## SUBJECTIVE DISCOUNT RATES AMONG ISRAELI ARABS AND ISRAELI JEWS

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# Subjective discount rates among Israeli Arabs and Israeli Jews

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In this study we compare the subjective discount rate for Israeli Jews and Arabs. All the subjects were bank customers, who were asked to bid and ask prices for delayed fixed amounts and for lotteries. The two populations live in the same country under the same laws. Nevertheless, according to the literature, Israeli Arabs seem to be a discriminated minority, who exhibit traits of a traditional collectivist culture, while Israeli Jews are a majority, who exhibit traits of an individualistic culture. As a discriminated minority, Israeli Arab may suffer from lower trust and as a result, according to the "trust" hypothesis, exhibit higher subjective discount rates and higher risk aversion. On the other hand, according to the "cushion" hypothesis, a collectivist society such as Israeli Arabs, provides a safety net for the individual and as a result, he will exhibit lower subjective discount rates and lower risk-aversion. The experimental findings show that the subjective discount rate and risk aversion of Israeli Arabs are significantly higher than that of Israeli Jews. Moreover, higher percent of Israeli Jews are at the low range of the discount rates (below 10%) and lower percent of Israeli Jews are at the high range of discount rate (above 20%) compared to Israeli Arabs. This is consistent with the "trust" hypothesis. For Israeli Jews the discount rates are closer to the bank interest rate, while Israeli Arabs rates are much higher particularly for receipt. The dispersion of the distribution of discount rate is much larger for Arabs than for Jews.

#### JEL Classifications: C93, D14, D81, J15

Authors' Keywords: Discounting, Risk aversion, Cross-cultural, Israeli Arabs, Israeli Jews.

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# **1. Introduction**

The current paper compares subjective discount rate and risk attitudes among Jewish and Arab populations in Israel. Mikulincer (1993) suggested that Israeli Arabs exhibit traits of traditional Middle Eastern collectivist culture, while Israeli Jews exhibit traits of a modern Western individualistic culture. Hofstede (1991), as well, has proposed that Israeli Jews are more individualistic, while Arabs are more collectivistic.

Some researchers suggest that Israeli Arabs are a minority living in a Jewish state under discriminating laws and regulations which prefer Jews over Arabs (e.g., Halabi 1987, Kretzmer 1990, and Rouhana and Ghanem 1993). Other researchers suggest that the discrimination is not only in state laws but also in state policies. The main claim is that there is a major gap between the resources allocated to the Arab population and the Jewish population in favor of the Jewish majority (e.g., Benziman and Mansour 1993, Al-Haj and Rosenfeld 1990). This discrimination was also shown

in government services to the citizens such as education (Shavit 1990, Al-Haj 1995), and health (Reiss 1991).

Rouhana and Ghanem (1998) suggest that the Israeli Arabs are "systematically excluded from the political, social, economic and military power centers in the Israeli state," (p. 328). They also suggest that there is discrimination on the cultural level, such as the language, and dominant symbols and values (such as the flag) are exclusively rooted in the majority's religion.

Malach Pines (2003) agrees that there are differences between these two groups, however states that "the fact that Israeli Jews and Israeli Arabs, both descendants of the biblical Abraham, reside in the same country under the same democratically elected government, yet are two distinct cultural groups makes them ideal subjects for cross-cultural research" (p. 98).

The first difference between the two populations we refer to in this study, is the level of income. According to the National Insurance Institute of Israel, in 2005–2006, 15.4% of Israeli Jewish families were below the poverty line, while 51.2% of Israeli Arabs families were below the poverty line.

There are several empirical and experimental results on the relation between risk attitude and wealth; however the findings are mixed. Some of the findings show a positive relation between risk aversion and wealth (e.g., Fafchamps and Pender 1997, Nielsen 2001), other findings show no relation between risk wealth and risk attitude (Binswanger 1981, Mosley and Verschoor, 2005). Still others found a negative relation between wealth and risk aversion (Wik and Holden 1998, Yesuf 2004).

The findings regarding the relation between wealth and discount rates are more consistent. Most of the studies found negative relations between wealth and discount

rates (e.g., Hausman 1979, Lawrence 1991, Harrison et al. 2002, Yesuf 2004). However, there are a few studies which did not find such a relation between wealth and discount rate (Kirby et al. 2002, Anderson et al. 2004).

The second difference referred to in this study is the fact that the Arab population is a minority, mostly Moslems, living with a Jewish majority (approximately 20% of the population in Israel, are Arabs). These two groups have different social capital and different levels of membership in associations and might have different level of trust.

There are several studies that deal with the relation between trust and economic decision making.

Bohnet and Zeckhauser (2004) tested experimentally the relation between the decision to trust a stranger in a one-shot interaction and the decision to take risk. They conducted three experimental treatments: a decision problem, a risky dictator and a trust game. They found that, in a trust game, subjects behave as though there is a "betrayal cost" and as a result, subjects needed a much higher chance to receive the good outcome, meaning lower risk than in the other conditions. They also tested the trust level for minorities compared to the majority and women compared to men. They suggest, based on the finding of Alesina and La Ferrara (2002), that minorities are less likely trust others. The results show lower trust among minorities and women compared to the majority and men respectively; however these differences are not significant.

Additional studies found that minority groups are less likely to trust others (e.g., Glaeser et al. 2000, Ashraf et al. 2004). The findings on the relation between gender and trust are mixed. Some of the studies indicate that women are less likely to trust

others (e.g., Glaeser et al. 2000, Buchan et al. 2003). Some of them indicate that there is no difference between men and women regarding trust (e.g., Croson and Buchan 1999, Ashraf et al. 2004). However, Eckel and Wilson (2003) reported a higher trust rate for American women than for men and Fershtman and Gneezy (2001) found mistrust in Jewish/Israeli men of Eastern origin, and that men are affected by ethnic affiliation while women are not.

Another group of studies tested the relation between social capital and economic activity. They used several variables to measure social capital such as trust, involvement in associations, individualism, and ethnic diversity.

Knack and Keefer (1997) suggest that "economic activities that require some agents to rely on the future actions of others are accomplished at lower cost in a higher trust environment" (p. 1252). They found that trust has a significant impact on aggregate economic activity. They also claim that involvement in associations may strengthen trust within the ethnic group, but weaken trust between the ethnic groups. Helliwell (1996) tested the effect of social capital on productivity growth in 17 OECD members. He used an equally weighted combination of trust and associations were negatively related to productivity growth.

Tample and Hohnson (1998) tested the effect of social indicators on economic growth. Specifically they define the variable KINSHIP as the "dominance of the immediate family over the extended family or clan and tribal allegiances" (Page 976). They found a positive relation between the KINSHIP variable and economic growth. Easterly and Levine (1997) show that ethnic diversity can explain cross-country differences in economic indicators. Their main finding is that "ethnic diversity tends

to slow growth by making it more difficult to agree on the provision of public goods and policies that foster economic growth" (p.1231).

Feddereke and Klitgaars (1998) show a positive relation between homogeneity in a country's population and growth (ethnolinguistic fractionation index). They also found some evidence of a positive relation between individualism and growth.

Rodrik (1999) used ethnic fragmentation to measure domestic social conflict. He found evidence that supports the hypothesis that growth in divided societies is more exposed to economic external shocks. He presented a model, in which the cooperation in the society is a measure for the social conflict. He claims that: "when social division runs deep, there will be greater suspicion about others' motives and a higher probability will be attached to an opportunistic grab for resources by the rival group" (page 359).

Grootaert (1999) empirically estimates how social capital affects household welfare and poverty in Indonesia. His focus was on household memberships in local associations, as an aspect of social capital especially relevant to daily household decisions that affect welfare and consumption. The data suggest that households with higher social capital spend more per capita. They also have more savings and better access to credit. Grootaert measures social capital along six dimensions: density of memberships, internal heterogeneity of associations, meeting attendance, active participation in decision-making, payment of dues, and community orientation. His findings show that additional memberships raises per capita household spending as well as the heterogeneity of associations and active participation in decision-making.

Grootaert and Narayan (2001) found that social capital, measured in the same manner as in Grootaet (1999), including membership in an association as an agrarian

syndicate, reduces the probability of being poor in Bolivia. They claim that the effects of social capital operate through (at least) three mechanisms: sharing of information among association members, the reduction of opportunistic behavior, and better collective decision-making. The results partly confirm the hypothesis that social capital provides long-term benefits such as better access to credit and a higher level of trust in the community as a source of assistance in case of need.

The group of studies mentioned, indicate that differences in social capital may affect economic decisions. Trust, involvement in associations, individualism, and ethnic diversity are all important variables that could explain differences in economic decisions.

Specifically, a minority such as the Israeli Arabs might exhibit less trust. The lack of trust in the minority group is a result of greater suspicion about others' motives as Rodrik (1999) mentioned. Since economic activities require that some agents rely on the future actions of others, the minority group (Israeli Arabs) will ask for higher premium in these activities. This premium might be a higher subjective discount rate or lower price for risky assets.

The third difference between Israeli Jews and Israeli Arabs we refer to are cultural differences. Specifically we refer to the fact that Israeli Arabs exhibit collectivist culture, while Israeli Jews exhibit individualistic culture (e.g., Hofstede 1991, Mikulincer 1993). In recent years, the impact of cultural differences on subjects' economic and financial decision-making has been a focus of attention in the research literature. Most of the studies investigating cultural influences compared two or more groups from different countries and societies.

Gell (1992) and Helfrich (1996) suggested that cultures may differ in their attitudes toward time discounting. Tan and Johnson (1996) reported no difference in discount rates between Canadian and foreign Chinese undergraduates.

Risk attitude has also been tested in some cross-cultural research studies. Weber and Hsee (1998) and Hsee and Weber (1999) found that Chinese are less risk-averse than are Americans in making financial decisions. Hofstede (1980) and Markus and Kitayama (1991) suggested that Japan, like China, is a collective society that differs from individualistic cultures such as the United States. In contrast to these studies, this paper concentrates on the cultural influences of two different societies living in the same country under the same laws, as noted by Malach Pines (2003).

Du, Green and Myerson (2002) collected information on subjective discounting and risk attitudes among American, Chinese, and Japanese graduate students at three American universities. They contended that Chinese and Japanese would show similar decision-making tendencies, since both societies are collective and should exhibit decision-making behavior different from that in individualistic cultures such as the United States. According to the "cushion" hypothesis, collectivist society provides the individual with a safety net, and as a result, this individual will be less risk-averse. The discounting functions suggest fundamental commonalities among the three groups with respect to the processes underlying their evaluation of delayed and probabilistic rewards. Unexpectedly, Du, Green and Myerson found that the Japanese exhibited the least discounting of delayed rewards, whereas the Americans and Chinese were virtually equal in this regard. For probabilistic rewards, in contrast, the Chinese showed the least discounting. The authors suggested that the observed differences in discounting may be caused by cultural differences in attitudes toward delay or probability or by differences in perception of time or risk. Since the

Americans and Chinese showed differences in probability discounting but not in temporal discounting, the authors proposed that groups differing on one discounting task might not necessarily differ on the other.

Based on the "cushion" hypothesis, we expect to find that the Israeli Arabs who live in a collectivist society that provides the individual a safety net will be less risk averse and show a lower discount rate.

It is important to mention that there are findings that show that subjective discount rates are correlated with risk aversion. Benzion et al. (1989) results support an implicit risk hypothesis according to which delayed consequences are associated with an implicit risk value. According to their compensation hypothesis, individuals require compensation for a change in their financial position.

According to Stevenson (1986), Green and Myerson (1997), and Myerson et al. (2003) delaying rewards is risky because delaying a reward increases the possibility that something will prevent payment. Keren and Roelofsma (1995) suggested that discounting occurs due to the uncertainty encapsulated in future payoffs. Specifically, they found that introducing external uncertainty has a similar effect on subject behavior as time delays are expanded. Anderhub et al. (2001) investigated the correlation between subjects' attitude to risk and their time-preference, using the random number auction (BDM) in order to determine subjects' buying and selling prices for a lottery. They found that subjects who exhibit a relatively high degree of risk aversion tend to discount the future more heavily than subjects who are less riskaverse. Benzion et al. (2007) also found a positive relation between discounting and risk aversion.

We used an experimental procedure to compare the discount rates of Israeli Jews and Israeli Arabs. Our subjects were mature bank clients at various branches, some

located in the Arab sector and some in the Jewish sector. The subjects were asked to state the amount they would be willing to pay (WTP) in order to postpone payments, and the amount they would be willing to accept (WTA) in order to postpone receipt of a sum both for period of six months and of 24 months. To measure risk attitude, we asked the subjects to choose between a fixed amount and a lottery with the same expected value as the fixed amount.

The rest of the paper is organized as follows. Section 2 describes the experimental procedure and methods, while Section 3 presents the major results and offers some possible explanations. Finally, Section 4 summarizes the paper and presents its conclusions.

# 2. Experimental procedure

The study participants comprised 86 bank customers from 35 different branches of the same bank. Of these participants, 41 were Israeli Arabs (27 men and 14 women), and 45 were Israeli Jews (18 men and 27 women). The subjects were asked to fill out a questionnaire that included a number of demographic questions, such as age, gender, number of children, and other details. Next, they were asked to state the amount they would be willing to pay (WTP) in order to postpone payments, and the amount they would be willing to accept (WTA) in order to postpone receipt of a sum. They indicated their preference from a list of amounts presented to them immediately after each question. The listed amounts were relative to the sum presented in the question and identical for postponing and receiving equal sums. They also had the option of indicating a preference that differed from those presented in the list.

Table 1 presents the eight cases proposed to the subjects:

#### <Insert Table 1 about here>

An example of a postponed receipt (WTA) question was phrased as follows:

An amount of 20,000 NIS is going to be deposited in your bank account immediately. Instead, we are offering you the option of receiving this amount in six months. What is the minimum amount you are willing to accept in six months instead of receipt of the sum today?

20,600 NIS	20,700 NIS	20,800 NIS	20,900 NIS	21,000 NIS	22,000 NIS
23,000 NIS	24,000 NIS	25,000 NIS	26,000 NIS	Other Amoun	.t

An example of a postponed payment (WTP) question was phrased as follows: You have to pay 20,000 NIS immediately. Instead we are offering you the option of paying this amount in six months. What is the maximum amount you are willing to pay in six months instead of payment today?

The same amounts were presented in this case as in the WTA example above.

The discount rate for delaying receipt and delaying payment was calculated by the following equation:

$$\mathbf{r} = \left(\frac{P}{X}\right) - 1 \tag{1}$$

where P is the payment for delaying the amount of X for t periods.

#### Risk attitude

In order to measure risk, we asked the subjects to answer four questions. For each question, subjects had to choose between a fixed amount and a lottery with the expected value as the fixed amount. The questions were as follows:

(1) An amount of 5,000 NIS is going to be deposited in your bank account immediately. Instead of the fixed amount, we are offering you a lottery ticket with equal odds of receiving 2,000 NIS or 8,000 NIS. Please mark which alternative you prefer.

(2) You have to pay an amount of 5,000 NIS immediately. Instead of the fixed amount, we are offering you the option of paying according to a lottery, with equal odds of paying 2,000 NIS or 8,000 NIS.

(3) An amount of 20,000 NIS is going to be deposited in your bank account immediately. Instead of the fixed amount, we are offering you a lottery ticket with equal odds of receiving 5,000 NIS or 35,000 NIS. Please select your preferred alternative.

(4) You have to pay an amount of 20,000 NIS immediately. Instead of the fixed amount, we are offering you the option of paying according to a lottery, with equal odds of paying 5,000 NIS or 35,000 NIS.

## **3. Results**

#### Discounting

Table 2 presents the average discount rates and standard deviations (in brackets) for Israeli Arabs and Israeli Jews for each of the eight cases described in table 1. We used one tailed T-test to compare the average discount rate and two-tailed F-test

to compare the standard deviations of the discount rates. The table presents the implied annual discount rate for the 6 months and 24 months periods.

#### <Insert Table 2 about here>

Table 3 presents the distribution of discount rate for each group and each case based on the individual observations.

#### <Insert Table 3 about here>

Table 2 shows that for all the cases, the discount rate of the Israeli Arabs is significantly higher than that of the Israeli Jews (For example 18% for Jews and 48% for Arabs to postpone receipt in six months). Table 3 shows that higher percent of Israeli Jews are at the low range of the discount rates (discount rate below 10%) and lower percent of Israeli Jews are at the high range of discount rate (discount rate above 20%) compared to Israeli Arabs for each one of the cases. For example, in the receipt of 20,000 and 6 months about 15% of the Arabs and 24% of the Jews are in the lower range, while about 79% of the Arabs and 43% of the Jews are at the upper range. In the payment of 20,000 and 6 months about 44% of the Arabs and 65% of the Jews are in the lower range, while about 47% of the Arabs and 16% of the Jews are in the upper range. That is, Israeli Arabs as compared to Jews are willing to pay more in order to postpone payment and ask more in order to postpone receipt.

In all the cases the standard deviation of the discount rate is higher for the Israeli Arabs (see Table 2). This result is consistent with the trust hypothesis and with the fact that Israeli Arabs have lower income. The Israeli Arabs, as a minority, might suffer from less trust and as a result are asking to receive higher amount in the future instead of getting an amount of money today (meaning higher discount rate).

However this finding is inconsistent with the prediction of the "cushion" hypothesis.

The higher discount rate for delayed payment may be due to the fact that the Israeli Arabs are poorer compared to the Jewish population.

Another explanation is that the standard norm of paying obligation maybe weaker for the Arab population, and they may assume that some part of the delayed payment will not be paid. This is consistent with Shahor (2006), who finds that the rate of Israeli Arabs who pay municipal taxes is lower compared to Israeli Jews.

Arrow (1972) claims that willingness to pay tax depends on the public trust in the authorities. Knack and Keefer (1997) suggest that since a minority suffers from less trust, they pay less tax to the authorities.

Moreover, the discount rates of Israeli Jews seem to be in the same magnitude as the interest rates (For example: annual discount rate of 16% to postpone receipt in six months and 11% to postpone payment in six months). The discount rates of Israeli Arabs seem to be quite high compare to actual interest rate (For example: annual discount rate of 43% to postpone receipt in six months and 40% to postpone payment in six months)

Next, we test the differences between the subjective discount rates for postponing receipt and postponing payment of the same amount for the same period of time. Table 4 presents the difference between subjective discount rates for postpone receipt

and postpone payment, and T-test significance for the hypothesis that the difference is not different from zero..

#### <Insert Table 4 about here>

It seems that in both populations, the subjective discount rate for postponing payment is lower than the subjective discount rate for postponing receipt. That is, subjects are willing to pay less when postponing payment relative to what they ask in order to postpone receipt. There is no difference between the two positions for the low amount (5000) and the short period (6 months) for the Arabs.

#### Risk attitude

Table 5 presents the percent of subjects per question that chose either a fixed amount or a lottery in each group. We used nominal regression analysis in order to test the difference between the Israeli Jewish and Israeli Arab populations. The dependent variable was the probability of choosing a fixed amount, and the independent variable was a dummy variable with 1 for Israeli Jews and 0 for Israeli Arabs.

#### <Insert Table 5 about here>

The Israeli Arab population displayed more risk aversion than the Israeli Jewish population for only two of the four questions. When asked to pay 5,000 NIS and to receive 20,000 NIS, the percentage for taking the fixed amount is significantly higher among the Israeli Arab population. However, when asked about receiving 5,000 NIS and paying 20,000 NIS, no significant difference was found between the Israeli Arab

and Israeli Jewish populations. We can conclude that Israeli Arabs seem to be more risk-averse than Israeli Jews inconsistent with the "cushion" hypothesis. However, higher risk aversion in the lotteries might also indicate lower trust for the Israeli Arabs as we saw in the subjective discounting results. Subjects with lower trust might believe that the higher outcome from the lottery has a lower chance than presented since they have to relay on a stranger to perform the lottery, and so, they are willing to pay less for this lottery. These results are consistent with Schechter (2007), who found positive relation between risk and trust, but inconsistent with Eckel and Wilson (2004), who did not find a significant relation.

# 4. Conclusions

This paper analyzes the time preferences of Israeli Arabs and Israeli Jews using subjective discount rate in an experimental procedure. Israeli Arabs and Israeli Jews are two different social groups that live in the same country under the same laws. The Israeli Arabs as a minority group are possibly discriminated against in different aspects of life, for example, employment in the public and private sectors. This paper is different from others who examine trust and economic behavior, since we compare two groups of subjects, one a minority the other a majority, who live in the same country under the same laws.

This study also differs from others in its use of an "average" general population (clients of different branches of the same bank) rather than students. The "average" general population is more appropriate than students since cultural differences are sharper in the average population. For Israeli Jews, we found that the discount rates are much lower that was found in previous research and this could be due to the fact that the subjects in the experiment were bank customers rather than students. As expected, the implicit discount rate of delayed receipts are, higher than for delayed payment. The latter one, are quite close to the real market interest rate.

Findings regarding Israeli Arabs indicate that discount rates are much higher for both positions comparing Israeli Jews, and much higher than the market interest rate. The difference between Arab and Jewish citizens might be explained by different socio economic status as well as level of trust, which is associated to the fact that Israeli Arabs are a discriminated minority in Israel.

Another possible explanation is that Israeli Arabs face higher interest rates in borrowing because they have lower income and higher client risk (discrimination). As for delayed payment, it is possible that standard obligations are not always paid by Israeli Arabs, as indicated by Shahor (2006).

Our findings do not support the "cushion" hypothesis, meaning that collectivist society such as the Israeli Arabs provides the individual with a safety net, and as a result, this individual will be less risk-averse and show lower discount rate. It is possible that the "cushion" effect has some influence on the Israeli Arabs decision making. However, the low trust and low income of the Israeli Arabs may have stronger influence in the opposite direction.

More experimental work is needed in the field of cross-culture comparisons in order to understand the full impact of both cultural differences and membership in a minority on economic decision making.

## References

- Alesina, A., La Ferrara, E., 2002. Who trusts others?. Journal of Public Economics, 85,2007-234.
- Al-Haj, M., 1995. Education, empowerment, and control: the case of Arabs in Israel. Albany, N.Y,: State University of New York Press.
- Al-Haj, M., Rosenfeld, H., 1990. The Arab local government in Israel. Boulder, Colo: Westview Press.
- Anderhub, V., Gneezy, U., Guth, W., Sonsino, D., 2001. On the interaction of risk and time preferences – an experimental study. German Economic Review, 2(3), 239-253.
- Anderson, C.L., Dietz, M., Gordon, A., Klawitter, M., 2004. Discount rates in Vietnam. Economic Development and Cultural Change, 52, 873-888.
- Arrow, K., 1972. Gifts and exchange. Philosophy and Public Affairs, 1, 343-362.
- Ashraf, N., Bohnet, I., Piankov, N., 2004. Is trust a bad investment? Working paper, Kennedy School of Government, Harvard University.
- Benziman, U., Mansour., A., 1992. Subtenants: The Arabs of Israel, their statues and the policy towards them. Keter, Jerusalem.
- Benzion, U., Rapport, A., Yagil, J., 1989. Discount rates inferred from decisions: An experimental study. Management Science, 35, 270-284.
- Benzion, U., Krahnen, J.P., Shavit, T., 2007. Subjective Evaluation of Delayed Risky Outcomes: An Experimental Approach. Working paper.
- Binswanger, H.P., 1981. Attitudes toward risk: theoretical implication of an experiment in Rural India. Economic Journal, 91, 867-890.

- Bohnet, I., Zeckhauser, R., 2004. Trust, risk and betrayal. Journal of Economic Behavior and Organization, 55, 467-484.
- Buchan, N., Croson, R., Solnick S., 2003. Trust and gender: an examination of behavior, biases, and beliefs in the investment game. Working paper. The wharton School, University Pennsylvania.
- Croson, R., Buchan, N., 1999. Gender and culture: international experimental evidence from trust games. American Economic Review 89, 386-391.
- Du, W., Green, L., Myerson, J., 2002. Cross-cultural comparisons of discounting delayed and probabilistic rewards. The Psychological Record, 52, 479-494.
- Easterly, W., Levine, R., 1997. Africa's growth tragedy" policies and ethnic divisions. The Quartely Journal of Economics, 112(4), 1203-1250.
- Eckel, C.C., Wilson, R.K., 2003. Conditional trust: Sex, race and facial expressions in a trust game. Working paper, Virginia Tech.
- Eckel, C.C., Wilson, R.K., 2004. Is trust a risky decision?. Journal of Economic Behavior and Organization, 55, 447-465.
- Fafchamps, M., Pender, J., 1997. Precautionary saving, credit constraints, and irreversible investment: Theory and Evidence from Semiarid India. Journal of Business and Economic Statistics, 15, 180-194.
- Fedderke, J., Klitgaard, R., 1998. Economic growth and social indicators: An exploratory analysis. Economic Development and Cultural Change, 46(3), 455 489.

- Fershtman, C., Gneezy, U, 2001. Discrimination in a segmented society: an experimental approach. The Quarterly Journal of Economics, 116(1), 351-377.
- Gell, A., 1992. The anthropology of time: Cultural constructions of temporal maps and images. Berg: Oxford, UK.
- Glaeser, E.L., Laibson, D.I., Scheinkman, J.A., Soutter, C.L., 2000. Measuring trust. Quarterly Journal of Economics 115, 811-846.
- Green, L., Myerson, J., 1997. Exponential versus hyperbolic discounting of delayed outcomes: risk and waiting time. Am Zool 36, 496-505.
- Grootaert, C., 1999. Social Capital, Household Welfare, and Poverty in Indonesia. World Bank Policy Research Working Paper No. 2148.
- Grootaert, C., Narayan, D., 2001. Local Institutions, Poverty, and Household Welfare in Bolivia. World Bank Policy Research Working Paper No. 2644.
- Halabi, U., 1987. Discrimination on the basis of national affiliation in Israeli legislation. M.A. thesis, Hebrew University Law School, Jerusalem.
- Harrison, G.W., Lau, M.I., Williams, M.B., 2002. Estimating individual discount rates in Denmark: A field experiment. American Economic Review, 92, 1606-1617.
- Hausman, J., 1979. Individual discount rate and the purchase and utilization of energy-using durables. Bell Journal of Economics, 10, 33-54.
- Helfrich, H. (Ed.)., 1996. Time and mind. Seattle, WA: Hogrefe & Huber.

- Helliwell, J.F., 1996. Economic Growth and Social Capital in Asia. The Asia PacificRegion in the Global Economy: A Canadian Perspective, R. Harris, Richard, ed.,Calgary, University of Calgary Press, 1996.
- Hofstede, G., 1980. Culture's consequences: International differences in workrelated values. Beverly Hills, CA: Sage.
- Hofstede, G. (1991), Cultures and Organizations: Software of the Mind, McGraw-Hill, London.
- Hsee, C. K., Weber, E. U., 1999. Cross-national differences in risk preference and lay predictions. Journal of Behavioral Decision Making, 12, 165-179.
- Keren G., Roelofsma, R., 1995. Immediacy and Certainty in Intertemporal Choice. Organizational Behavior and Human Decision Process 63(3): 287-297.
- Kirby, K.N., Godoy, R., Reyes-Garcia, V., Byron, E., Apaza, L., Leonard, W., Perez,
  E., Vadez, V., Wilkie, D., 2002. Corrlates of delay-discount dates: evidence from
  Tsimane' Amerindias of the Bolivian rain forest. Journal of Economic
  Psychology, 23, 291-316.
- Knack, S., Keefer, P., 1997. Does social capital have an economic patoff? a crosscountry investigation. The Quartely Journal of Economics, 112 (4), 1251-1288.
- Kretzmer, D., 1990. The legal status of Arabs in Israel. Boulder, Colo: Westview Press.
- Lawrance, E,C., 1991. Poverty and the rate of time preference:evidence from panel data. Journal of Political Economy, 99, 54-77.

- Markus, H. R., Kitayama, S., 1991. Culture and self: Implications for cognition, emotion, and motivation. Psychological Review, 98, 224-253.
- Malach Pines, A., 2003. Occupational burnout: a cross-cultural Israeli Jewish- Arab perspective and its implications for career counselling. Career Development International, 8, 97-106.
- Mansour, A., 1993. Arab personalities in Israel. Sikkuy, Jerusalem. (In Hebrew).
- Mikulicer, M., Weller, A., Florian, V., 1993. Sense of closeness to parents and family rulers: a study of Arab and Jewish youth in Israel. International Journal of Psychology, 28, 23-335.
- Mosley, P., Verschoor, A., 2005. Risk attitude and the 'vicious circle of poverty'. European Journal of Devlopment Research, 17, 59-88.
- Myerson, J., Green, L., Hanson, S., Holt, D., Estle, S.J., 2003. Discounting delayed and probabilistic rewards: Processes and traits. Journal of Economic Psychology 24. 619-635.
- Nielsen, U., 2001. Poverty and attitude towards time and risk experimental evidence from Madagascar. Royal veterinary and Agricultural University of Denmark, Department of Economic and Natural Resources.
- Reiss, N., 1991. The health care of the Arabs in Israel. Boulder, Colo, Westview Press.
- Rodrik, D., 1999. Where did all the growth go? External shocks, social conflict, and growth collapses. Journal of Economic Growth, 4, 358-412.

- Rouhana, N.N., Ghanem, A., 1993. The democratization of a traditional minority in an ethnic democracy: the palestinians in Israel. Democracy, peace, and the Israeli-Palestinian conflict, ed. E.Kaufman, S.Abed, and R.Rothstein, Boulder, Colo: Lynne Rienner publisher, 163-185.
- Rouhana, N.N., Ghanem, A., 1998. The crisis of minorities in ethnic states: the case of Palestinian citizens in Israel. International Journal of Middle East Studies, 30(3), 321-346.
- Schechter, L., 2007. Traditional trust measurement and the risk confound: An experiment in Rural Paraguay. Journal of Economic Behavior and Organization, Forthcoming.
- Shahor, T., 2006. Income from property tax in the Municipal Authorities in Israel:Comparison between the Arab and the Jewish Municipal Authorities. The MaxStern Academic College of Emek Yezreel, Israel. Working paper. (In Hebrew).
- Shavit, Y., 1990. Segregation, Tracking, and the educational attainment of minorities: Arab and oriental Jews in Israel. American Sociological Review, 55(1), 115-126.
- Stevenson, M.K., 1986. A discounting model for decisions with delayed positive or negative outcomes, Journal of Experimental Psychology: General 115 (2), 131-154.
- Tan, C. T., and Johnson, R. D., 1996. To wait or not to wait: The influence of culture on discounting behavior. In W. H. Loke (Ed.), Perspectives on judgment and decision making (pp. 97-106). Lanham, MD: Scarecrow.

- Temple, J., Johnson, P.A., 1998. Social capability and economic growth. Quarterly Journal of Economics, 113(3), 965-990
- Weber, E. U., Hsee, C., 1998. Cross-cultural differences in risk perception, but cross-cultural similarities in attitudes toward perceived risk. Management Science, 44,1205-1217.
- Wik, M., Holden, S. 1998. Experimental studies of peasant's attiude toward risk in Northern Zambia. Agricultural University of Norway, Department of Economics and Social Sciences, Working paper.
- Yesuf, M., 2004. Risk, time and land management under market imperfections: application to Ethiopis. Goteborg University, Department of Economic, Working paper.

# Tables

Amount	Postpone	Period
	Receipt/Payment	
20,000	Receipt	6 months
20,000	Receipt	24 months
5,000	Receipt	6 months
5,000	Receipt	24 months
20,000	Payment	6 months
20,000	Payment	24 months
5,000	Payment	6 months
5,000	Payment	24 months

# Table 1: <u>The discounting scenarios</u>

Table 2: Derived discount rate for Isra	<u>aeli Arabs and Israeli Jews in annual ter</u>	m.
(Standard dev	viation in brackets)	

Amount	Postpone	Period	Mean Discount rate		Significance
	Receipt/		Arabs	Jews	T-test for average
	Payment				(F-test for STDV)
20,000	Receipt	6 months	0.48 (0.48)	0.18 (0.14)	0.00 (0.00)
20,000	Receipt	24 months	0.27 (0.33)	0.13 (0.08)	0.01 (0.00)
5,000	Receipt	6 months	0.43 (0.57)	0.16 (0.1)	0.00 (0.00)
5,000	Receipt	24 months	0.27 (0.42)	0.13 (0.09)	0.02 (0.00)
20,000	Payment	6 months	0.27 (0.23)	0.13 (0.13)	0.00 (0.00)
20,000	Payment	24 months	0.10 (0.06)	0.06 (0.04)	0.00 (0.02)
5,000	Payment	6 months	0.40 (1.1)	0.11 (0.08)	0.05 (0.00)
5,000	Payment	24 months	0.12 (0.09)	0.07 (0.04)	0.00 (0.00)

Receipt/	Amount	Group	r < 10%	$10\% \le r < 20\%$	$20\% \le r$
Payment					
Receipt	20,000	Arabs	15%	6%	79%
6 months		Jews	24%	33%	43%
Receipt	20,000	Arabs	18%	35%	47%
24 months		Jews	31%	44%	25%
Receipt	5,000	Arabs	27%	9%	64%
6 months		Jews	26%	28%	46%
Receipt	5,000	Arabs	17%	34%	49%
24 months		Jews	31%	51%	18%
Payment	20,000	Arabs	44%	9%	47%
6 months		Jews	65%	19%	16%
Payment	20,000	Arabs	49%	40%	11%
24 months		Jews	77%	21%	2%
Payment	5,000	Arabs	43%	8%	49%
6 months		Jews	59%	19%	22%
Payment	5,000	Arabs	39%	39%	22%
24 months		Jews	61%	39%	0%

Table 3: Distribution of annual subjective discount rates

Amount	Period	Arabs	Jews
20,000	6 months	0.21 (0.01)	0.05 (0.00)
20,000	24 months	0.17 (0.01)	0.07 (0.00)
5,000	6 months	0.03 (0.49)	0.05 (0.00)
5,000	24 months	0.15 (0.04)	0.06 (0.00)

# Table 4: difference between subjective discount rates for postpone receipt and postpone payment.

\* In brackets the significance of T-value for the hypothesis that the difference between postponed receipt and postponed payment is zero.

Tuble 5. <u>Choice between Lottery and Tixed amount</u>						
Action and	Jewish		Arabs	Chi-Square		
Amount	Fixed Amount	Lottery	Fixed Amount	Lottery	(significant)	
Get 5000	86.7%	13.3%	78%	22%	1.109 (0.292)	
Pay 5,000	73.3%	26.7%	92.7%	6.3%	5.95 (0.02)	
Get 20,000	62.2%	37.8%	85.4%	14.6%	6.08 (0.02)	
Pay 20,000	86.7%	13.3%	82.9%	17.1%	0.234 (0.629)	

**Table 5: Choice between Lottery and Fixed amount**