

Social and Economic Connectedness: Measurement in the Age of Big Data

Johannes Stroebel, NYU Stern

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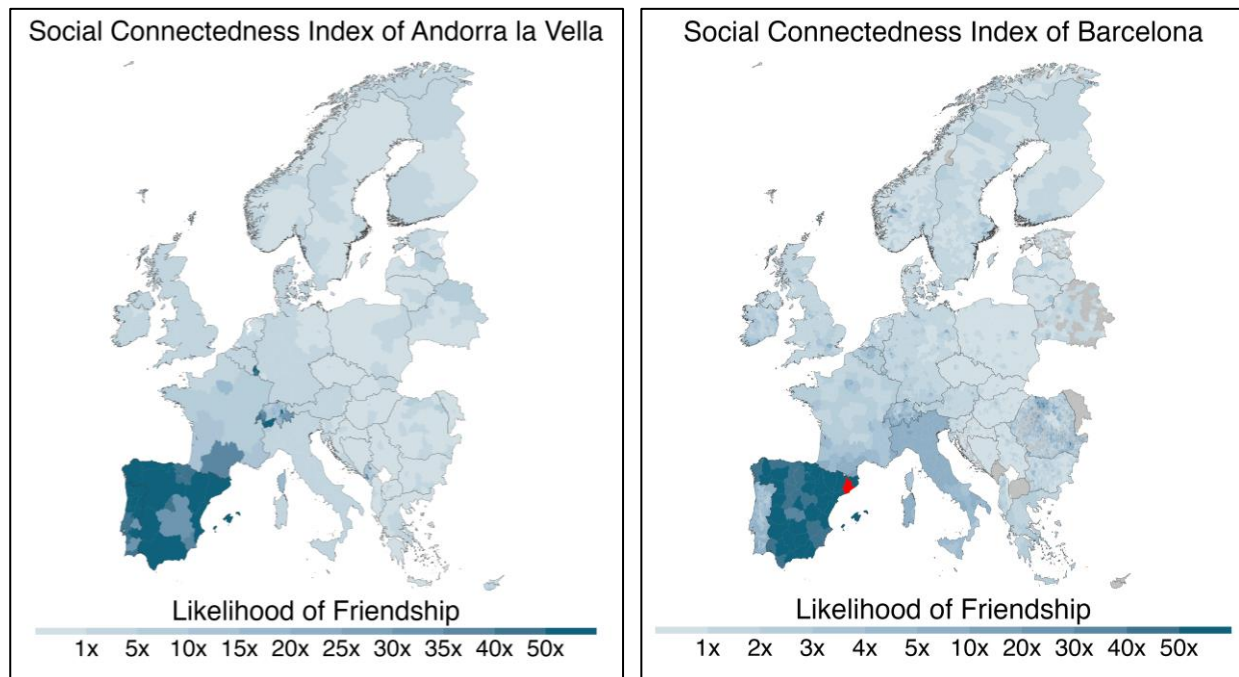
One of Antoni Calvó-Armengol's central theoretical contributions was the argument that situating economic interactions within a social context yields fundamentally new insight into economic decisions and outcomes. His models showed that the structure of social relations—who is connected to whom, and how those people are themselves connected—is a first-order economic object rather than a contextual detail, because information, beliefs, aspirations, and trust all flow through social networks (Calvó-Armengol and Jackson, 2004; Calvó-Armengol, Patacchini, and Zenou, 2009; Calvó-Armengol and Jackson, 2009). This lecture reports findings from an empirical research agenda inspired by these theoretical predictions.

My research begins from a simple observation: testing theoretical predictions from network models often requires making social networks observable at the scale of entire populations. My co-authors and I have collaborated with Facebook/Meta to address this measurement gap, and the resulting research agenda has produced a range of findings at the individual level. We have shown that social networks shape individuals' housing market expectations and decisions: for example, individuals are more likely to buy a home when their far-away friends have recently experienced house price increases (Bailey, Cao, Kuchler, and Stroebel, 2018a). We have also found that social networks drive consumer product adoption decisions, with individuals more likely to take up new technologies when their friends have done so (Bailey, Johnston, Kuchler, Stroebel, and Wong, 2022). And we have shown that social networks transmit beliefs and behaviors even during major public health crises: individuals' social distancing decisions during the Covid-19 pandemic responded strongly to the experiences of their geographically distant friends (Bailey, Johnston, Koenen, Kuchler, Russel, and Stroebel, 2024).

This lecture focuses on a different part of the research agenda: one that produces measures of local "social capital" that can be made broadly available to the research community, enabling a new generation of researchers to test Toni's predictions. These measures capture the intensity of friendship links across distinct groups, and highlight that social ties can be especially valuable when they connect individuals who differ on important dimensions.

The first such dimension is geography. To measure the extent of social links across geographies, the Social Connectedness Index (SCI) reports the relative probability that two individuals in different locations are connected as friends, derived from billions of friendship links on the world's largest social network, Facebook (Bailey, Cao, Kuchler, Stroebel, and Wong, 2018b). The resulting maps reveal that the spatial structure of social ties is shaped systematically by geographic distance, physical features such as rivers and mountain ranges, shared language, and historical migration patterns. This structure has direct economic consequences for migration flows (Bailey et al., 2018b), knowledge diffusion as measured by patent citations (Bailey et al., 2018b), trade flows (Bailey, Gupta, Hillenbrand, Kuchler, Richmond, and Stroebel, 2021), investment patterns (Kuchler, Li, Peng, Stroebel, and Zhou, 2022), and the geographic spread of disease, including during the Covid-19 pandemic (Kuchler, Russel, and Stroebel, 2022).

Social Connectedness to Andorra and Barcelona



Note: Each panel shows the relative likelihood of friendship implied by the Social Connectedness Index (SCI), obtained by normalizing SCI values for the focal region by a low-connectivity reference level (the 10th percentile among regions in the countries shown). The focal region is highlighted in red. SCI data is publicly available through the [Humanitarian Data Exchange](#).

The second dimension is socioeconomic status, or simply "class." To measure how connected low-SES and high-SES individuals are within a location, we construct global measures of "economic connectedness" (EC). Constructing this measure required developing a method to infer individual socioeconomic status within the Facebook data from observable signals—including location, educational background, and device characteristics—and then ranking individuals within country-cohort cells. The resulting cross-class connectedness measures show large variation in EC both within and across countries (Chetty, Jackson, Kuchler, Stroebe, et al., 2022a,b; Johnston, Kuchler, Kumar, Stroebe, Kulkarni, and Bailey, 2026). The determinants of cross-class connectedness mirror theoretical predictions about how network composition responds to social structure: cross-class connections are less common where inequality is higher, in denser cities, in places with more residential segregation, and in places where higher- and lower-SES individuals speak different languages (Johnston et al., 2026).

Economic connectedness turns out to be a powerful predictor of economic outcomes. Children who grow up in regions with higher economic connectedness experience substantially higher rates of upward income mobility, even after controlling for a wide range of standard predictors (Chetty, Jackson, Kuchler, Stroebe, et al., 2022a; Johnston et al., 2026). The proposed mechanisms—access to resources, access to information, and the formation of aspirations—are precisely those Toni formalized in his theoretical work, including the framework that derived persistent inequality from the structure of networks (Calvó-Armengol and Jackson, 2004).

Economic connectedness also predicts societal trust at the country level, suggesting that the same social structure that shapes individual mobility also shapes the collective institutions that depend on trust (Johnston et al., 2026).

The lecture closes with policy implications. A central lever in many countries—including the active *Pacte contra la segregació escolar* in Catalonia and Barcelona’s *Pla de Xoc*—has been integrating schools across socioeconomic lines. Our ongoing work decomposing the causal effects of peer *exposure* from peer *interaction* shows that the long-run benefits of school integration for lower-SES children depend on whether increased exposure actually translates into cross-class friendships (Chetty, Jackson, Johnston, Kuchler, and Stroebe, 2026). School integration without friendship formation can leave lower-SES students worse off; conversely, economic connectedness can be increased even holding school composition fixed by directly targeting friendship formation.

The empirical evidence increasingly vindicates one of Toni’s central claims: the structure of social relations is a key economic object. Measuring it carefully, and acting on what the measurements reveal, is a promising avenue for policy aimed at building more trusting societies and more equal opportunities for everyone.

References

- Bailey, M., R. Cao, T. Kuchler, and J. Stroebe. 2018a. “The Economic Effects of Social Networks: Evidence from the Housing Market.” *Journal of Political Economy* 126(6): 2224–2276.
- Bailey, M., R. Cao, T. Kuchler, J. Stroebe, and A. Wong. 2018b. “Social Connectedness: Measurement, Determinants, and Effects.” *Journal of Economic Perspectives* 32(3): 259–280.
- Bailey, M., A. Gupta, S. Hillenbrand, T. Kuchler, R. Richmond, and J. Stroebe. 2021. “Social Connectedness and International Trade.” *Journal of International Economics* 129: 103418.
- Bailey, M., D. Johnston, T. Kuchler, A. Kumar, and J. Stroebe. 2025. “Cross-Gender Social Ties Around the World.” *AEA Papers and Proceedings* 115.
- Bailey, M., D. Johnston, T. Kuchler, J. Stroebe, and A. Wong. 2022. “Peer Effects in Product Adoption.” *American Economic Journal: Applied Economics* 14(3): 488–526.
- Bailey, M., D. Johnston, M. Koenen, T. Kuchler, D. Russel, and J. Stroebe. 2024. “Social Networks Shape Beliefs and Behavior: Evidence from Social Distancing during the Covid-19 Pandemic.” *Journal of Political Economy: Microeconomics* 2(4).
- Calvó-Armengol, A., and M. O. Jackson. 2004. “The Effects of Social Networks on Employment and Inequality.” *American Economic Review* 94(3): 426–454.
- Calvó-Armengol, A., and M. O. Jackson. 2009. “Like Father, Like Son: Social Network Externalities and Parent-Child Correlation in Behavior.” *American Economic Journal: Microeconomics* 1(1): 124–150.
- Calvó-Armengol, A., E. Patacchini, and Y. Zenou. 2009. “Peer Effects and Social Networks in Education.” *Review of Economic Studies* 76(4): 1239–1267.
- Chetty, R., M. O. Jackson, D. Johnston, T. Kuchler, and J. Stroebe. 2026. “The Causal Effects of Peer Exposure vs. Peer Interaction on Economic Mobility.” Working Paper.

- Chetty, R., M. O. Jackson, T. Kuchler, J. Stroebe, et al. 2022a. "Social Capital I: Measurement and Associations with Economic Mobility." *Nature* 608(7921): 108–121.
- Chetty, R., M. O. Jackson, T. Kuchler, J. Stroebe, et al. 2022b. "Social Capital II: Determinants of Economic Connectedness." *Nature* 608(7921): 122–134.
- Johnston, D., Kuchler, T., Kumar, A., Stroebe, J., Kulkarni, M., and Bailey, M. 2026. "Social Capital Around the World: Measurement, Determinants, and Effects". Working Paper.
- Kuchler, T., Y. Li, L. Peng, J. Stroebe, and D. Zhou. 2022. "Social Proximity to Capital: Implications for Investors and Firms." *Review of Financial Studies* 35(6): 2743–2789.
- Kuchler, T., D. Russel, and J. Stroebe. 2022. "The Geographic Spread of Covid-19 Correlates with the Structure of Social Networks as Measured by Facebook." *Journal of Urban Economics* 127: 103314.