reasonable royalty' would be most difficult of the three potential damages for an expert witness to estimate.

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References

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