

***Connected and Disconnected: Empirical Evidence on the Impact of Internet
Use on Social Capital in Switzerland, Revisited¹***

Author:

Volker G. Täube
Swiss Federal Statistical Office (SFSO)
Section Economic Structure and Cycle
Espace de l'Europe 10
CH 2010 Neuchâtel

Abstract:

The paper is tied to an earlier analysis with a similar interest (see Täube, 2004b). The question than was if the alleged decline of social capital reported by authors like Putnam for the U.S., due to the use of new Information- and Communication Technologies like the Internet, can equally be found for Switzerland. Because Switzerland is in international comparisons among the countries with the most intense use of the Internet one should expect that Putnam's conclusions hold equally in this context. Furthermore, a point will be made with regard to the necessary distinction between different sorts of social capital: Since strong social contacts to peers account for different objectives of production than do weaker contacts to acquaintances or colleagues, an alleged decline of social capital in one social context does not necessarily lead to a similar tendency in another. The analysis relies on data from the Swiss Household Panel (SHP) from 1999 to 2002. Complementary to the cross sectional evidence presented earlier, the empirical examination focuses this time on a longitudinal design over the now available four waves of the panel.

Key Words: Social Capital, Internet Use, Information- and Communication Technologies.

Introduction

The idea seems to be somehow intriguing plausible: The spread of new technologies is accompanied by a change in the mode of production that is characterized by a displacement of the individual away from the work in a group to more individual activities. With the increasing specialization in the productive process individuals

¹ This study has been realised using the data collected by the Swiss Household-Panel, a project financed by the Swiss National Science Foundation Program, SPP, "Switzerland Towards the Future" (Grant no. 5004-53205).

become alienated from each other and experience an increase in social isolation. Putnam (1995, 1996), taking up this classical idea of Durkheim, tries to present empirical evidence on this tendency by referring to membership turnouts in diverse U.S. institutions like e.g. the red cross, labor unions or bowling clubs. As responsible factors for the alleged drop in membership numbers Putnam (1996, p. 3) identifies besides other factors „television, the electronic revolution, and other technological changes.“

In a similar manner Nie and Erbring (2000, p. 6) have quoted evidence for a decline in social capital with regard to Internet use in the United States:

“The more time people spend using the Internet the more they lose contact with their social environment. This effect is noticeable even with just 1-5 Internet hours/week (8 percent), and it rises substantially for those spending more than 10 hours/week, of whom up to 15 percent report a decrease in social activities. Even more striking is the fact that Internet users spend much less time of talking on the phone to friends and family: the percentage reporting a decrease exceeds 25 percent – although it is unclear to what extent this represents a shift to e-mail even in communicating with friends and family, or a technical bottleneck due to a single phone line pre-empted by Internet use.”

Since the U.S. are especially with regard to Information and Communication Technologies one of the leading economies in the world these results may be an alarming sign to countries that expect economic growth impulses from increasing adoption of such technologies in a variety of societal branches.² In this regard, a decrease in social capital would probably affect national economics by demanding for additional coordination in fields that were guided until now through self enforcing social mechanisms such as norms. However, a closer inspection of the above cited statements from Putnam or Nie and Erbring reveals that social capital is treated here undifferentiated as a single category that comprises social contacts to friends and family members as well as to the general social environment or even memberships in diverse institutions. Contrary to this perspective Burt (1992); Flap and de Graf (1986); Lin (1982); Lin, Ensel and Vaughn (1981); Sodeur (1972); Wellman and Wortley (1990), and others have pointed to the fact that social capital differs with respect to its end: whereas weaker ties or more instrumental contacts (“leverage capital”) serve

² In the E-Europe Action Plans 2002 and 2005 the European Council declared repeatedly “the ambitious objective for Europe to become the most competitive and dynamic economy in the world. It recognized an urgent need for Europe to quickly exploit the opportunities of the new economy and in particular the Internet.”

as a productive resource for physical well being, more expressive relations or strong ties (“support capital”) serve as a means to maximize social well being.³ Because the respective dimensions of social capital account for different structural aspects with sometimes diverging capital properties the conceptualization of social capital as being a single identity is not only simplifying but may lead to erroneous conclusions. If the concept of social capital should be of any analytical relevance, the typical capital aspects of social capital (e.g. which social aspects correspond to capital properties such as accumulation or capital decay) need to be identified. Therefore, the next section will look again in more detail into this issue.

In the subsequent paragraph we set off our empirical analysis by presenting some figures on diffusion and use of the Internet in Switzerland. As will become clear, there exists an extensive use of the Internet in Switzerland that is comparable to figures for the United States.

After that the preparation of the data from the Swiss Household Panel will be discussed and results of a longitudinal regression analysis on the effect of Internet use on a person’s social relations be presented.

A summary of the findings and some concluding remarks on given theoretical implications will close the analysis.

1. Accumulation and decay of social capital

Whereas Putnam’s proposition that time spent on using technologies like Television or the Internet happens at the expense of time invested in actual social contacts clearly puts a focus on relational aspects, the respectively cited empirical evidence often relates to membership fluctuations in diverse organizations. Even though the latter aspect may account for opportunities in making social contacts, the link between being a member of a certain institution or not and the accumulation or the decay of an individual’s social capital is not straight forward. In line with Lin (2001, p. 12) the nature of social capital is here clearly understood as being relational and, thus, has to be measured accordingly: „These debates and clarifications lead to the suggestion that social capital, as a concept, is rooted in social networks and social relations, and must be measured relative to its root. Therefore, social capital can be defined as *resources embedded in a social structure which are accessed and/or mobilised in purposive actions*”.

³ See Lindenberg (1990) for the distinction of physical and social well being as two general ends of human action.

Since social relations to peers (e.g. close friends) differ with respect to time commitments and degree of reciprocity from relations to more distant acquaintances like e.g. neighbours or colleagues, the evidence on membership turnouts or dropouts does not offer any hint on the kind of social capital affected. For to show the validity of this point Table 1 presents the results for a hierarchical cluster analysis (single solution with two clusters) for the contact density⁴ of an individual with regard to close friendship relations and contacts to neighbours for the four panel waves 1999 to 2002.

Tab 1: Two clusters of contact density

Case	2 Clusters
Contact_Friends 1999	1
Contact_Friends 2000	1
Contact_Friends 2001	1
Contact_Friends 2002	1
Contact_Neighbors 1999	2
Contact_Neighbors 2000	2
Contact_Neighbors 2001	2
Contact_Neighbors 2002	2

Source: Swiss Household Panel 1999-2002, own calculations.

As can be seen from table 1 the contact density to close friends (cluster 1) differs clearly from the one to neighbours (cluster 2) in all four waves.

Because different tie strengths involve different reinforcement mechanisms, an appropriate theoretical as well as a measurement concept of social capital has to take these aspects into account. In this sense we would expect i.e. also differences with regard to the duration of accumulation or the time span of capital decay: accumulation as well as a decay of social capital in form of strong ties (support capital) involves probably a longer time span than social capital created by weak ties (leverage capital). Table 2 summarizes capital aspects for different capital conceptions, based on considerations on different reinforcing mechanisms (Täube 2002a, 2004a). One could thus imagine that leverage capital is *more fluid* than

⁴ The contact density was calculated as the product of the respective number of contacts times the average frequency of such contacts reported per month.

support capital, accounting for different social structural aspects. Hence, a decay in leverage capital does not necessarily imply a decay in support capital.⁵ Therefore, a decline in leverage capital also does not lead automatically to severe consequences for the “civic society” whereas this might well be the case for a decline in support capital.⁶

Tab. 1: Characteristics of different capital conceptions

	Possibility of Accumulation	Relative Time Span of Accumulation	Relative Time Span of Decay	Degree of Generalization
Physical Capital	Yes	Short	Short	High
Human Capital	Yes	Long	Short	Low
Cultural Capital	Restricted	Long	Long	Low
Social Capital as Support Capital	Restricted	Long	Long	Low
Social Capital as Leverage Capital	Yes	Short	Short	High

(Due to their significance in the degree of generalization of capital, transferability and the possibility of substitution are treated here as one category.)

2. Diffusion and Use of the Internet in Switzerland

Although the data used by Nie and Erbring stem from a Survey already conducted in December 1999 the authors concluded that: “As of today, heavy Internet users are still a small fraction of the total population, but that fraction is steadily growing. (...) Moreover, time spent on the net also grows with the number of years a person has been connected” (2000, p.17). Hence, we should expect an even increased tendency of diminishing social contacts for heavy Internet users today.

A comparison of the results obtained by Nie and Erbring for the effect of Internet use in the U.S. with results from Switzerland implies, of course, that the countries are by and large comparable with regard to the diffusion and the use of the Internet.⁷

As the OECD (2003) data shows for 2001 (figure 1) Switzerland is with 31 fixed Internet subscribers per 100 inhabitants ahead of the United States with 27,2 subscribers per 100 inhabitants. In fact, among the OECD countries Switzerland

⁵ Which is not to say that a decay in support capital does not affect leverage capital since the former refers to the context of social integration and is thus constitutive for social structures.

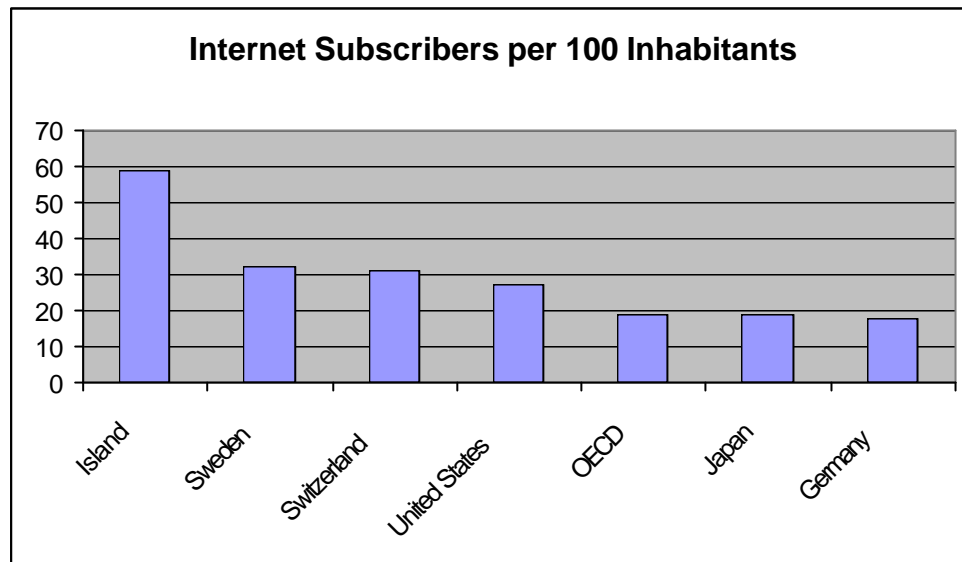
⁶ For the significance of strong ties with regard to participation in national elections, see Täube, 2002b.

⁷ For a more detailed account on the Information Society in Switzerland, see Huber, Cosandey, Täube et al. (2002) or the Indicators for the Information Society in Switzerland:

http://www.bfs.admin.ch/stat_ch/ber20/indic-soc-info/ind20d_intro.htm

takes in this regard the fourth place while the United States hold the sixth place with both countries ranging clearly above the OECD average (18,8 per 100 inhabitants).

Fig. 1: Internet diffusion in selected OECD countries, 2001



Source: OECD, 2003a

In addition to a large diffusion of the Internet in Switzerland the actual use of the Internet is also well developed: As can be seen from table 2, in 2001 Switzerland showed only a slightly smaller number of Internet users per capita (57,0%) than the United States (57,2%). Although table 2 presents additional evidence for the assumption that the fraction of Internet users is steadily growing, numbers from the 2003 OECD Science, Technology and Industry Scoreboard qualify this tendency, pointing out that this trend is about to slow down for some countries in 2002: “Countries with the highest rates of Internet use by adults are Sweden (70%), Denmark (64%) and Finland (62%). However, Internet use is growing more slowly in these countries than in other OECD countries, a sign that they are reaching saturation” (OECD, 2003b, p.86).

Latest numbers from another survey in Switzerland (MA-Net, Wave 1/2004 by the WEMF AG) show about 65% of the population using the Internet occasionally, whereas about 50% are qualified as being heavy Internet users, having reported to use the Internet at least several times a week.

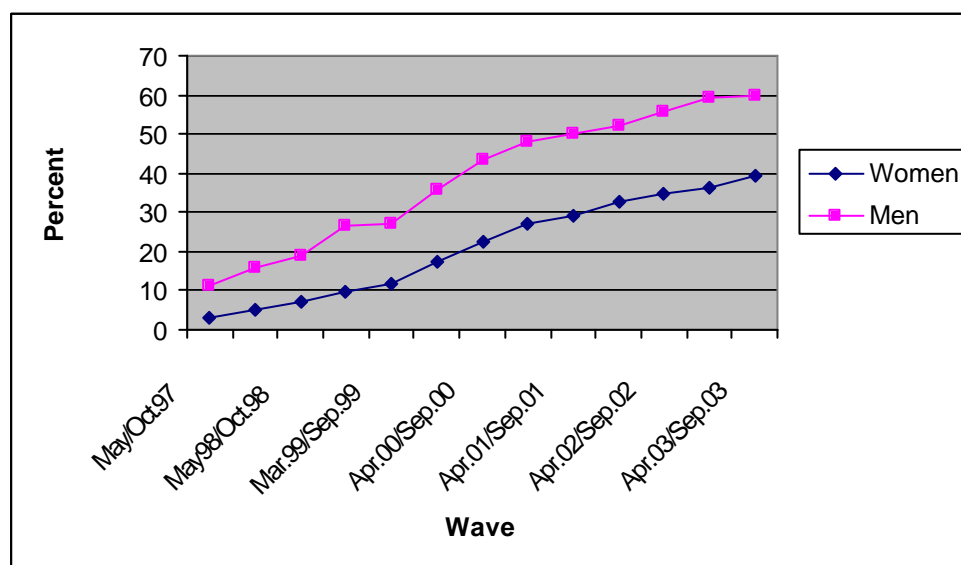
Tab. 2: Internet users per capita for selected countries

Country	1999	2000	2001
Sweden	50.4%	56.4%	64.3%
United States	39.4%	49.0%	57.2%
Switzerland	29.4%	43.4%	57.0%
Japan	15.2%	31.3%	46.5%
Germany	26.2%	34.1%	43.3%

Source: Digital Planet (WITSA), 2002.

Although Switzerland shows by and large similar tendencies with regard to Internet use along different socio demographic categories (e.g. Internet is typically used more often by younger persons with higher income and a higher educational level⁸) than other countries, the OECD (2003b) points out for 2002 that even though men make greater use of the Internet than women in all countries, this difference is especially distinct for Switzerland with about half of the men using the Internet against one third of the women doing so. Actual figures from the MA-Net Survey (fig. 2) on heavy Internet users in Switzerland (use Internet at least several times a week) show for 2003 about 40% of all women belonging to that group against 60% of all men.

Fig. 2: Heavy Internet Users in Switzerland by Sex



Source: MA-Net, own calculations

⁸ See Täube and Joye, 2002.

3. Connected and Disconnected? Results from a longitudinal analysis

In the already mentioned study from Nie and Erbring the data on individual contacts was generated by referring to the characteristic “time spent with family” and “time spent with friends”.⁹ Although this information is far from being conclusive on the number of actual social relations, the authors suppose an alleged effect of Internet use on social capital saying that:

“The Internet could be the ultimate isolating technology that further reduces our participation in communities even more than television did before it” (Nie and Erbring, 2000, p. 19). Even if “(m)ost Internet users use e-mail, and undoubtedly have increased their ‘conversations’ with family and friends” Nie and Erbring go on stating that “(T)he more time people spend using the Internet the more they lose contact with their social environment. This effect is noticeable even with just 1-5 Internet hours/week (8 percent), and it rises substantially for those spending more than 10 hours/week, of whom up to 15 percent report a decrease in social activities” (ibid.).

Referring to the distinction between support and leverage capital it seems that the authors were especially concerned with the former since they put the focus on contacts to the family and friends. However, since a certain amount of time invested in a social relation may be seen as basic resource necessary for its existence, the following analysis concentrates on actual numbers of social contacts of Internet users within different relational fields (weak and strong relations) instead of looking at allocations of time budget shares. Thus, the hypothesis we are about to test and which can be traced to Nie and Erbring’s considerations can be stated as follows:

The more time people spend using the Internet the more they lose social contacts.

For the longitudinal analysis we used data from four waves (1999 – 2002) of the Swiss Household Panel. In a first step the change scores of the individual variables on the intensity of Internet use (minutes per week) and on the reported number of close friends as well as the number of neighbours were calculated for the 1st and the 2nd wave (1999 and 2000), for the 2nd and 3rd wave (2000 and 2001), and for the 3rd and 4th wave (2001 and 2002).

Table 3 summarizes the regression coefficients for the change score of Internet use and contacts to friends and neighbors.

⁹ The respective question wording in the questionnaire of the Stanford study was: “Has using the Internet changed the amount of time you spend with your family/friends?”.

Tab. 3: Regression coefficients for change scores Internet use and social contacts.

SHP Wave	Variables	Beta coefficient	Significance
1999 / 2000	Internet use / close friends	.027	.053
	Internet use / neighbours	-.010	.467
2000 / 2001	Internet use / close friends	.014	.350
	Internet use / neighbours	.010	.452
2001 / 2002	Internet use / close friends	.014	.334
	Internet use / neighbours	.011	.429

As can be seen from table 3 none of the regression coefficients is significant which implies that there is no empirical evidence for an impact of the amount of Internet use on the number of social contacts to close friends or neighbors.

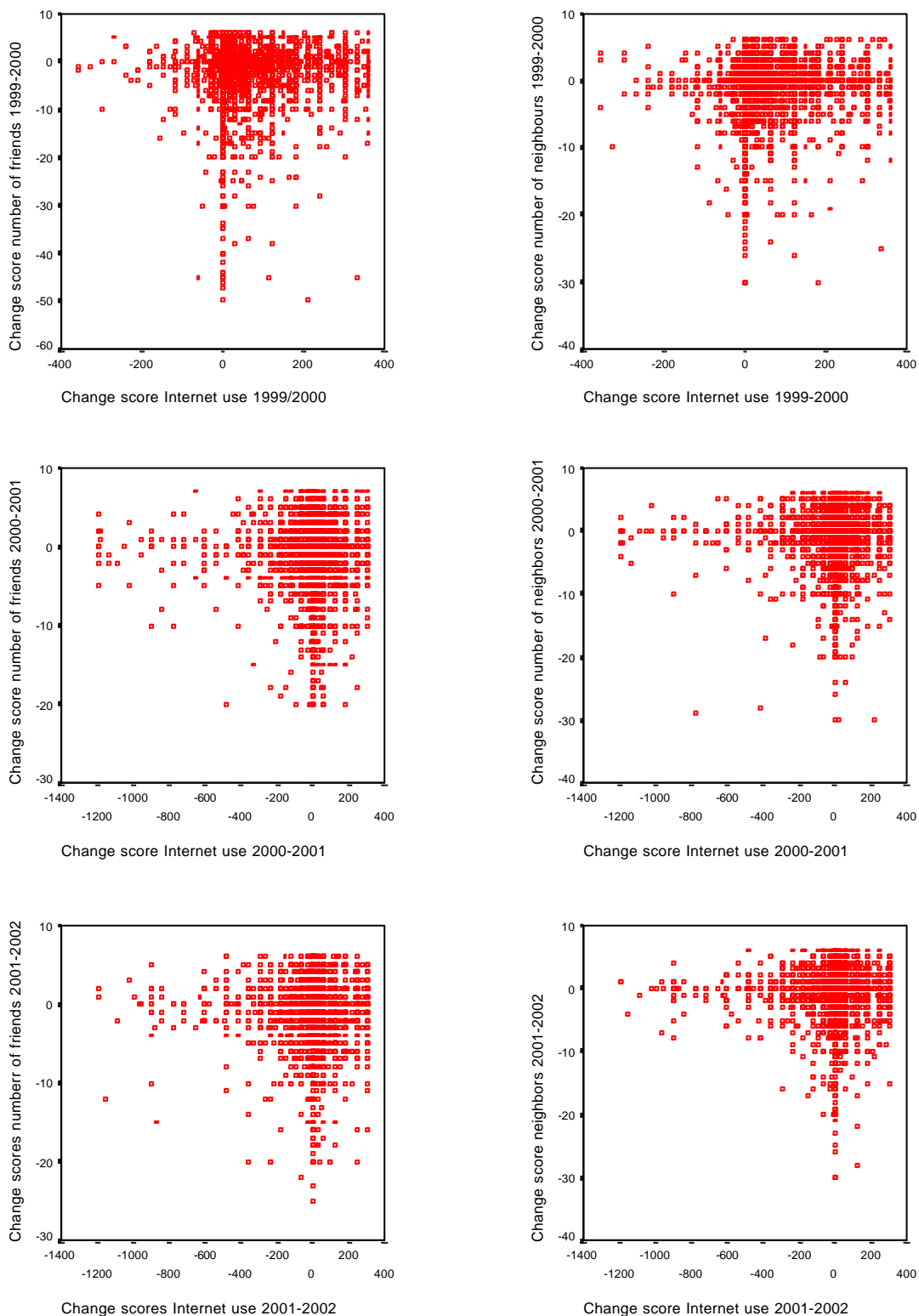
The grouping of the change score variables could of course be a more appropriate manner to handle the data structure in order to find the suggested causal relation. But than the decisive question shifts to where do we assume the cutoff point at which the hypothesized relation comes into being? As becomes evident from inspection of the plots for the distributions of cases on the change scores for Internet use and social contacts in figure 3 the data structure does not give us any clue on this question.

One explanation for the problem at hand could be that the number of heavy Internet users is underrepresented in the sample of the Swiss Household Panel. In their Stanford study Nie and Erbring (2000, p. 18) report for the year 2000 on 15% Internet users using the Internet less than one hour a week, about 49% using the Internet between 1 and 5 hours, 22% using the Internet between 5 and 10 hours, and 14% using the Internet more than 10 hours a week.

A glance on the frequencies for the variable on Internet use from the SHP shows for 2000 about 44% of users with an intensity of up to one hour Internet use per week, 39,5% using the Internet between 1 and 5 hours, 10% using the Internet between 5 and 10 hours, and about 6% using the Internet more than 10 hours a week.

Although the figures for Internet use differ markedly between the two surveys – especially with regard to the extremes – this fact is probably unrelated to the results of the above analysis since Nie and Erbring stated that the alleged tendency on a decline in social contacts due to Internet use is already apparent with an Internet use between 1 and 5 hours a week.

Fig. 3 Scatter plots for Internet use in minutes and social contacts to friends and neighbours for all Internet users: change scores 1999/2000, 2000/2001, and 2001/2002.



Another reason that might at least partly be responsible for the divergence between the results from the Stanford study and the ones we obtained from the SHP data could be the difference in Internet use with regard to sex. If men and women differ with respect to the amount and the quality of social capital over which they dispose, Internet use might well have a stronger effect on one of the both. In order to clarify this point we present in tables 4 and 5 in addition regression coefficients for Internet use and social contacts differentiated by sex.

Tab. 4: Regression coefficients for Internet use and social contacts for men

SHP Wave	Variables	Beta coefficient	Significance
1999 / 2000	Internet use / close friends, men	.035	.093
	Internet use / neighbours, men	-.017	.466
2000 / 2001	Internet use / close friends, men	-.003	.895
	Internet use / neighbours, men	.021	.321
2001 / 2002	Internet use / close friends, men	-.011	.640
	Internet use / neighbours, men	.008	.723

As was already the case for change scores of Internet use and social contacts for all Internet users, the test for Internet use by men and social contacts to friends and neighbors shows no significant results. Finally, we test for the effect of Internet use on the social contacts of women:

Tab. 5: Regression coefficients for Internet use and social contacts for women

SHP Wave	Variables	Beta coefficient	Significance
1999 / 2000	Internet use / close friends	-.048	.006 **
	Internet use / neighbours	.028	.117
2000 / 2001	Internet use / close friends	.008	.653
	Internet use / neighbours	.011	.534
2001 / 2002	Internet use / close friends	.009	.636
	Internet use / neighbours	.020	.319

Apart from one significant result for the waves 1999/2000 with a weak effect in the predicted direction, the picture obtained for change scores of Internet use of women and social contacts corresponds to the general impression showing no effect of the former on the latter.

4. Conclusions

Although the idea of a substitution of social capital by an increased Internet use due to limitation of time resources is logically appealing, to find empirical evidence for it turns out to be a rather difficult issue. In part this may be explained by a lack of appropriate measurement concepts on social capital that are applicable to common survey data. However, because Internet use in Switzerland is up till today a still growing phenomenon it seemed to be of interest to compare the situation in Switzerland with the one in the United States for which Nie and Erbring cited on a decrease in social capital evoked by increasing Internet use. As a closer inspection of the results for the U.S. showed the respective evidence is not as straight forward as one would think just by looking at the conclusions drawn. Concerning the notion of social capital for example the respondents were asked about changes in the amount of time spend with family and close friends. But neither gives this kind of information any clue on actually cancelled relations that would account for a tendency “social isolation up”, nor does it say anything on an effect of Internet use on more distant social contacts that might differ from close relations with regard on some capital specific aspects such as decay. Tied to an earlier analysis with a similar interest (Täube, 2004) we tried to identify an alleged effect of Internet use on social capital in Switzerland by referring to actual social relations in different contexts (support and leverage capital). Whereas the earlier analysis was based on results from cross sectional inspections on the 1999, 2000 and 2001 waves of the Swiss Household Panel the focus was this time on a longitudinal analysis of this data comprising in addition yet one more survey wave for 2002. But as it was the case than, no evidence for a decline in social capital – measured as number of friendship relations that account for support capital, and number of relations to neighbors that indicate leverage capital – could be found. Just like the earlier presented evidence based on inspection of cross sectional data the results from the above analysis puts a question mark on the claimed tendency on a decline of social capital – at least for Switzerland.

References

- Burt, Ronald. 1992. *Structural Holes. The Social Structure of Competition*; Cambridge, Mass.: Harvard University Press.
- Council of the European Union. 2000. *eEurope 2002. An Information Society For All; Action Plan prepared by the Council and the European Commission for the Feira European Council, 19-20 June 2000.*
- Council of the European Union. 2002. *eEurope 2005. An Information Society For All; Action Plan prepared by the Council and the European Commission for the Seville European Council, 21-22 June 2002.*
- Huber, Maja; Cosandey, Florent; Täube, Volker G. et al. 2002. *La société de l'information en Suisse: Etat de lieu et perspectives*; Neuchâtel: Office fédéral de la statistique.
- Lin, N. 2001. "Building a Network Theory of Social Capital"; in: Nan Lin, Ronald S. Burt and Karen Cook (Eds.), *Social Capital: Theory and Research*, p. 3–29.
- Lin, Nan. 1982. *Social Resources and Instrumental Action*; in: Peter Marsden and Nan Lin (Eds.), *Social Structure and Network Analysis*, Beverly Hills: Sage Publications.
- Lin, Nan; Ensel, W. M. and Vaughn, J. C. 1981. *Social Resources and Strength of Ties: Structural Factors in Occupational Status Attainment*; *ASR*, 46, p. 393-405.
- Lindenberg, Siegwald. 1990. *Homo Socio-oeconomicus: The Emergence of a General Model of Man in the Social Sciences*; *JITE*, 146, p. 727-748.
- MA-Net. 1997-2003. *Studie der Arbeitsgemeinschaft für Medienforschung (WEMF AG)*; Zürich.
- Nie, N. H. and Erbring, L. 2000. *Internet and Society*, Report of the Stanford Institute for the Quantitative Study of Society (download from: http://www.stanford.edu/group/siqss/Press_Release/internetStudy.html).
- OECD. 2003a. *Perspectives des communications de l'OCDE*; Paris: OECD.
- OECD. 2003b. *OECD Science, Technology and Industry Scoreboard*; Paris: OECD.
- Putnam, R. (1995), "Bowling Alone: Americas Declining Social Capital", *Journal of Democracy*, 6(1), p. 65-87.
- Putnam, R. (1996), "The Strange Disappearance of Civic America", *The American Prospect*, 7(24), p. 7-24.
- Sodeur, Wolfgang. 1972. *Wirkungen des Führungsverhaltens in kleinen Formalgruppen*; Rene König and Erwin Scheuch (Eds.), *Maisenheim am Glahn*: Anton Hein.

Täube, Volker G. 2002a. Zur Messung des Sozialkapitals von Akteuren mit Einfluß in empirischen Netzwerken; Series: Europäische Hochschulschriften, Bern (a.o.): Peter Lang.

Täube, Volker G. 2002b. Die paradoxe Figur des rationalen Wählers: Eine theoretische und empirische Bestandsaufnahme; Berlin: Wissenschaftlicher Verlag Berlin.

Täube, Volker G. 2004a. Measuring the Social Capital of Brokerage Roles; in: Connections, Vol. 26, no. 1, p. 29-52.

Täube, Volker G. 2004b. Connected and Disconnected? On the Impact of Internet Use on Social Connectedness; in Giampiero E. Beroggi (Ed.), Journal of Computational and Mathematical Organization Theory (CMOT), Vol. 10 (3), p. 227-240.

Täube, Volker G. and Joye, Dominique. 2002. "Determinants of Internet Use in Switzerland: Structural Disparities and New Technologies", in W. Glatzer (Ed.), Rich and Poor: Disparities, Perceptions, Concomitants, Dordrecht: Kluwer Academic Publishers, p.73-86.

Wellman, Barry and Wortley, Stan. 1990. Different Strokes from Different Folks: Community Ties and Social Support; AJS, 96(3), p.558-588.

WITSA/IDC. 2002. Digital Planet 2002: The Global Information Economy; Report published by the World Information Technology and Services Alliance (WITSA) /International Data Corporation (IDC).