Special Feature B

The Competitive Saving Motive: Concept, Evidence, and Implications

by Shang-Jin Wei[1]

Introduction

The competitive saving motive refers to saving for the purpose of raising one's relative status in the competition for dating and marriage partners. Unlike the standard life-cycle and precautionary motives for savings, the competitive saving motive is all about competition with others. The higher an individual's savings relative to those in the same age and gender cohort, the better his or her competitive position.

From an evolutionary point of view, there are good reasons to think that competitive savings can be quantitatively significant. Competitive savings refer to the accumulation of wealth to gain an edge in the race to satisfy one's strong biological and physiological desires. When such competition intensifies, people are likely to adjust their savings rates accordingly.

Empirical Motivation and Theory

I first proposed the notion of a competitive saving motive in research published with Xiaobo Zhang in the *Journal of Political Economy* in 2011. We estimated that a heightened competitive saving motive in China, triggered by a sharp rise in the male-to-female ratio in the pre-marital age cohort since 2000, contributed to about 50% of the actual rise in the Chinese savings rate since 2000. In fact, many countries, including Singapore, India, Vietnam, Korea, Taiwan, have also exhibited unbalanced sex ratios in the pre-marital age cohorts. Accordingly, the competitive saving motive may have played a quantitatively important role in the evolution of these countries' savings rates as well. In addition, the competitive saving motive can also be present and important in countries with a balanced sex ratio, though it is not as easy to estimate its effect, given the lack of variation in the strength of this saving motive.

With Qingyuan Du (2011), I formalised a theory of the competitive saving motive. Our model clarified the conditions under which the competitive saving motive at an individual level can translate into major changes in economy-wide aggregate savings. In this Special Feature, I summarise a number of key points from the theory. First, the savings rate of the gender that is in excess supply will tend to rise. With a relative surplus of males, men, and importantly, parents of unmarried sons, will tend to raise their savings whenever the male's probability of marriage declines. This is because higher savings is considered both as an effective signal and a competitive instrument in the dating and marriage market. Second, the impact on the savings rate of the gender that is in shorter supply is indeterminate. On the one hand, women (and their parents) may wish to reduce their savings to free ride on the higher savings of their future husbands. On the other hand, the desire

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of women to out-compete each other to be matched with the best possible men could induce them to raise, rather than to lower, their savings rate. Moreover, women may want to save more in order to maintain "bargaining power" *vis-à-vis* savings-rich husbands within the marriage. *A priori,* it is unclear which effect dominates. Third, the economy-wide savings rate goes up unambiguously in response to a higher sex ratio. This is a striking result and needs some explanation. If women or families with a daughter also raise their savings in response to a higher sex ratio, it is clear that aggregate savings would go up. What if they choose to reduce savings? Even in this case, our model predicts that the increase in savings by men or their parents tends to outweigh any reduction in savings by women or their parents, due to both the competition motive and the desire to smooth consumption in anticipation of free-riding by a future spouse. Fourth, the rise in aggregate savings due to an increase in the sex ratio may be a transitional phenomenon, but the resultant distortions can only correct in the long run.

A rise in the aggregate savings rate that is triggered by a rise in the sex ratio is socially inefficient. While all young men (and their parents) hope to improve their chances of marriage by increasing savings and reducing consumption, such hopes cannot be realised in the aggregate, as the total number of unmarried young men for the country as a whole is ultimately determined by the sex ratio, and not by the aggregate savings rate. The economy thus has excess savings that could be consumed or invested with no change to the marriage outcome.[2]

In principle, an unbalanced sex ratio in either direction (a surplus of males or a surplus of females) can trigger a rise in the savings rate due to the competitive saving motive. The amount of incremental savings could differ in the two cases if men and women have a different tolerance for involuntary singlehood.

Evidence and Findings

Empirically, there is abundant evidence that (relative) wealth helps one to gain status in the dating and marriage market. By and large, there are no wealthy men who are involuntary bachelors. Previous studies have also shown that unmarried male portfolio managers are more likely to take riskier positions or have a less diversified portfolio than their married but otherwise comparable counterparts, presumably to gamble for a higher return.

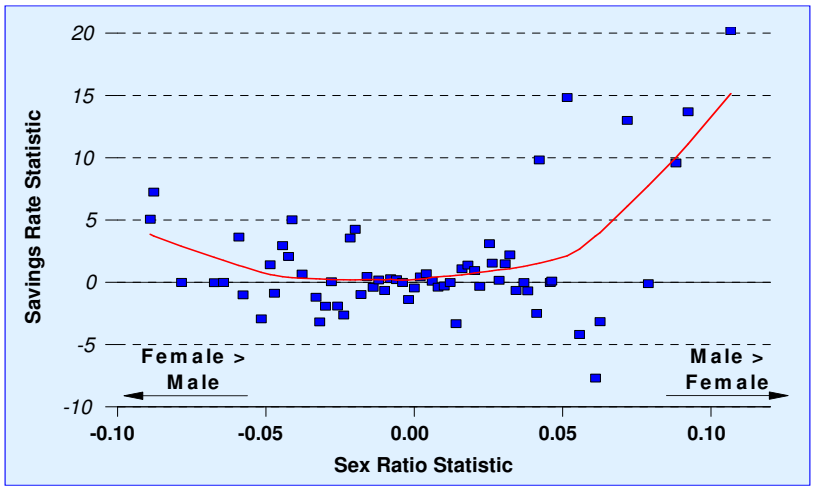
Cross-country Data Patterns

Du and Wei (2011) report patterns on gender imbalances and private sector savings rates across countries. Specifically, we ran a non-linear panel regression of the aggregate savings rate on the sex ratio and other control variables, including country and year fixed effects over the period 1990–2010. The sex ratio is defined as the male-to-female ratio for the pre-marital age group of 10–24 year-olds (from the United Nations Population Division). For robustness, our regressions also controlled for the effects of per capita income, the dependency ratio, the government fiscal deficit, and a proxy for financial development.

[2] It should be noted that raising the savings rate is but one of several actions that individuals or their families may take to compete more successfully in the dating and marriage market. Other responses include purchasing more visible status goods, increasing the supply of work effort, accumulating more human capital, and demonstrating greater entrepreneurship. I have examined several of these issues in other papers with either Xiaobo Zhang or Qingyuan Du.

Chart 1 below plots the non-linear relationship between a country's savings rate and its sex ratio for the age cohort of 10–24 year-olds, after holding constant the control variables.[3] It shows that at sex ratios above +/−0.05, greater gender imbalance tends to correspond with higher savings rates. This verifies the theory presented in the Du-Wei model, which predicted that the aggregate savings rate would increase as the gender imbalance worsens. However, the increase in the savings rate is stronger when men outnumber women than the reverse.

Chart 1
Conditional Scatter Plot of Sex Ratio and Savings Rate Statistics across Countries, 1990–2010



Household-level Evidence

It is useful to go beyond cross-country evidence and examine household-level evidence. I focus on China as it is geographically large, with significant differences in the extent of gender imbalances across regions. At the national level, the sex ratio for the Chinese pre-marital cohort increased from near balance in 1990 to about 115 young men per 100 young women in 2007. China's household savings rate (out of disposable income) almost doubled from 16% to 30% during the same period. The time series data on the national savings rate and the sex ratio for the pre-marital cohort clearly move together. Much as the time series pattern is suggestive, the household-level evidence across regions is even more revealing. While China as a whole exhibits a rising male-to-female ratio, the extent of the gender imbalance is very disparate across regions. For example, Anhui Province has a very unbalanced sex ratio in the order of 120 young men per 100 young women, whereas Inner Mongolia has a sex ratio that is almost balanced. As the marriage market is very local (i.e. it is uncommon for people to migrate across regions to marry), we can examine how savings rates respond to changes in local marriage market conditions. The competitive saving motive predicts a particular interaction effect: families with an unmarried son that live in a region with a more unbalanced sex ratio are likely to have a higher savings rate. This pattern is not predicted by standard theories on savings, but can easily be verified in the data.

[3] We regress the savings rate and the sex ratio for the pre-marital age cohort on the independent variables listed above, producing two panels of residuals which can be matched by country and year. By construction, the two residual series are both centred at zero. The sex ratio residuals are divided into 100 equally-spaced baskets and matched to their corresponding savings rate residuals. The mean value of the savings rate residuals within a given basket is plotted against the middle value of the sex ratio residuals of that basket. A locally weighted least square (LOWESS) procedure is used to trace out the non-linear slope.

To examine the empirical relationship between household savings rates (out of disposable income) and local sex ratios (at the county or city level), we run regressions taking into account other determinants of savings rates such as household income, the age of the head of household, gender, ethnicity, educational level, children's age, and whether family members have major health problems. The interaction effect predicted by our theory is strongly borne out in the data. My 2011 study with Xiaobo Zhang found that in the rural areas, families with unmarried sons living in regions with a more skewed male sex ratio tended to have higher savings rates. In comparison, the savings rates of families with an unmarried daughter appeared to be uncorrelated with the extent of gender imbalances at the local level. Across Chinese cities, the savings rates by both unmarried son-families and unmarried daughter-families tended to rise with the local sex ratio. These patterns are consistent with the basic prediction of the competitive saving motive: savings tend to be higher in regions with higher sex ratios, especially among families with unmarried sons. The pattern of savings by households with unmarried daughters is also consistent with the Du-Wei model that allows for intra-family bargaining. When women (or their parents) are concerned about the erosion of bargaining power *vis-à-vis* their husbands (or his family), they may not reduce their savings rate in response to the gender imbalance. When the effect of intra-family bargaining dominates, the savings rate by unmarried daughter-families could rise in response to an increase in the number of males to females.

Policy Implications

The conventional determinants of savings form only part of the explanation for the high savings rates among Asian countries. New research on the competitive saving motive indicates that a rise in the sex ratio in many of these countries may have played an important role in sustaining high savings rates, or elevating them to new records in recent years.

By extension, the sex ratio imbalance is a "missing" fundamental variable behind many of these countries' current account surpluses, since a country's current account is the difference between national savings and investment. My work has highlighted that a *one-off* increase in the sex ratio can cause a *temporary* rise in the current account. The latter will shift to the long-run equilibrium level when all cohorts in the society have adjusted fully to the new male-to-female ratio. Nonetheless, the transition period can be as long as a decade. If, instead of a one-off increase, there is a sustained rise in the sex ratio, as is the case in China, the phase of the economy's current account surplus could last even longer. If a large country such as China runs a surplus when competitive saving motives are heightened, the rest of the world has to collectively run a current account deficit during the transition period.

While the sex ratio imbalance is a type of distortion, it is very different from those associated with nominal exchange rate policies, which tend to be the overwhelming focus of typical policy discussions. Gender imbalances exacerbate the competitive saving motive, which may have created an impression of an under-valued real exchange rate *even when there is none* (Du & Wei, 2011). Accordingly, if governments were to artificially appreciate the nominal exchange rate to reduce a current account surplus whose root cause is a rise in competitive savings triggered by a higher sex ratio, they would simply be introducing new distortions rather than resolving existing ones. In this instance, the outcome is Pareto inferior, and the country incurs significant welfare losses. Instead of simply focusing on the nominal exchange rate, my research on the competitive saving motive suggests that a broader look at the structural determinants of savings and current accounts may turn out to be more productive and helpful in the long run for policy discussions on global imbalances and their rectification.

References

Du, Q and Wei, S J (2011), "A Darwinian Perspective on 'Exchange Rate Undervaluation'", *NBER Working Paper* No. 16788.

Du, Q and Wei, S J (2013), "A Theory of Competitive Saving Motive," *NBER Working Paper* No. 18911.

Wei, S J and Zhang, X (2011), "The Competitive Saving Motive: Evidence from Rising Sex Ratios and Savings Rates in China," *Journal of Political Economy*, Vol. 119(3), pp. 511–564.

Liu, Y, Wei, S J and Zhang, X (2012), "Status Competition and Housing Prices," *NBER Working Paper* No. 18000.