

Normal Science: An Example from the Analysis of Dowries

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Michael Smitka, Department of Economics
Washington and Lee University

As argued earlier, the history of science and related work in the philosophy of science earlier provides guidance towards learning more effectively, from playing the game of economics (jargon and name-dropping of key researchers), to the role of exemplars and the tenuous nature of “truth”. The foil for that analysis was Thomas Kuhn’s *The Structure of Scientific Revolutions*, which emphasized discontinuity. It is important to remember that revolutions are not a normal facet of our personal experience, nor that of scientific communities. Instead a field develops through the interaction of individuals through professional networks, in pursuit of a common “research agenda” (to borrow the terminology of Imre Lakatos).

Our recent discussion of dowries provides a succinct illustration. The received interpretation, from Gary Becker’s seminal *A Treatise on the Family*, is that a dowry is a price that clears marriage markets. (Becker also discusses dowry as an element determining bargaining power within a family.) But in natural populations the numbers of men and women are roughly equal, so men in a physical sense are not scarce and need not be “bought”. There are exceptions, or so it is claimed, where changes in either male mortality or female mortality could lead to imbalance. For example, in the Dutch Republic in the 16th-18th centuries, the East Indies Company was a major employer, and seaman had extraordinarily high mortality (de Vries and van der Woude 1996), leading to an imbalance that lasted for over a century. Likewise Bhat and Holli (1999) argue that a sharp drop in the childbirth-related mortality in India produced a shift in the ratio of marriageable women to men, as does Rao (1993, 1993, 2000). Presumably warfare can have a similar transitory effect, and in such exceptional cases the Becker model might “fit”.

In any case, with dowries it is women (or their parents) paying for a husband, so implicitly husbands must be scarce, or at least scarce at a zero price (men must be paid else they remain celibate...). Of course if marriage is somehow an undesired burden, then we should find that poor women can’t afford to buy a husband and perforce there must be a corresponding number of unmarried men. In most populations marriage, however, is universal. (There are exceptions, including medieval Europe, and early modern northern Europe, and perhaps we would find dowries important in such societies.) But while I have not checked, I seriously doubt there is a correlation between dowries and widespread celibacy. Similarly, if dowries are central to the clearing of marriage markets, then they should not be observed in polygamous societies. Again, I believe that turns out not to be the case. (The data supplement to Botticini and Siow [2003] should make it easy to test these hypotheses; obviously, I have not done so.)

While Botticini and Siow (2003) do not go into great detail, they make clear that their dissatisfaction with received interpretations of dowries is the impetus for their research. In their case, they note that dowries serve as a way to split wealth among all children, and dowries disappear as societies become wealthier – which correlates with the decline of family businesses (including farms) as central to making a living. They also note that the timing of dowries and the lack of sharing rules likewise fits with a bequest motive where incentives matter.

But you have the Botticini and Siow paper and can read their argument for yourself. It is written in standard microeconomic style, in the pattern of normal science. They thus have a formal model, and then develop a set of predictions that are related to the model (ideally, they are based on the model, but in practice models seldom incorporate all of the key elements that we can observe, while including lots of things we can't). They then attest supporting evidence, culled from a fascinating range of historical and anthropological studies.

But their story is really part of a dialog among those interested in family economics. In this case, another researcher Anderson (2003) is familiar with India. In South Asia, dowry inflation is an issue, because it leads to gender-selective abortions and in extreme cases to violence, such as murders of daughters-in-law whose families don't deliver sufficient dowry (Bloch and Rao 2002, Agnihotri 2003). Furthermore, it appears to be a top-down phenomenon, which flies in the face of the conclusions of Botticini and Siow (2003). Anderson's paper – which follows up on her Ph.D. thesis – is quite careful to document this dialog; almost the entire last page contrasts her findings with Botticini and Siow (2003). Her bottom line is that there are various separate explanations for dowries, and that Botticini and Siow (2003) are by no means wrong.

She is not working in isolation. Crawford and Rochford (1984) and Dalmia (2000) and Dalmia and Lawrence (2001) use a similar matching “solution concept,” even if their papers are otherwise quite different. Anderson does however largely ignore the Becker scarcity approach, and so is implicitly arguing against it; if mortality changes are central, then this should lead to shifts in dowries that do not correlate with caste, whereas she documents the “downward” spread of dowries and other caste-specific elements. Her paper, and that of Botticini and Siow, is thus part of a larger dialog.

Indeed, there is at least one other strand present, raised long ago by Becker, that property is an element affecting intra-family power. Goody (1998), Fafchamps and Quisumbing (2000) and Zhang and Chan (1999) are all papers in this tradition. Hence the logic of dowries among Jews in Roman-era Cairo serving as a restraint on divorce that I cited in class is well known. Botticini and Siow could thus refer to it in passing in their data appendix without feeling compelled to explain the argument in detail, as it would be a common exemplar among their “community” of researchers on the economics of family and marriage.

What we find, then, is that normal science leads to a proliferation of facts and explanations. Each author presents their own explanation for dowries, often while complimenting the work of rivals-*cum*-colleagues as complementary to theirs. If there is criticism, it is often subtle, though sometimes a journal will sponsor competing papers. Hence in the *Journal of Political Economy* (*JPE*) we see Edlund (2000) commenting on Rao (1993), who then issues a rejoinder in Rao (2000), which is then “independently” preceded by Zhang and Chan (1999) and followed by Anderson (2003).

What we see in this series of papers, including those published just in the *JPE*, is that hypothesis testing does not lead to explanations being rejected, a paring down of theory, but rather to the accumulation of models. A corollary – the documentation of which I will leave this to historians of economic thought – is that over time, with the ebb and flow of “hot” or “important” research areas, a great many such explanations will be forgotten, with the associated data and exemplars

fading into obscurity. While dowries are currently the focus of a modest community of researchers, among them the consensus is that, despite their varying favored explanations, dowries will fade into obscurity. If they are correct, then their research will likewise soon be forgotten. But in economics topics also fade in and out – deflation was long relegated to the footnotes of economic history, a feature of the Great Depression that was unlikely to ever reoccur. Now it is on the front burner. Some of the participants in today’s debate, such as Barry Eichengreen and Ben Bernanke, are in fact familiar with the contemporary debates in the 1930s. But it is not unusual to find economists “reinventing the wheel” out of ignorance of past work. Normal science is not linear, edging ever closer to the truth, at least in economics. It is instead a social undertaking, and the content of what is known shifts over time in a manner that cannot be characterized as progressive.

Bibliography on Dowries

Agnihotri, Indu. “The Expanding Dimensions of Dowry.” *Indian Journal of Gender Studies* 10:2 (May-Aug. 2003): 307-19.

Recent years have seen a spread and intensification in the scale of dowry demand and dowry-related violence. Some months ago the AIDWA organised a workshop to discuss the issue in view of the women's movements' engagement with it for over two decades. The discussion highlighted the changing form and nature of dowry as well as social practices in different regions, castes and community groups, and the need to understand these in the context of trends emerging in the globalisation era.

Anderson, Siwan, “Why Dowry Payments Declined with Modernization in Europe but Are Rising in India.” *Journal of Political Economy* 111:2 (April 2003): 269-310.

In contrast to most dowry-oriented societies in which payments have declined with modernization, those in India have undergone significant inflation over the last five decades. This paper explains the difference between these two experiences by focusing on the role played by caste. The theoretical model contrasts caste- and non-caste-based societies. Modernization is assumed to involve two components: increasing average wealth and increasing wealth dispersion within caste groups. The paper shows that, in caste-based societies, modernization leads to increases in dowry payments, whereas in non-caste-based societies, the payments decline.

Becker, Gary. *A treatise on the family*. Harvard University Press, [1981], 1991. *HQ518.B35*.

Bhat, P. N. Mari and Halli, Shiva S. “Demography of Brideprice and Dowry: Causes and Consequences of the Indian Marriage Squeeze.” *Population Studies* 53:2 (July 1999): 129-48.

The paper investigates whether past declines in mortality could have created a huge deficit of eligible men in the marriage market, and whether the ensuing competition for mates could be responsible for the coercive character the dowry system of marriage has assumed in India. New indices have been developed to measure the trends in bridegroom availability that aid in the inquiry into the demographic origins of marriage squeeze. It is contended that the marriage squeeze against women was particularly intense in India because mortality decline, in addition to age structural changes, drastically reduced the number of widowers in the population who once accounted for about one-fifth of the annual supply of bridegrooms. Our projections indicate that, as a result of recent declines in fertility, the marriage squeeze against females will ease substantially by the end of the first decade of the twenty-first century, and that marriages of men will begin to be delayed more than those of women.

----- and -----, “Demography of Brideprice and Dowry: Causes and Consequences of the Indian Marriage Squeeze: Erratum.” *Population Studies* 54:1 (March 2000): 131.

Bloch, Francis and Rao, Vijayendra. "Terror as a Bargaining Instrument: A Case Study of Dowry Violence in Rural India." *American Economic Review* 92:4 (September 2002): 1029-43.

Botticini, Maristella. "A Loveless Economy? Intergenerational Altruism and the Marriage Market in a Tuscan Town, 1415-1436." *Journal of Economic History* 59:1 (March 1999): 104-21.

This article examines the role of dowries and highlights the variables that affected the size of dowries in fifteenth-century Tuscany. The estimation, which matches the households found in the marriage contracts with the corresponding households in the Florentine Catasto of 1427, offers support for the present net value hypothesis and for the altruism model. Results indicate a positive correlation between a bride's dowry size and her age when used as proxy for her contribution to the marital household. Parents also provided their daughters with larger dowries when they married 'down' into relatively less wealthy or socially prominent households.

----- and Siow, Aloysius. "Why Dowries?" *American Economic Review* 93:4 (September 2003): 1385-98.

Crawford, Vincent P. and Rochford, Sharon C. "Bargaining and Competition in Matching Models." UCSD Department of Economics Working Papers: 84-8, 1984.

There has recently been a renewal of interest in matching models (see, for example, Crawford and Knoer 1981, Kaneko 1982, Kelso and Crawford 1982, Quinzii 1982, Rochford n.d., Roth 1982, 1984, and Shapley and Shubik 1972). These models extend Gale and Shapley's 1962 analysis of the "marriage problem," in which assignments of men to women are sought that are stable in the sense that no man and woman prefer each other to their assigned mates. The more recent models study the matching problem in various settings that more closely resemble real markets. They maintain Gale and Shapley's assumptions that there is no uncertainty; that matching is discrete; that agents may be completely heterogeneous; and that there are two sides of the market, such that only matches involving agents on opposite sides are productive. They relax Gale and Shapley's assumption that agents' preferences over prospective matches are fixed, instead allowing agents to decide (among other things) how to share the surplus from their matches. In the original marriage-market metaphor, they make dowries negotiable (and allow them to be paid to women); in the labor market, they allow salaries and job descriptions to be chosen endogenously by firms and workers.

Dalmia, Sonia. "Dowries and Marital Equilibria: Three Essays on the Hedonic Analysis of Marriage Transactions in India." Ph.D. Dissertation. University of Iowa, 2000.

----- and Lawrence, Pareena G. "An Empirical Analysis of Assortative Mating in India and the U.S." *International Advances in Economic Research* 7:4 (November 2001): 443-58.

This paper uses a conditional logit model to analyze empirically how individuals sort themselves through marriage into households in India and the U.S. The results support positive assortative mating of spouses with respect to age and schooling. We find no evidence in favor of Becker's theory of labor market specialization in couples. Moreover, while similarity in age is the strongest predictor of marital choice in India, education of a prospective spouse plays a more important role in the U.S. Finally, we find that while dowry increases the likelihood of women marrying men with characteristics dissimilar to their own, availability of a mate has a positive effect on the degree of stratification in India.

Deolalikar, Anil B. and Rao, Vijayendra. "The Demand for Dowries and Bride Characteristics in Marriage: Empirical Estimates for Rural South-Central India." In Krishnaraj, Maithreyi; Sudarshan, Ratna M.; and Shariff, Abusaleh, eds. *Gender, population and development*, Oxford University Press, 1998: 122-40.

de Vries, Jan, and Ad Van Der Woude. *The First Modern Economy: Success, Failure and Perseverance of the Dutch Economy, 1500-1815*. Cambridge University Press, 1996.

Dharmalingam, A. "Economics of Marriage Change in a South Indian Village." *Development and Change* 25:3 (July 1994): 569-90.

The Indian marriage system has undergone major changes in the last few decades. Studies have found an expansion and intensification of dowry and increase in age at marriage. Using information from a village in Tamil Nadu, south India, this article shows that recent marriage changes in the study village (increased number of love-marriages and stagnation or slight decline in marriage age) are caused by the economic independence and personal autonomy among the younger generation which are products of major changes in the socio-economic organization of the society.

Edlund, Lena. "The Marriage Squeeze Interpretation of Dowry Inflation: A Comment." *Journal of Political Economy* 108:6 (December 2000): 1327-33.

Fafchamps, Marcel and Quisumbing, Agnes R. "Control and Ownership of Assets Within Rural Ethiopian Households." Centre for the Study of African Economies Working Paper WPS/00/27, 2000.

This paper investigates how the control and devolution of productive assets are allocated among husband and wife. Theory predicts that bargaining power within marriage depends on the division of assets upon divorce (exit option) and on control over assets during marriage (non-cooperative marriage). In empirical applications, bargaining power is typically proxied by variables such as dowry payments, assets brought to marriage, and ownership of assets within marriage. Using detailed household data from rural Ethiopia, we show that assets brought to marriage, ownership of assets, control within marriage, and disposition upon death or divorce are only partly related. In rural Ethiopia, control over productive resources is centralized in the hands of the household head, be it a man or a woman, irrespective of ownership at or after marriage. Disposition upon death or divorce only loosely depends on individual ownership during marriage but control over assets is associated with larger claims over these assets upon divorce, a finding consistent with the presence of incentive problems. We also find that assets brought into marriage have little impact on disposition upon death, but matter in case of divorce.

Goody, Jack. "Dowry and the Rights of Women to Property." In Hann, C. M., ed. *Property relations: Renewing the anthropological tradition*. Cambridge University Press, 1998: 201-13.

Hoch, Steven L. "Bridewealth, Dowry, and Socioeconomic Differentiation in Rural Russia." In Grantham, George and Leonard, Carol S., eds. *Agrarian organization in the century of industrialization: Europe, Russia, and North America*. Research in Economic History Series, Supplement 5, pt. B. JAI Press, 1989: 389-410.

Menski, Werner. "Dowry: A Survey of the Issues and the Literature." In Menski, Werner, ed. *South Asians and the dowry problem*. Trentham Books, University of London, School of Oriental and African Studies, 1998: 37-60.

Rao, Vijayendra. "Dowry 'Inflation' in Rural India: A Statistical Investigation." *Population Studies* 47:2 (July 1993): 283-93.

Dowries in most regions of South Asia have steadily become larger over the last 40 years, causing widespread destitution among families with daughters to be married. This paper attempts to investigate the reasons behind dowry "inflation" with data on marriage transactions and other individual and household information from six villages in south-central India, and from the Indian census. It is found that a "marriage squeeze" caused by population growth which resulted in a surplus of younger women in the marriage market, has played an important role in the increase in dowries. Other factors that increase the size of dowries include differences in the landholdings of the parental households, and residence in regions in the more northerly parts of India.

-----, "The Rising Price of Husbands: A Hedonic Analysis of Dowry Increases in Rural India." *Journal of Political Economy* 101:4 (August 1993): 666-77.

-----, "The Marriage Squeeze Interpretation of Dowry Inflation: Response." *Journal of Political Economy* 108:6 (December 2000): 1334-35.

Stuard, Susan Mosher. "Dowry Increase and Increments in Wealth in Medieval Ragusa (Dubrovnik)." *Journal of Economic History* 41:4 (Dec. 1981): 795-811.

Zhang, Junsen and Chan, William. "Dowry and Wife's Welfare: A Theoretical and Empirical Analysis." *Journal of Political Economy* 107:4 (August 1999): 786-808.

Gary S. Becker (1991) attributes the existence of marital transfers to inflexibility in the division of joint product within the marriage, but this cannot explain the coexistence of dowries and bride-prices. This paper offers an alternative analysis. While Becker's interpretation is retained for bride-prices, a dowry is now represented as a premortem bequest by altruistic parents for a daughter. It not only increases the wealth of the new conjugal household but also enhances the bargaining power of the bride in the allocation of output within that household, thereby safeguarding her welfare. The authors find empirical support for this hypothesis in micro data from Taiwan.