

Dogville or An Illustration of Some Properties of General Equilibrium

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Abstract

In this note we argue that Lars von Trier's movie *Dogville* can be viewed as an illustration of a simple economy where one agent has only her body as initial endowment. The movie illustrates some interesting comparative statics of equilibrium allocations. It shows how life would be like in a world where, in the absence of constitutional or legal constraints, economic forces reign freely and raises some fundamental issues of voluntary exchange versus force that apply to a number of contentious issues in public debate.

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The analysis of simple exchange and production economies is at the very core of any introduction into microeconomic theory and when we speak of an economist many of us mean 'someone who understands the two welfare theorems'. Yet, we rarely picture how life is like in such an economy. Of course, we have the Edgeworth box in all its marvellous elegance and beauty and when we talk about efficiency we can visualize the contract curve gently sloping from the southwest corner upwards to the northeast. Yet again, how would such an economy look like if inhabited by real people? How would such people spend their days? And what would it mean for them to depend solely on their endowments and nothing else—no rights, no protection, no regulation, no law? It's not a simple exercise to picture such an economy in 'technicolor', to fill it with life and tell the stories a Walrasian equilibrium allocation entails. But wouldn't it, perhaps, be worth it, out of sheer curiosity and for educational purposes?

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The good news—that we want to convey in this note—is that you don’t even have to spend your own creative juices on the task. Somebody has already done it. Shot the movie. In colour. And, yes, it’s out on DVD.

It’s *Dogville* by Lars von Trier.

A movie that tries to fill an abstract idealistic concept with real life faces a tremendous challenge. It has to strip away many important elements of real life we are familiar with (in the case of a pure market economy human compassions as much as constitutional rights) and yet maintain elements of realism such that the audience can still ‘identify’ with the movie’s protagonists. This difficult hybrid nature of *Dogville* is reflected in its hybrid aesthetics that combine an extremely minimalist set (where much of the scenery exists merely as white labelled drawings on a stage) with naturalistic props and costumes and a no less naturalistic soundscape (such that we can hear how a door is shut even if we can’t see a door).

Dogville tells the story of a small village economy with a little over a dozen agents. Life is simple and fairly static until one day a new agent arrives. She is called Grace and, for reasons that can be treated as exogenous, her only endowment is her body and the few pieces of clothing that she is wearing (including a rather grand feather boa, an item that, sadly, is of not much use in Dogville). Grace is in need of food and shelter and the villagers can supply these goods. But, of course—and this is the moment when the film reveals its purpose—to examine the logic of pure markets—shelter and food *come at a price*. And so Tom, the village philosopher, suggests to Grace she should consider ‘physical labor’. Grace knows she has no alternative and, with a smiling face, offers herself to the market.

The movie continues by showing the new equilibrium allocation. Grace helps in the small village shop, provides company to lonely, blind Jack, looks after the children of Chuck, does some gardening and so forth. In return she receives a home and food and even some money that she spends on the only luxury items available in town, some small figurines sold in the shop. Everyone is better off and, celebrating Pareto efficiency, von Trier summarizes the prevailing mood in one of his chapter titles as “happy times in Dogville”. The economy has grown through the arrival of the new agent and the invisible hand has led it onto the new contract curve.

Of course, once we have established Walrasian equilibrium (and have proven its desirable properties) in the classroom the natural next step is to do some comparative statics on that equilibrium. Quite remarkably, this is also what von Trier does next. He introduces a small exogenous shock that changes relative prices and proceeds by showing how the equilibrium allocation and,

crucially, agents' lives change in response. Earlier in the movie the police dropped by in Dogville, putting up a poster with Grace's picture and the word 'missing'. But nothing changes in response to that, after all the villagers know from the start that Grace must have fled from somewhere. The poster does not provide new information and, accordingly, does not affect the equilibrium. But then the police come again with a new poster that looks almost identical to the old one only that the word 'missing' has been replaced by the word 'wanted'. Grace, the poster explains, is suspected of having been involved in a bank robbery a week ago. The villagers know, of course, that Grace is innocent since she has spent all of last week in Dogville; she simply can't be guilty, she has a perfect alibi. Still, Grace's demand for shelter increases, of course, and her alibi rests on the villagers willingness to provide it. On her own, she cannot prove her innocence and if the village community withdraws its protection she will be in worse trouble as before. The theoretical consequences of this exogenous shock are straightforward. For the same amount of labor Grace should, in the new equilibrium, receive less in return. Or, for the same amount of food and shelter and money she must now work harder. In a well-behaved economy with normal goods the prediction is that she will supply more labor and still receive less in return. There is an income and a substitution effect.

While for economists such comparative statics are the bread and butter of analytical thinking, the concept is a little harder to grasp for non-economists. Moreover, the predictions that are easily derived in a pure market economy are much less straightforward in 'reality' where human dignity and physical inviolability are protected by constitutional rights. Alas, there are no such rights in the Edgeworth box and, hence, the movie faces a difficult task. Not only must it illustrate a way of reasoning not particularly familiar to non-economists, it must also tell a story that is stripped bare of important elements of real life.¹ Consequently, von Trier slows down the action and spends much more time on showing the comparative statics than he took for showing the properties of the initial allocation.

Logically, Grace's wages are cut. But this is not all the Walrasian auctioneer has in stock for her. In the new equilibrium allocation, it turns out, Grace must also supply a new set of physical services. Food and shelter require now the provision of sexual services. This is not particularly pleasant to watch. In fact, some might be tempted to judge the sexual encounters that now take place as rape. But not everybody agrees. As Ben, who is the first to receive his allocation of sex with Grace, explains: *"It's not personal. I just... have to take due payment, that's all."*

In exploring this new exchange pattern in much detail, the movie raises some deep questions

¹As mentioned above, this is systematically mirrored in the movie's staging.

about how voluntary trade is in the Dogville economy. As such the movie's investigation mirrors any analysis of equilibrium allocations that offer what might be conceived as 'harsh deals' to the poor. In *Dogville*, Grace's poverty is extreme. She is the only agent in the Dogville economy who has nothing but her body. So, does she have a choice? Dissenters might argue that, when Ben takes his payment, the movie leaves the realm of pure economics. Others might side with Ben and his view that sex is simply the service Grace has to provide in the new equilibrium—that Grace is not a 'victim' of force but merely a price taker. In our view, a (classroom) debate about whether or not what happens between Ben and Grace is pure exchange should be didactically valuable as it mirrors debates about the benefits of global trade where some appear to have more choice than others. And there are other, similarly contentious examples of trade such as child labor (Basu and Van 1998) or prostitution (Edlund and Korn 2002), where it is empirically difficult to distinguish force from exchange. We would hesitate to suggest any particular outcome to which such a (classroom) debate should be steered.²

In any case, the comparative statics follow those of a market where agents have well-behaved preferences. Both, income and substitution effects, are qualitatively precisely as one would predict and they are shown in vivid pictures. We consider this a striking achievement and one of exquisite rarity in art.³ We would like to advocate the movie as of prime educational value. That it isn't pretty can't be helped. Surely, every good economics student with a little bit of imagination will suspect that, even in a simple Edgeworth box, life is not too pleasant close to one of its corners. *Dogville* confirms this suspicion: Life on the contract curve is not necessarily nice—not even in slightly bigger economies with a little bit of production as well. In terms of basic Micro 101, one might say that *Dogville* stresses the importance of the second welfare theorem that sometimes does not receive quite the same attention as the first.

We should not close this little note without briefly mentioning the two final episodes of the movie that deviate from the abstract-realistic hybrid nature of its first 150 minutes. First, before the final titles role, there is one last scene where another 'exogenous shock' occurs that, this time, dramatically enlarges Grace's choice set. This is a scene of purely philosophical/metaphysical content in which von Trier allows Grace (and himself, we suppose) the freedom of *moral judgement*. In fact, the scene is reminiscent of the notions of a 'final judgement'. For the purposes of economic

²For an interesting discussion of this question (can 'oppression' be consensual? as he puts it) as well as of the movie's ending that we do not discuss in detail here, see Brighenti (2006).

³For a discussion on how movies can contribute to philosophical debate, see Livingston (2006).

education it is irrelevant.

Second, when the titles role, von Trier shows a sequence of photographs taken from American life. These photographs might be taken as a political afterthought, placing some of the movie's ideas in space and time. Again, we believe, that for the educational purposes we outline here they are largely irrelevant.

References

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