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CONSEJERÍA DE ECONOMÍA, HACIENDA Y ADMINISTRACIÓN PÚBLICA

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**CIRIEC-ESPAÑA, revista de economía pública, social y cooperativa, ISSN 0213-8093
Número 93 (agosto 2018)**

La economía social ante los paradigmas económicos emergentes: innovación social, economía colaborativa, economía circular, responsabilidad social empresarial, economía del bien común, empresa social y economía solidaria

P. 5-50

Rafael Chaves Ávila & José Luis Monzón Campos

Resumen

En los últimos quince años han irrumpido en el escenario político, económico y científico términos como la innovación social, la economía colaborativa, la empresa social, la responsabilidad social empresarial, la ciudadanía corporativa, la economía circular, la economía del bien común, la economía solidaria y las prácticas económicas alternativas. La irrupción de este nuevo léxico se ha hecho patente durante la última crisis y en el contexto de transformación estructural de las economías occidentales. Conforman paradigmas que nacen en el contexto de deslegitimación del modelo económico imperante basado en la empresa maximizadora de beneficios y poniendo en valor la dimensión social. El objeto del presente artículo es analizar estas nociones emergentes y compararlas con el ya consolidado concepto de la economía social. Para ello, en primer lugar y como punto de referencia, se presenta el concepto de economía social, su sentido socioeconómico y epistemológico y sus dimensiones cuantitativas actuales en Europa. En segundo lugar, se estudia cada una de estas nociones emergentes abordando su contenido, su grado de institucionalización académica y social y finalmente el grado de notoriedad alcanzado. En tercer lugar, se realiza una interpretación de la aparición de estas nociones y se ofrece un marco de análisis para su comparación con el concepto de economía social. El artículo finaliza con un apartado de conclusiones.

Demografía de las cooperativas en tiempos de crisis

P. 51-84

Mercè Sala-Ríos, Teresa Torres-Solé & Mariona Farré-Perdiguer

Resumen

El objetivo de este trabajo es estudiar cómo la crisis de 2008 afectó a la demografía empresarial de las cooperativas y comparar su situación con la de los años anteriores y posteriores a la misma. Para ello se acota el período de crisis y se define un período pre-crisis y uno post-crisis. El estudio avanza a través de tres campos de análisis como son la dinámica empresarial, el componente estructural y el ámbito territorial. La dinámica empresarial se estudia a través de la evolución de las tasas de entrada, salida y supervivencia. El componente estructural presenta los efectos de la crisis distinguiendo por tamaño y por clase de cooperativa. Por último, en el ámbito territorial se aplica la técnica de análisis regional Shift-Share para identificar y descomponer el crecimiento del empleo cooperativo entre el efecto regional y el efecto sectorial. Entre los resultados obtenidos destacamos los siguientes. Primero, la crisis incrementó el comportamiento pro-cíclico de las cooperativas. Segundo, fueron las medianas y grandes cooperativas las que mostraron mayor resistencia al tiempo que la antigüedad fue un garante de supervivencia pero no de preservación de empleo. Tercero, se produjo un proceso de creación de cooperativas y/o de incremento de su empleo ligado a la cobertura de necesidades y servicios de forma conjunta. Cuarto, en términos sectoriales las cifras señalan al sector industrial y al de la construcción como los más afectados por la crisis. Por último y en comparación con los años anteriores a la crisis, se detectan cambios importantes en las CCAA que presentaban ventajas de localización para las cooperativas.

Características de la economía solidaria colombiana. Aproximaciones a las corrientes influyentes en Colombia

P. 85-113

Ricardo Dávila Ladrón de Guevara, Amanda Vargas Prieto, Lina Blanco, Edgar Roa, Luz Stella Cáceres, Luis Alfredo Vargas

Resumen

En Colombia, la procedencia teórica y doctrinal para la definición y conceptualización de lo que se entiende por economía solidaria no es muy clara, por esto consideramos la realización de un proyecto de investigación que nos llevará a ello. El primer resultado se presenta en este artículo. El objeto del mismo es presentar la reflexión teórica que nos permitirá tener una guía de análisis para definir la economía solidaria en Colombia. A través de una metodología cualitativa basada en el método de análisis documental y utilizando diferentes técnicas de recolección de información, analizamos dos corrientes demográficas que han tenido incidencia en la definición de la economía solidaria en Colombia. La primera es la corriente latinoamericana y la segunda es la corriente de economía social y solidaria. Finalmente hacemos una revisión del marco normativo para proponer algunos elementos teóricos que son la base de la investigación. Este artículo es la realización del primer objetivo específico del proyecto en mención.

Empresas capitalistas versus cooperativas: Análisis comparado de resultados económicos y financieros para España en 2008-2015

P. 115-154

Pedro Atienza Montero & Álvaro Rodríguez Pacheco

Resumen

El objetivo del presente trabajo consiste, partiendo de las hipótesis establecidas en la literatura, en la realización de un análisis comparativo de ratios financieros relativos a solvencia, liquidez, rentabilidad y la financiación, de las empresas capitalistas respecto a las cooperativas, durante el periodo comprendido entre 2008-2015, en España. Además de una comparación general tomando como referencia a la economía española en su conjunto, es decir, sin distinguir por sectores o tamaños de empresas, también se realiza dicha tarea individualmente por sectores productivos y por tamaños. Asimismo, se persigue contrastar las hipótesis mencionadas. Los resultados muestran una mayor rentabilidad financiera en las capitalistas y con diferencia, tanto desde la perspectiva de la economía en su conjunto, como en cada uno de los cuatro tamaños de empresas y en 6 sectores. La rentabilidad económica, con resultados no ya tan indiscutibles, también es mayor en las empresas convencionales en las pymes y empresas medianas y grandes. En relación a la solvencia, ésta es mayor en las cooperativas, tanto desde una perspectiva general de la economía, como en las microempresas y en cinco sectores, lo cual contraviene la hipótesis establecida. En cuanto a la liquidez las capitalistas alcanzan mayores niveles en la comparación general de la economía y en el sector primario. Sin embargo, ocurre lo contrario para las microempresas y para tres sectores. Por último, en cuanto al endeudamiento, en la comparación general así como en ocho sectores productivos y en las microempresas y pymes, éste es mayor en las empresas capitalistas, no cumpliéndose la hipótesis teórica de partida.

Valor social de las cooperativas sociales: aplicación del modelo poliédrico en la cooperativa para la acogida de menores Zabalduz S.Coop

P. 155-180

Enekoitz Etxezarreta Etxarri, Juan Carlos Pérez de Mendiguren Castresana, Liseth Diaz Molina, Anjel Errasti Amozarrain

Resumen

El objetivo de este trabajo es tratar de aportar en la confección de herramientas de medición que mejor se adecúen a las particularidades propias de la Economía Social. Para ello, se aplica una metodología de medición (el modelo poliédrico) en una cooperativa de iniciativa social guipuzcoana (Zabalduz S.Coop) y se analizan los resultados obtenidos en base a su capacidad de aprehender el valor generado por dicha cooperativa en su integridad. Tras contextualizar la metodología aplicada en el marco de los enfoques de medición del valor social, el artículo pasa a relatar el proceso y los resultados de esta investigación. Se detallan y categorizan las variables identificadas por los stakeholders para Zabalduz S.Coop, y se avanza en una propuesta de medición de dichas variables. Por último se resume en una tabla el valor social consolidado

en los tres niveles monetizables (valor económico con impacto social, retorno socioeconómico y valor social específico) y se recogen las variables no monetizables relacionadas con el valor emocional. Finalmente se realiza una breve discusión teórico-metodológica sobre los límites que presenta el modelo aplicado y sobre las posibles alternativas que pudieran plantearse para superarlos.

Experiencia Cooperativa de Mondragón: la educación cooperativa como un proceso de transformación social

P. 181-209

Liliane Cristine Schlemmer Alcântara, Carlos Alberto Cioce Sampaio & Leire Uriarte Zabala

Resumen

Este artículo pretende mostrar una propuesta de educación cooperativa potenciadora de la articulación entre prácticas productivas y prácticas educativas, o sea, entre reflexión y acción, como factor potenciador del proceso de enseñanza-aprendizaje para el desarrollo individual y social. La propuesta parte de una investigación cualitativa – estudio de caso y observación participante – del Modelo de Educación Cooperativa del movimiento cooperativo de Mondragon. La interpretación de los datos se ha llevado a cabo siguiendo la metodología del Discurso del Sujeto Colectivo (DSC) con ayuda del software QualiQuantiSoft®. En esta propuesta se vislumbra la educación cooperativa como factor de expresión y realización de los principios de la solidaridad y transformación social para avanzar en los procesos de desarrollo territorial sostenible.

Impacto social y económico de las aceleradoras de emprendimiento: análisis de factores condicionantes e implicaciones para la innovación social

P. 211-240

Lydia Cánovas Saiz, Isidre March Chordà & Rosa M. Yagüe Perales

Este estudio indaga de forma pionera y exploratoria en el desempeño de las Aceleradoras y las start-ups albergadas en ellas en términos del empleo que generan. Los emprendedores que participan en una Aceleradora viven una experiencia que es crucial para la supervivencia, desarrollo y expansión de su start-up. Las Aceleradoras están generando una enorme expectación en España con Valencia a la cabeza, pero son un fenómeno muy reciente por lo que las evidencias empíricas existentes a día de hoy son poco concluyentes o inexistentes. De ahí el carácter pionero de nuestro estudio, el cual ofrece a partir de una muestra de 116 aceleradoras una aproximación al alcance del empleo generado por las start-ups ubicadas en ellas. Las evidencias empíricas encontradas aportan valiosas implicaciones prácticas a tener en cuenta a la hora de generar expectativas realistas acerca de estos instrumentos. Los resultados, de carácter exploratorio, demuestran que las Aceleradoras localizadas en EEUU estimulan la creación de un mayor número de start-ups que en otros países, así como de puestos de trabajo. El estudio identifica las variables que más intensamente inciden en la creación de nuevas empresas y sus niveles de empleo.

Economía del Bien Común y Finanzas Éticas

P. 241-264

Joan Ramon Sanchis Palacio & Vanessa Campos Climent

Resumen: El modelo de la Economía del Bien Común (EBC) propone el uso de instrumentos, medidas e indicadores para aplicar una gestión financiera ética en las organizaciones. Esto se traduce en el trabajo con bancos éticos y sociales y el uso de otros instrumentos financieros alternativos. De esta manera, el dinero deja de ser un fin en sí mismo y se convierte en un medio al servicio del crecimiento de las empresas y del desarrollo humano. El presente trabajo tiene como objetivo analizar el tratamiento que la EBC hace de las finanzas éticas a través del estudio de los criterios y subcriterios que se utilizan en la Matriz del Bien Común. Esta Matriz relaciona determinados valores y algunos de los principios universales de los Derechos Humanos con los diferentes grupos de interés de la empresa y establece una serie de variables e indicadores que facilitan la medición de la contribución de las organizaciones al bien común. El análisis realizado demuestra que el modelo de la EBC utiliza como criterio para el comportamiento de las empresas la ética en las finanzas y propone la colaboración con bancos éticos y sociales para financiarse. Aunque la oferta de finanzas éticas y sociales es aún escasa, las empresas que implementan el Balance del Bien Común persiguen la mejora de su comportamiento en relación con el uso de instrumentos de finanzas éticas para realizar sus inversiones y gestionar sus

Social Currencies and Cryptocurrencies: Characteristics, Risks and Comparative Analysis

P. 265-291

Graciela Lara Gómez & Michael Demmler

This article deals with the concepts of social currencies and cryptocurrencies. The objective of the present paper is to identify similarities and differences between two currency systems which represent a new generation of money that exists alongside the official and legal money system. The paper includes an analysis of the major characteristics of both currencies, their operating mechanisms in global and local contexts, as well as their risks and challenges for the financial markets. The article uses a mainly documentary research method and presents selected contributions of experts on the topics of social currencies and cryptocurrencies. Furthermore, empirical evidence is presented to highlight some important characteristics of the Bitcoin currency. The principal result of the paper is that, indeed there exist similarities between social currencies and cryptocurrencies, as for example the absence of a central bank, a lack of regulation and a limited minting process. However, because of aspects like their different origins, their local vs. global character and their inherent financial risks, the two money systems need to be interpreted as fundamentally different. Especially with reference to globally operating cryptocurrencies, given that there does not exist any public cover of the currency nor sufficient regulation, risk management mechanisms need to be improved in order to diminish the speculative tendencies inherent to this currency.

¿Economía alternativa o tecnopolítica? Activismo desde el consumo cooperativo de productos agroecológicos

P. 293-318

Ricard Espelt, Ismael Peña-López & Enrique Rodríguez

El cooperativismo agroecológico se configura a través del encuentro de dos corrientes que, a veces, han tenido trayectorias paralelas: el cooperativismo y la agroecología. En cualquier caso, ambos movimientos tienen como elemento común su dimensión política. En el contexto de la era de la Sociedad Red y de la expansión de las Tecnologías de la Información y la Comunicación (TIC), este artículo estudia el vínculo entre los grupos de consumo agroecológico, como instrumento de promoción de una economía alternativa, y los movimientos sociales, como espacio de desarrollo de la tecnopolítica. Por un lado, se evalúa el papel del modelo de toma de decisiones en asamblea -liderazgo horizontal y distribuido-, como parte fundamental del funcionamiento autogestionado. Por otro lado, se estudia la relación entre el compromiso social y político de estas organizaciones y la conexión con los movimientos sociales. El campo de investigación del estudio se centra en los grupos y cooperativas de consumo de la ciudad de Barcelona y su relación con el movimiento 15M acaecido en el año 2011. Los resultados muestran la afinidad ideológica entre las organizaciones y el movimiento que se concreta a través de una participación individual y donde el papel de las TIC es fundamental.



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Partners' Educational Pairings and Fertility Across Europe

P. 1195-1232

Natalie Nitsche, Anna Matysiak, Jan Van Bavel, Daniele Vignoli

Abstract

We provide new evidence on the education-fertility relationship by using EU-SILC panel data on 24 European countries to investigate how couples' educational pairings predict their childbearing behavior. We focus on differences in first-, second-, and third-birth rates among couples with varying combinations of partners' education. Our results show important differences in how education relates to parity progressions depending on the education of the partner. First, highly educated homogamous couples show a distinct childbearing behavior in most country clusters. They tend to postpone the first birth most and display the highest second- and third-birth rates. Second, contrary to what may be expected based on the "new home economics" approach, hypergamous couples with a highly educated male and a lower-educated female partner display among the lowest second-birth transitions. Our findings underscore the relevance of interacting both partners' education for a better understanding of the education-fertility relationship.

The Impact of the Affordable Care Act Young Adult Provision on Childbearing: Evidence From Tax Data

P. 1233-1243

Bradley Heim, Ithai Lurie, Kosali Simon

Abstract

We use panel U.S. tax data spanning 2008–2013 to study the impact of the Affordable Care Act (ACA) young adult provision on an important demographic outcome: childbearing. The impact is theoretically ambiguous: gaining insurance may increase access to contraceptive services while also reducing the out-of-pocket costs of childbirth. Because employer-reported U.S. Wage and Tax Statements (W-2 forms) record access to employer-provided benefits, we can examine the impact of the coverage expansion by focusing on young adults whose parents have access to benefits. We compare those who are slightly younger than the age threshold with those who are slightly older. Our results suggest that the ACA young adult provision led to a modest decrease in childbearing.

Father Absence and Accelerated Reproductive Development in Non-Hispanic White Women in the United States

P. 1245-1267

Lauren Gaydos, Daniel W. Belsky, Benjamin W. Domingue, Jason D. Boardman

Abstract

Girls who experience father absence in childhood also experience accelerated reproductive development in comparison with peers with present fathers. One hypothesis advanced to explain this empirical pattern is genetic confounding, wherein gene-environment correlation (rGE) causes a spurious relationship between father absence and reproductive timing. We test this hypothesis by constructing polygenic scores for age at menarche and first birth using recently available genome-wide association study results and molecular genetic data on a sample of non-Hispanic white females from the National Longitudinal Study of Adolescent to Adult Health. We find that young women's accelerated menarche polygenic scores are unrelated to their exposure to father absence. In contrast, polygenic scores

for earlier age at first birth tend to be higher in young women raised in homes with absent fathers. Nevertheless, father absence and the polygenic scores independently and additively predict reproductive timing. We find no evidence in support of the rGE hypothesis for accelerated menarche and only

Maybe Next Month? Temperature Shocks and Dynamic Adjustments in Birth Rates

P. 1269-1293

Alan Barreca, Olivier Deschenes, Melanie Guldi

Abstract

We estimate the effects of temperature shocks on birth rates in the United States between 1931 and 2010. We find that days with a mean temperature above 80°F cause a large decline in birth rates 8 to 10 months later. Unlike prior studies, we demonstrate that the initial decline is followed by a partial rebound in births over the next few months, implying that populations mitigate some of the fertility cost by shifting conception month. This shift helps explain the observed peak in late-summer births in the United States. We also present new evidence that hot weather most likely harms fertility via reproductive health as opposed to sexual activity. Historical evidence suggests that air conditioning could be used to substantially offset the fertility costs of high temperatures.

Organized Violence and Institutional Child Delivery: Micro-Level Evidence From Sub-Saharan Africa, 1989–2014

P. 1295-1316

Gudrun Østby, Henrik Urdal, Andreas Forø Tollefsen, Andreas Kotsadam...

Abstract

The conditions under which a mother gives birth greatly affect the health risk of both the mother and the child. This article addresses how local exposure to organized violence affects whether women give birth in a health facility. We combine geocoded data on violent events from the Uppsala Conflict Data Program with georeferenced survey data on the use of maternal health care services from the Demographic and Health Surveys. Our sample covers 569,201 births by 390,574 mothers in 31 countries in sub-Saharan Africa. We use a mother fixed-effects analysis to estimate the effect of recent organized violence events within a radius of 50 km of the home of each mother on the likelihood that her child is born in a health facility. The results indicate that geographical and temporal proximity to organized violence significantly reduces the likelihood of institutional births. Although the level of maternal health care overall is lower in rural areas, the negative effect of violence appears to be stronger in urban areas. The study further underscores the importance of household and individual resilience, indicating that the effect of organized violence on institutional child delivery is greater among poor and less-educated mothers.

Effect of Retirement on Cognition: Evidence From the Irish Marriage Bar

P. 1317-1341

Irene Mosca, Robert E. Wright

Abstract

This study empirically investigates the relationship between retirement duration and cognition among older Irish women using microdata collected in the third wave of The Irish Longitudinal Study on Ageing. Ordinary least squares (OLS) regression estimates indicate that the longer an individual has been retired, the lower the cognitive functioning, with other factors thought to affect cognition held constant (e.g., age, education, and early-life socioeconomic conditions). However, retirement is potentially endogenous with respect to cognition because cognition may affect decisions relating to retiring. If so, the OLS estimates will be biased. To test for this possibility, instrumental variable (IV) estimation is used. This method requires an IV that is highly correlated with retirement duration but not correlated with cognition. The instrument used in this study is based on the so-called marriage bar, the legal requirement that women leave paid employment upon getting married, which took effect in Ireland in the 1930s and was abolished only in the 1970s. The IV regression estimates, along with formal statistical tests, provide no evidence in support of the view that cognition affects retirement decisions. The finding of a small negative effect of retirement duration on cognition is robust to alternative empirical specifications. These findings are discussed in the wider context of the effects of work-like and work-related activities on cognition.

Extension, Compression, and Beyond: A Unique Classification System for Mortality Evolution Patterns

P. 1343-1361

Matthias Börger, Martin Genz, Jochen Ruß

Abstract

A variety of literature addresses the question of how the age distribution of deaths changes over time as life expectancy increases. However, corresponding terms such as *extension*, *compression*, or *rectangularization* are sometimes defined only vaguely, and statistics used to detect certain scenarios can be misleading. The matter is further complicated because mixed scenarios can prevail, and the considered age range can have an impact on observed mortality patterns. In this article, we establish a unique classification framework for realized mortality scenarios that allows for the detection of both pure and mixed scenarios. Our framework determines whether changes of the deaths curve over time show elements of extension or contraction; compression or decompression; left- or right-shifting mortality; and concentration or diffusion. The framework not only can test the presence of a particular scenario but also can assign a unique scenario to any observed mortality evolution. Furthermore, it can detect different mortality scenarios for different age ranges in the same population. We also present a methodology for the implementation of our classification framework and apply it to mortality data for U.S. females.

Bayesian Estimation of Age-Specific Mortality and Life Expectancy for Small Areas With Defective Vital Records

P. 1363-1388

Carl P. Schmertmann, Marcos R. Gonzaga

Abstract

High sampling variability complicates estimation of demographic rates in small areas. In addition, many countries have imperfect vital registration systems, with coverage quality that varies significantly between regions. We develop a Bayesian regression model for small-area mortality schedules that simultaneously addresses the problems of small local samples and underreporting of deaths. We combine a relational model for mortality schedules with probabilistic prior information on death registration coverage derived from demographic estimation techniques, such as Death Distribution Methods, and from field audits by public health experts. We test the model on small-area data from Brazil. Incorporating external estimates of vital registration coverage through priors improves small-area mortality estimates by accounting for underregistration and automatically producing measures of uncertainty. Bayesian estimates show that when mortality levels in small areas are compared, noise often dominates signal. Differences in local point estimates of life expectancy are often small relative to uncertainty, even for relatively large areas in a populous country like Brazil.

Cross-National Comparisons of Union Stability in Cohabiting and Married Families With Children

P. 1389-1421

Kelly Musick, Katherine Michelmore

Abstract

Increases in cohabitation, nonmarital childbearing, and partnership dissolution have reshaped the family landscape in most Western countries. The United States shares many features of family change common elsewhere, although it is exceptional in its high degree of union instability. In this study, we use the Harmonized Histories to provide a rich, descriptive account of union instability among couples who have had a child together in the United States and several European countries. First, we compare within-country differences between cohabiting and married parents in education, prior family experiences, and age at first birth. Second, we estimate differences in the stability of cohabiting and married parents, paying attention to transitions into marriage among those cohabiting at birth. Finally, we explore the implications of differences in parents' characteristics for union instability and the magnitude of social class differences in union instability across countries. Although similar factors are associated with union instability across countries, some (prior childbearing, early childbearing) are by far more common in the United States, accounting in part for higher shares separating. The factors associated with union instability—lower education, prior childbearing, early childbearing—also tend to be more tightly packaged in the United States than elsewhere, suggesting greater inequality in resources for children.

Same-Sex Married Tax Filers After *Windsor* and *Obergefell*

P. 1423-1446

Robin Fisher, Geof Gee, Adam Looney

Abstract

This article provides new estimates of the number and characteristics of same-sex married couples after U.S. Supreme Court rulings in 2013 and 2015 established rights to same-sex marriage. The U.S. Department of the Treasury and the Internal Revenue Service subsequently ruled that same-sex spouses would be treated as married for federal tax purposes. Because almost all married taxpayers file joint tax returns, administrative tax records provide new information on the demographic characteristics of married same-sex couples. This study provides estimates of the population of same-sex tax filers drawn from returns filed in 2013, 2014, and 2015, using methods developed by the U.S. Census Bureau to address measurement error in gender classification. We estimate that approximately 0.48 % of all joint filers in 2015 were same-sex couples, or approximately 250,450 couples.

Sampling Weights for Analyses of Couple Data: Example of the Demographic and Health Surveys

P. 1447-1473

Stan Becker, Amanda Kalamar

Abstract

In some surveys, women and men are interviewed separately in selected households, allowing matching of partner information and analyses of couples. Although individual sampling weights exist for men and women, sampling weights specific for couples are rarely derived. We present a method of estimating appropriate weights for couples that extends methods currently used in the Demographic and Health Surveys (DHS) for individual weights. To see how results vary, we analyze 1912 estimates (means; proportions; linear regression; and simple and multinomial logistic regression coefficients, and their standard errors) with couple data in each of 11 DHS surveys in which the couple weight could be derived. We used two measures of bias: absolute percentage difference from the value estimated with the couple weight and ratio of the absolute difference to the standard error using the couple weight. The latter shows greater bias for means and proportions, whereas the former and a combination of both measures show greater bias for regression coefficients. Comparing results using couple weights with published results using women's weights for a logistic regression of couple contraceptive use in Turkey, we found that 6 of 27 coefficients had a bias above 5 %. On the other hand, a simulation of varying response rates (27 simulations) showed that median percentage bias in a logistic regression was less than 3 % for 17 of 18 coefficients. Two proxy couple weights that can be calculated in all DHS surveys perform considerably better than either male or female weights. We recommend that a couple weight be calculated and made available with couple data from such surveys.

Imputation Match Bias in Immigrant Wage Convergence

P. 1475-1485

Joni Hersch, Jennifer Bennett Shinall

Abstract

Although immigrants to the United States earn less at entry than their native-born counterparts, an extensive literature has found that immigrants have faster earnings growth that results in rapid convergence to native-born earnings. However, recent evidence based on U.S. Census data indicates a slowdown in the rate of earnings assimilation. We find that the pace of immigrant wage convergence based on recent data may be understated in the literature as a result of the method used by the census to impute missing information on earnings, which does not use immigration status as a match characteristic. Because both the share of immigrants in the workforce and earnings imputation rates have risen over time, imputation match bias for recent immigrants is more consequential than in earlier periods and may lead to an underestimate of the rate of immigrant wage convergence.

The Effects of Deferred Action for Childhood Arrivals on the Educational Outcomes of Undocumented Students

P. 1487-1506

Amy Hsin, Francesc Ortega

Abstract

Deferred Action for Childhood Arrivals (DACA) is the first large-scale immigration policy to affect undocumented immigrants in the United States in decades and offers eligible undocumented youth temporary relief from deportation as well as renewable work permits. Although DACA has improved the economic conditions and mental health of undocumented immigrants, we do not know how DACA improves the social mobility of undocumented immigrants through its effect on educational attainment. We use administrative data on students attending a large public university to estimate the effect of DACA on undocumented students' educational outcomes. The data are unique because they accurately identify students' legal status, account for individual heterogeneity, and allow separate analysis of students attending community colleges versus four-year colleges. Results from difference-in-difference estimates demonstrate that as a temporary work permit program, DACA incentivizes work over educational investments but that the effect of DACA on educational investments depends on how easily colleges accommodate working students. At four-year colleges, DACA induces undocumented students to make binary choices between attending school full-time and dropping out of school to work. At community colleges, undocumented students have the flexibility to reduce course work to accommodate increased work hours. Overall, the results suggest that the precarious and temporary nature of DACA creates barriers to educational investments.

How Durable Are Ethnoracial Segregation and Spatial Disadvantage? Intergenerational Contextual Mobility in France

P. 1507-1545

Haley McAvay

Abstract

Building on emerging research into intergenerational contextual mobility, I use longitudinal data from France (1990–2008) to investigate the extent to which second-generation immigrants and the French majority continue to live in similar neighborhood environments during childhood and adulthood. To explore the persistence of ethnoracial segregation and spatial disadvantage, I draw on two measures of neighborhood composition: the immigrant share and the unemployment rate. The analysis explores the individual and contextual factors underpinning intergenerational contextual mobility and variation across immigrant-origin groups. The results document a strong stability of neighborhood environments from childhood to adulthood, especially with regard to the ethnoracial composition of the neighborhood. Individual-level factors are quite weak in accounting for these patterns compared with the characteristics of the city of origin. Moreover, the degree of contextual mobility between childhood and adulthood varies across groups. I find that neighborhood environments are more stable over time for non-European second-generation immigrants. The findings offer important new empirical contributions to the French literature on the residential segregation of immigrants and will more broadly be of interest to scholars of intergenerational spatial and social mobility.

Places of Persistence: Slavery and the Geography of Intergenerational Mobility in the United States

P. 1547-1565

Thor Berger

Abstract

Intergenerational mobility has remained stable over recent decades in the United States but varies sharply across the country. In this article, I document that areas with more prevalent slavery by the outbreak of the Civil War exhibit substantially less upward mobility today. I find a negative link between prior slavery and contemporary mobility within states, when controlling for a wide range of historical and contemporary factors including income and inequality, focusing on the historical slave states, using a variety of mobility measures, and when exploiting geographical differences in the suitability for cultivating cotton as an instrument for the prevalence of slavery. As a first step to disentangle the underlying channels of persistence, I examine whether any of the five broad factors highlighted by Chetty et al. (2014a) as the most important correlates of upward mobility—family structure, income inequality, school quality, segregation, and social capital—can account for the link between earlier slavery and current mobility. More

fragile family structures in areas where slavery was more prevalent, as reflected in lower marriage rates and a larger share of children living in single-parent households, is seemingly the most relevant to understand why it still shapes the geography of opportunity in the United States.

Cohort Differences in Parental Financial Help to Adult Children

P. 1567-1582

John C. Henretta, Matthew F. Van Voorhis, Beth J. Soldo

In this article, we examine birth cohort differences in parents' provision of monetary help to adult children with particular focus on the extent to which cohort differences in family structure and the transition to adulthood influence these changes. Using data from the Health and Retirement Study from 1994 to 2010, we compare financial help to children of three respondent cohorts as the parents in these birth cohorts from ages 53–58 to 57–62. We find that transfers to children have increased among more recent cohorts. Two trends—declining family size and children's delay in marriage—account for part of the increase across cohorts. However, other trends, such as the increase in the number of stepchildren and increasing child's income level, tend to decrease the observed cohort trend.



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On Comparison Of Horvitz-Thompson And Murthy's Sampling Strategies For Estimating Sensitive Finite Population Totals Under Scrambled Randomized Response Plans

P. 5-27

Samindranath Sengupta

Abstract

We consider the problem of unbiased estimation of a finite population total related to a sensitive quantitative variable under two scrambled randomized response plans and compare the relative efficiency of the unequal probability sampling strategies due to Horvitz-Thompson (1952) and Murthy (1957) under a super-population model depending on a parameter g . It is shown that for the linear plan the model expected variance is smaller for Murthy's (1957) strategy if $g \leq 1$, while for the multiplicative plan the model expected variance is smaller for the Horvitz-Thompson (1952) strategy if $g \geq 2$. We also address the problem of unbiased estimation of the variances of these two sampling strategies under the two randomized response plans and study the non-negative property of the variance estimators.

Resumen

Consideramos que el problema de la estimación no sesgada de un total finito de población está relacionado a una variable cuantitativa sensible bajo dos planes aleatorizados de respuesta aleatoria y comparar la eficiencia relativa de las estrategias desiguales de muestreo probabilístico debido a Horvitz-Thompson (1952) y Murthy (1957) bajo una superpoblación modelo dependiendo de un parámetro g . Se muestra que para el plan lineal, el modelo la varianza esperada es menor para la estrategia de Murthy (1957) si $g \leq 1$, mientras que para el plan multiplicativo, la varianza esperada del modelo es menor para los Horvitz-Estrategia de Thompson (1952) si $g \geq 2$. También abordamos el problema de la estimación de las varianzas de estas dos estrategias de muestreo bajo los dos planes de respuesta aleatoria y estudiar la propiedad no negativa de la varianza estimadores.

Posdem: frame and reliability

P. 29-35

Gonzalo Sánchez-Crespo Benítez

Abstract

Try to reduce the sampling error for a specific survey population frame with the stratification and the sample size done is possible at any time. The sampling methods are tested over the frame with the purpose to make the sample more representative. POSDEM allows testing 28 different sampling methods over any population frame. We seek increased sample heterogeneity. Software is free and more sampling procedures can be added. It can be used in surveys, censuses, quality control or to explore frames into big data. Sampling methods have a strong relationship with the survey population frame. Partly by this, there are many sampling methods that are not frequently applied. On the other hand we know that several alternatives of systematic sampling and unequal probabilities sampling are frequently used. However, both may be disturbed by the structure of the investigated population. Trends, cycles and inappropriate relationship between variables are present more often that it seems. In both cases, to find the best sampling method, it is necessary to study the relationship between the sampling plans and the population frame before applying these methods. For different sample sizes, software POSDEM tests this relationship between frames and sampling methods. That test might be done just over the real population or over a super population model inspired on this population. We

find interesting results regarding stability properties procedures.

Resumen

Siempre es posible reducir el error de muestreo para un determinado marco poblacional sin variar el tamaño de muestra o la estratificación utilizada. Para conseguir que la muestra sea más representativa podemos estudiar los diferentes métodos de muestreo disponibles en relación con el marco utilizado. POSDEM permite contrastar 28 métodos sobre cualquier marco poblacional. Buscamos aumentar la heterogeneidad en la muestra. El programa está disponible en la web y puede ser utilizado en encuestas, censos, estudios de control de calidad o para explorar por muestreo marcos dentro de grandes poblaciones. Los métodos de muestreo presentan una relación estrecha con su marco poblacional. Para diferentes tamaños de muestra, el software POSDEM, contrasta estas relaciones entre marcos y métodos de muestreo. Este contraste puede realizarse sobre el marco real o sobre el marco suprapoblacional basado en un modelo de dicho marco. De esta forma se ponen de manifiesto resultados relevantes acerca de la estabilidad de los procedimientos utilizados. Observamos que se utilizan con frecuencia distintas alternativas de muestreo sistemático y muestreo con probabilidades desiguales. Sin embargo ambos pueden ser distorsionados por la estructura de la población investigada. Tendencias, ciclos o inapropiadas relaciones entre variables se presentan con mayor frecuencia de lo aconsejable. En todos los casos para elegir el mejor método de muestreo es necesario estudiar la relación entre el plan de muestreo y el marco poblacional antes de aplicar estos métodos.

Estudio para la estimación de la varianza del cambio neto anual en la Encuesta de Población Activa

P. 37-44

Montserrat Herrador Cansado, Juana Porras Puga, Carlos Pérez Arriero, Juan Vicente Jiménez Llorente

Resumen

La varianza del estimador del cambio neto anual se calcula aplicando métodos indirectos como las semimuestras reiteradas, el jackknife y el bootstrap. Cada uno de ellos está adaptado al diseño muestral de la Encuesta de Población Activa y tiene en consideración el solapamiento de las muestras entre los trimestres de dos años consecutivos. Además y en el caso del método bootstrap, se han usado diferentes metodologías que van desde la más sencilla, que no tiene en cuenta ni el solapamiento ni la calibración, hasta la más compleja con ambos aspectos incorporados. Finalmente, se comparan los errores de muestreo obtenidos por las diferentes técnicas utilizadas.

Abstract

The variance of the annual net change estimators is estimated using indirect methods such as repeated half-samples, jackknife and bootstrap. Each of them is adapted to the sample design of the Spanish Labour Force Survey and takes into account the overlap of the samples between the quarters of two consecutive years. In addition, in the case of the bootstrap method, different methodologies have been used, ranging from the simplest, without overlapping or calibration, to the most complex with both aspects incorporated. Finally, we compare the sampling errors obtained by the different techniques.

Tail weight measures for distributions. A new tail weight coefficient

P. 45-57

Juan Fco. Ortega

Abstract

Specific information on the structure of a distribution is contained in its extreme values, which is measured using the concept of the tail weight. In this paper we analyze the concept of tail of a distribution and propose a new definition for constructing the tail set. Using this set, we define a measure to quantify the tail weight in different distributions, which depends on the distribution and on a cut-off value. Fixing the cut-off value, we define a new tail weight coefficient, where this depends only on the distribution used. From all these elements a sample version is proposed, its main properties are studied and its values are calculated in certain distributions.

Resumen

Los valores extremos de una distribución contienen información importante sobre ella, la cual es cuantificada mediante las medidas de peso de colas. En este trabajo se analiza el concepto de cola de una distribución y se propone cómo determinar sus elementos. Usando este conjunto, se propone una medida para cuantificar su peso en diferentes distribuciones, la cual dependería de una cierta cota. Finalmente, fijando dicha cota se propone un nuevo coeficiente de peso de colas que depende sólo de la distribución en estudio. De todos estos elementos se propone una versión para muestras, se estudian sus principales propiedades y se calculan sus valores en ciertas distribuciones.



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Emulation of Utility Functions Over a Set of Permutations: Sequencing Reliability Growth Tasks

P. 273-285

Kevin J. Wilson, Daniel A. Henderson & John Quigley

Abstract

We consider Bayesian design of experiments problems in which we maximize the prior expectation of a utility function over a set of permutations, for example, when sequencing a number of tasks to perform. When the number of tasks is large and the expected utility is expensive to compute, it may be unreasonable or infeasible to evaluate the expected utility of all permutations. We propose an approach to emulate the expected utility using a surrogate function based on a parametric probabilistic model for permutations. The surrogate function is fitted by maximizing the correlation with the expected utility over a set of training points. We propose a suitable transformation of the expected utility to improve the fit. We provide results linking the correlation between the two functions and the number of expected utility evaluations to undertake. The approach is applied to the sequencing of reliability growth tasks in the development of hardware systems, in which there are a large number of potential tasks to perform and engineers are interested in meeting a reliability target subject to minimizing costs and time. An illustrative example shows how the approach can be used and a simulation study demonstrates the performance of the approach more generally. Supplementary materials for this article are available online.

Sequential Design for Functional Calibration of Computer Models

P. 286-296

Ahmed Aziz Ezzat, Arash Pourhabib & Yu Ding

Abstract

The calibration of computer models using physical experimental data has received a compelling interest in the last decade. Recently, multiple works have addressed the functional calibration of computer models, where the calibration parameters are functions of the observable inputs rather than taking a set of fixed values as traditionally treated in the literature. While much of the recent work on functional calibration was focused on estimation, the issue of sequential design for functional calibration still presents itself as an open question. Addressing the sequential design issue is thus the focus of this article. We investigate different sequential design approaches and show that the simple separate design approach has its merit in practical use when designing for functional calibration. Analysis is carried out on multiple simulated and real-world examples.

Fast Computation of Exact G-Optimal Designs Via L_1 -Optimality

P. 297-305

Lucia N. Hernandez & Christopher J. Nachtsheim

Abstract

Exact G-optimal designs have rarely, if ever, been employed in practical applications. One reason for this is that, due to the computational difficulties involved, no statistical software system currently provides capabilities for constructing them. Two algorithms for exact G-optimal design construction of small designs involving one to three factors have been discussed in the literature: one employing a genetic algorithm and one employing a coordinate-exchange algorithm.

However, these algorithms are extremely computer intensive in small experiments and do not scale beyond two or three factors. In this article, we develop a new method for constructing exact G-optimal designs using the integrated variance criterion, I_λ -optimality. We show that with careful selection of the weight function, a difficult exact G-optimal design construction problem can be converted to an equivalent exact I_λ -optimal design problem, which is easily and quickly solved. We illustrate the use of the algorithm for full quadratic models in one to five factors. The MATLAB codes used to implement our algorithm and the exact G-optimal designs produced by the algorithm for each test case are available online as supplementary material. imal designs produced by the algorithm for each test case are available online as supplementary material.

Bayesian Spatial Multivariate Receptor Modeling for Multisite Multipollutant Data

P. 306-318

Eun Sug Park, Philip K. Hopke, Inyoung Kim, Shuman Tan & Clifford H. Spiegelman

Abstract

For the development of effective air pollution control strategies, it is crucial to identify the sources that are the principal contributors to air pollution and estimate how much each source contributes. Multivariate receptor modeling aims to address these problems by decomposing ambient concentrations of multiple air pollutants into components associated with different source types. With the expanded monitoring efforts that have been established over the past several decades, extensive multivariate air pollution data obtained from multiple monitoring sites (multisite multipollutant data) are now available. Although considerable research has been conducted on modeling multivariate space-time data in other contexts, there has been little research on spatial multivariate receptor models for multisite, multipollutant data. We present a Bayesian spatial multivariate receptor modeling (BSMRM) approach that can incorporate spatial correlations in multisite, multipollutant data into the estimation of source composition profiles and contributions, based on discrete process convolution models for multivariate spatial processes. The new BSMRM approach enables predictions of source contributions at unmonitored sites as well as simultaneously dealing with model uncertainty caused by the unknown number of sources and identifiability conditions. The new approach can also provide uncertainty estimates for the predicted source contributions at any location, which was not possible in previous multivariate receptor modeling approaches. The proposed approach is applied to 24-hour ambient air concentrations of 17 Volatile Organic Compounds (VOCs) measured at nine monitoring sites in Harris County, Texas, between 2003 and 2005. Supplementary materials for this article, including real data and MATLAB codes for implementing BSMRM, are available online on the journal web site.

ADMM for High-Dimensional Sparse Penalized Quantile Regression

P. 319-331

Yuwen Gu, Jun Fan, Lingchen Kong, Shiqian Ma & Hui Zou

Abstract

Sparse penalized quantile regression is a useful tool for variable selection, robust estimation, and heteroscedasticity detection in high-dimensional data analysis. The computational issue of the sparse penalized quantile regression has not yet been fully resolved in the literature, due to nonsmoothness of the quantile regression loss function. We introduce fast alternating direction method of multipliers (ADMM) algorithms for computing the sparse penalized quantile regression. The convergence properties of the proposed algorithms are established. Numerical examples demonstrate the competitive performance of our algorithm: it significantly outperforms several other fast solvers for high-dimensional penalized quantile regression. Supplementary materials for this article are available online.

Directional Statistics of Preferential Orientations of Two Shapes in Their Aggregate and Its Application to Nanoparticle Aggregation

P. 332-344

Ali Esmiaeeli Sikaroudi, David A. Welch, Taylor J. Woehl, Roland Faller, James E. Evans, Nigel D. Browning & Chiwoo Park

Abstract

Nanoscientists have long conjectured that adjacent nanoparticles aggregate with one another in certain preferential directions during a chemical synthesis of nanoparticles, which is referred to the oriented attachment. For the study of the oriented attachment, the microscopy and nanoscience communities have used dynamic electron microscopy for direct observations of nanoparticle aggregation and have been so far relying on manual and qualitative analysis of the observations. We propose a statistical approach for studying the oriented attachment quantitatively with multiple aggregation examples in imagery observations. We abstract an aggregation by an event of two primary geometric objects merging into a secondary geometric object. We use a point set representation to describe the geometric features of the primary objects and the secondary object, and formulated the alignment of two point sets to one point set to estimate the orientation angles of the primary objects in the secondary object. The estimated angles are used as data to estimate the probability distribution of the orientation angles and test important hypotheses statistically. The proposed approach was applied for our motivating example, which demonstrated that nanoparticles of certain geometries have indeed preferential orientations in their aggregates.

Difference Detection Between Two Images for Image Monitoring

P. 345-359

Long Feng & Peihua Qiu

Abstract

In manufacturing industries, images are commonly used for quality control purposes. In such applications, if the quality of the products is good, then their images should be all similar to the image of a good-quality product. Therefore, comparison of images is a fundamental task in image-based quality control. This problem, however, is complicated in the sense that (1) observed images often contain noise, and (2) the related images need to be geometrically matched up first because images of different products could be geometrically mismatched because the relative positions between a camera and different products are often not exactly the same. The first issue requires a statistical method that can remove noise, and the second issue is related to the so-called image registration problem in the image processing literature. In this article, we propose effective methods for detecting difference between two images of products, and our proposed methods can accommodate both noise and geometric mismatch mentioned above. Theoretical results and numerical examples show that they can work effectively in applications.

Thresholded Multivariate Principal Component Analysis for Phase I Multichannel Profile Monitoring

P. 360-372

Yuan Wang, Yajun Mei & Kamran Paynabar

Abstract

Monitoring multichannel profiles has important applications in manufacturing systems improvement, but it is nontrivial to develop efficient statistical methods because profiles are high-dimensional functional data with intrinsic inner- and interchannel correlations, and that the change might only affect a few unknown features of multichannel profiles. To tackle these challenges, we propose a novel thresholded multivariate principal component analysis (PCA) method for multichannel profile monitoring. Our proposed method consists of two steps of dimension reduction: It first applies the functional PCA to extract a reasonably large number of features under the in-control state, and then uses the soft-thresholding techniques to further select significant features capturing profile information under the out-of-control state. The choice of tuning parameter for soft-thresholding is provided based on asymptotic analysis, and extensive numerical studies are conducted to illustrate the efficacy of our proposed thresholded PCA methodology.

A Dirichlet Process Gaussian State Machine Model for Change Detection in Transient Processes

P. 373-385

Zimo Wang & Satish T. S. Bukkapatnam

Abstract

The ability to detect incipient and critical changes in real world process—essential for system integrity assurance—is

currently impeded by the mismatch between the key assumption of stationarity underlying most change detection methods and the nonlinear and nonstationary (transient) dynamics of most real-world processes. The current approaches are slow or outright unable to detect qualitative changes in the behaviors that lead to anomalies. We present a Dirichlet process Gaussian state machine (DPGSM) model to represent dynamic intermittency, which is one of the most ubiquitous real-world transient behaviors. The DPGSM model treats a signal as a random walk among a Dirichlet process mixture of Gaussian clusters. Hypothesis tests and a numerical scheme based on this nonparametric representation were developed to detect subtle changes in the transient (intermittent) dynamics. Experimental investigations suggest that the DPGSM approach can consistently detect incipient, critical changes in intermittent signals some 50–2000 ms (20–90%) ahead of competing methods in benchmark test cases as well as a variety of real-world applications, such as in alternation patterns (e.g., ragas) in a music piece, and in the vibration signals capturing the initiation of product defects in an ultraprecision manufacturing process. A supplementary file to this article, available online, includes a Matlab implementation of the presented DPGSM.

Nonparametric Dynamic Curve Monitoring

P. 386-397

Peihua Qiu, Xuemin Zi & Changliang Zou

Abstract

Rapid sequential comparison between the longitudinal pattern of a given subject and a target pattern has become increasingly important in modern scientific research for detecting abnormal activities in many data-rich applications. This article focuses on this problem when observations are collected sequentially with uncorrelated or correlated noise involved. A dynamic monitoring procedure is developed after connecting the curve monitoring problem to curve comparison. Under the framework of generalized likelihood ratio testing, we suggest a new exponentially weighted moving average (EWMA) control chart that can accommodate unequally spaced design points. An adaptive parameter selection feature is built in the proposed control chart so that the chart can detect a wide range of longitudinal pattern shifts effectively. To furnish fast computation, recursive formulas are derived for computing the charting statistic. Numerical studies show that the proposed method can deliver a satisfactory performance, and it outperforms existing methods in various cases. An example from the semiconductor manufacturing industry is used for the illustration of its implementation. Supplementary materials for this article are available online.

Multi-Parameter One-Sided Monitoring Tests

P. 398-407

Guangyu Zhu & Jiahua Chen

Abstract

Multi-parameter one-sided hypothesis test problems arise naturally in many applications. We are particularly interested in effective tests for monitoring multiple quality indices in forestry products. Our search reveals that there are many effective statistical methods in the literature for normal data, and that they can easily be used to test hypotheses regarding parameter values permitting asymptotically normal estimators. We find that the classical likelihood ratio test is unsatisfactory, because to control the size, it must cope with the least favorable distributions at the cost of power. In this article, we find a novel way to slightly ease the size control, obtaining a much more powerful test. Simulation confirms that the new test retains good control of the Type I error and is markedly more powerful than the likelihood ratio test as well as many competitors based on normal data. The new method performs well in the context of monitoring multiple quality indices.