

# BIODATA

## CHANG CHING-CHENG

### POSITION

Research Fellow, The Institute of Economics, Academia Sinica  
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### EDUCATION

Ph.D. Agricultural Economics, Pennsylvania State University, December 1987.  
M.S. Agricultural Economics, National Taiwan University, June 1982.  
B.S. Agricultural Economics, National Taiwan University, June 1979.

### AWARDS

1998 – Vice Chancellor’s Award for industry/agency/assoc partnerships, Texas A&M Univ.  
1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001 – Research Award, National Science Council.  
1992 – Deputy Chancellor’s Award in Excellence, Texas A&M University.  
1988 - Outstanding Ph.D. Dissertation Award, American Ag. Econ. Association.  
1982 - First Prize, Master's Thesis Award, Chinese Rural Economics Society.  
1977 - Agricultural Association of China Scholarship.

### RESEARCH INTEREST

- Research on assessing the economic impact of public policies (commodity programs, environmental regulations, public research, and international trade policies) on natural resource usage and production decisions involved in agricultural sector.
- Research on methodological issues involved with micro-level and macro-level decision making, efficiency measurement, productivity growth, dynamic optimization, risk/uncertainty, and cost-benefit analysis in public project appraisal.
- Research on global climate change impact and related risk-reduction policies.
- Research on trade policies and market structure of international commodity market.

### RESEARCH EXPERIENCE

2000~ Research Fellow, Inst of Econ, Academia Sinica and Professor, National Taiwan University.  
2011~2012 Director, Socio-Econ Dept, APEC Research Center for Typhoon and Society  
1993~2000 Associate Research Fellow, Inst of Econ, Academia Sinica and Associate Professor,  
National Taiwan University.  
1992-93 Visiting Associate Professor. Dept of Ag Econ, Texas A&M University.  
1988-92 Visiting Assistant Professor. Dept of Ag Econ, Texas A&M University.  
1987-88 Post-doctoral Research Associate. Dept of Ag Econ, Texas A&M University.  
1979-83 Officer and Researcher, Bureau of Statistics, DGBAS, Executive Yuan.

### TEACHING

Linear Programming and Its Applications. Dept of Ag Econ, National Taiwan Univ.  
Agricultural Sector Modeling and Applications. Dept of Ag Econ, National Taiwan Univ.

### EDITORSHIPS

Associate Editor, Agricultural Economics, 2007-  
Editorial Board, Taipei Economic Inquiry, 2012-  
Executive Editor, Taiwan Journal of Applied Economics, 2008-

Editorial Board, *Taiwanese Agricultural Economic Review*, 2005-2012  
Editorial Board, *Academia Economic Papers*, 2004-2006  
Editorial Board, *Taiwan Economic Forecast and Policy*, 2007-2009

## PUBLICATIONS

### *I. Refereed Articles:*

Chen, P-C., Yu, M-M., Chang, C-C., and Hsu, S-H. (2018). "A Reassessment of the Global Food Security Index by Using a Hierarchical Data Envelopment Analysis Approach," Forthcoming in *European Journal of Operational Research* (SSCI, SCI)

Liu, R.W., H.C Lin, C.C. Chang, D. Hsieh, and S.H. Hsu, "An Economy-wide Analysis of Increasing Government Infrastructure Investment on Macro-economy, Fiscal Balance and Income Distribution: A Dynamic General Equilibrium Approach", *Taiwan Economic Forecast and Policy*, 48(2): 41-78, 2018. (in Chinese)

Huang, Y.C., H.C. Lin, C.C. Chang, W. Fang, and S.H. Hsu, "Artificial Light-Type Plant Factory in Taiwan- An Application of Input-Output Analysis." *Taiwanese Agricultural Economic Review*, 23(1): 75-118, 2017 (in Chinese)

Liu, R.W., H.C Lin, C.C. Chang, and S.H. Hsu, "The Global Value Chain Analysis of Cross-Strait Trade", *Agriculture and Economics*, 57: 1-39, 2017. (in Chinese)

Chen C.C., Shih J.C., S.H. Hsu, and C.C. Chang., "On Trade Liberalization and Food Security: A Case Study of Taiwan using Global Food Security Index (GFSI), *Frontiers of North East Asian Studies* 15: 1-26, 2016.

Liu, R.W., H.C Lin, C.C. Chang, and S.H. Hsu, "A Value-Added Analysis of Trade on Taiwan and Korea's ICT Industries", *Journal of Korea Trade*, 20(1): 47-73, 2016. (SSCI)

Hsieh, T.Y., J.J. Su, W.T. Hsiao, C.C. Chang, S.H. Hsu, "Investment Feasibility Analysis of Chicken Excrement Biomass Energy Generation", *Taiwanese Agricultural Economic Review*, 22(2): 31-70, 2016 (in Chinese)

Liu, R.W., H.C Lin, C.C. Chang, and S.H. Hsu, "Unveiling the True Value of Across-Strait Trade: The Global Value Chain Approach", *China Economic Review* 41(2016):159-180. DOI: 10.1016/j.chieco.2016.10.001 (SSCI)

Chen, P.C., C C Chang and C.N. Chen, "Projections of Future Long-Term Care Needs of an Aging Population of Taiwan - An Application of GEMTEE", *Journal of Population Studies* 51(2015): 43-93. (in Chinese)

Kuo, Y.L., C. C. Chang, and H. C. Lee, "Lulling by Public Flood Protection: Case of Benhe Community in Kaohsiung during Typhoon Fanapi", *Natural Hazards Review*, 17, No. 1, 2016, doi: 10.1061/(ASCE)NH.1527-6996.0000189, 05015003.

Hsiao H.I., C.C. Chang, C.H. Wu, "Decision Making Factors for Country-of-origin Agriculture Branding in International Markets: The Case of Orchids in Taiwan." *Journal of Horticulture* 2:2 (2015) doi:10.4172/2376-0354.1000134.

Yu, M.M., Chen, P.C., Chang, C.C., Hsu, S.H., and S. Managi, "Non-radial Directional Performance

Measurement with Undesirable Outputs: An Application to OECD and Non-OECD Countries”, International Journal of Information Technology & Decision Making, 14 (3): 481-520, 2015 (SCI Expanded).

Lin, H.C., H.L. Lee, S.M. Hsu, K.J. Lin, D.H. Lee, C.C. Chang and S.H. Hsu, “Baseline Forecasting for Taiwan’S Population in the Face of Low fertility Rate and Ageing Problems”, Taiwan Economic Forecast and Policy 46(1)(2015): 113-156. (in Chinese)

Chen, P.C., Yu, M.M., Chang, C.C., Hsu, S.H., and S. Managi, “The Enhanced Russell-Based Directional Distance Measure with Undesirable Outputs: Numerical Example Considering CO2 Emissions”, OMEGA, 53(2015): 30-40.

Hsu, W.K., P.C. Huang, C.C. Chang, W.L. Chiang, D.J. Chiou, and C.W. Chen, “Generation of Artificial Rainfall Events for Flood Risk Assessment in Taiwan”, Natural Hazards, 2015. DOI 10.1007/s11069-014-1233-1.

Chen, P.C., C.C. Chang, and C.L. Lai, “Incentive Regulation and Performance Measurement of Taiwan’s Incineration Plants: An Application of the Four-stage DEA Method”, Journal of Productivity Analysis, 41(2014): 277-290.

Lee, H.L., C.C. Chang, Y. Weng, S.H. Hsu, S.M. Hsu and Y.C. Chen, "An Economy-wide Analysis of Impacts on Taiwan of Reducing Tariff Escalation on Agriculture-Related Products in WTO Doha Round Negotiations, China Agricultural Economic Review, 6(2014):55-72. DOI 10.1108/CAER-06-2012-0058

Lin, K.J., S. M. Hsu, C.C. Chang, and, S.H. Hsu, “The China Syndrome? The Impact of China’s Growth on Wage Inequality in East Asian Economies”, Asia-Pacific Journal of Accounting and Economics, 20(2013) No. 4: 385-404.

Chang, C-H; Lin, H-C; Chang, C-H; Chang, C-Cg; Hsu, S-H, “Potential of Domestically Produced and Imported Tung (*Vernicia Fordii*) Seeds for Biofuels”, Journal of Biobased Materials and Bioenergy, 7 (2013, No. 4): 512-515. <http://dx.doi.org/10.1166/jbmb.2013.1324>

Chang, C.C., H.L. Lee, and S.H. Hsu, “Food Security: Global Trends and Regional Perspective with Reference to East Asia”, The Pacific Review 26(2013): 583-606. DOI: 10.1080/09512748.2013.842315.

Wu, C.H., C.C. Chang, P.C. Chen, and K.N. Kuo, "Efficiency and Productivity Change in Taiwan's Hospitals: a Non-radial Quality-adjusted Measurement", Central European Journal of Operations Research, 21(2013): 431-453.

Chen, P.C., S.H. Hsu, C.C. Chang, and M.M. Yu, "Efficiency Measurements in Multi-activity Data Envelopment Analysis with Shared Inputs: An Application to Farmers’ Cooperatives in Taiwan", China Agricultural Economic Review, 5(2013): 24-42.

Chen, P. C., Y. H. Huang, J. W. Juang, and C. C. Chang, " The Cost Efficiency of the Hog Farms Participating in the Record-Keeping Program in Taiwan: Before and After the Foot-and-Mouth Disease Outbreak", Agriculture and Economics, 48(2012):1-31. (in Chinese)

Chang, C C., and M. Mendy, “Economic Growth and Openness in Africa: What Is the Empirical Relationship?” Applied Economics Letters, 19 (2012): 1903-1907.

- Chang, C.C., Chen C.C., and B.A. McCarl, "Evaluating the Economic Impacts of Climate Change Induced Sea Level Rise with Possible Adaptation Strategies on Taiwan Agricultural Sector", *Agricultural Economics*, 43(2012):205-214.
- Chen, P.C., C.C. Chang, M.M. Yu, and S.H. Hsu, "Performance Measurement for Incineration Plants Using Multi-activity Network Data Envelopment Analysis: The Case of Taiwan", *Journal of Environmental Management*, 93(2012): 95-103.
- Chen C.C., B.A. McCarl, and C.C. Chang, "Climate Change, Sea Level Rise and Rice: Global Market Implications", *Climatic Change*, 91(2011):211-231.
- Leu, S. Y., P. C. Chen and C. C. Chang, " The Cost Efficiency of the Dairy Farms Participating in the Record-Keeping Program in Taiwan ", *Taiwanese Agricultural Economic Review*, 16, No.2 (2011):107-141. (in Chinese)
- Sheu, S. J. and C. C. Chang, "Assessing Damage by Typhoon in Taiwan-an Example of Vegetable Demand and Supply", *Taiwan Journal of Applied Economics*, 89(2011):31-62 . (in Chinese)
- Hsu, W.K., P.C. Huang, C.C. Chang, D.-M. Hung, W.L. Chiang, "An Integrated Flood Risk Assessment Model for Property Insurance Industry in Taiwan", *Natural Hazards*, 58 (2011): 1295-1309.
- Lin, Y. H., Shih. S. H., C. C. Chang, C. H. Lai and M. L. Huang, "Performance Measurement of Postal Services in Taiwan", *Public Administration & Policy*, 99(2011):131-178. (in Chinese)
- Chen C.C., B.A. McCarl, C.C. Chang, and C.T. Tso, "Evaluation the Potential Economic Impacts of Taiwanese Biomass Energy Production", *Biomass and Bioenergy*, 35(2011):1693-1701.
- Wu, C. H. and C. C. Chang, "The Formula for Measuring Agricultural Product Import Injuries", *International Trade Commission*, 21,No.2(2010):1-26 . (in Chinese)
- Lin, Y. H., K J. Lin, S. H. Hsu and C. C. Chang, "The Impacts of Sales Tax Reform on Price Levels in Taiwan", *Taiwan Economic Forecast and Policy*, 40, No.2(2010):87-126. (in Chinese)
- Tseng, W. C., C.C. Chen, C.C. Chang and Y.H. Chu. "Estimating the Economic Impacts of Climate Change on Infectious Diseases: A Case Study on Dengue Fever in Taiwan." *Climatic Change*, 92 (2009), 123-140.
- Chen, P. C., Y. H. Huang, S. M. Hsu, C.C. Chang." The Efficiency and Productivity Change of the Hog Farms Participating in the Record-Keeping Program in Taiwan" *Taiwanese Agricultural Economic Review*, 15:1 (2009), 43-80. (in Chinese)
- Luh, Y. H, F. M. Huang, C.C. Chang and S. Y. Lee. "Accumulation of Intangible Capital as a Growth Determinant: The Evidence from East-Asian Agricultural Production" *Taiwanese Agricultural Economic Review*, 14:2 (2009), 1-27. (in Chinese)
- Chen, P. C., C.C. Chang, M. M. Yu, S. H. Hsu. "The Efficiency of the Farmer's Organizations in Taiwan-An Application of the Multi-activity DEA Model" *Taiwan Economic Review*, 37:4 (2009), 415-453. (in Chinese)
- Chen, C.C., B. A. McCarl and C.C. Chang, "Stronger Niño/Southern Oscillation Events and the Economics of International Rice Market." *Climate Research* 36 (2008):113:122.
- Chen, Y.C., and C.C. Chang, "A Re-examination of Taiwan's Food Aid Policies under the WTO New Doha

Round.” Issues and Studies Vol. 47, No. 4 (2008):77-108 (in Chinese)

Chen, P., M-M Yu, C.C. Chang, and S-H, Hsu, “Total Factor Productivity Growth in China’s Agricultural Sector.” China Economic Review 19 (2008):580-593.

Luh, Y.H., C.C. Chang, and F.M. Huang, “Efficiency Change and Productivity Growth in Agriculture: A Comparative Analysis for Selected East Asian Economies.” Journal of Asian Economics, 19(2008): 312-324.

Wang, H.P., Hsieh, T.M., C.C. Chang, Y.H. Luh, and S.H. Hsu, “A Risk Analysis of Compulsory Automobile Liability Insurance - An Application of Malmquist Productivity Index.” Academia Economic Papers, Vol. 36, No. 2 (2008):195-120. (in Chinese)

Wu, C.H., C.C. Chang, and K.N. Kuo, “Evaluating the Resource Allocation Efficiency of the Healthcare System in Taiwan.” International Journal of Public Policy, Vol. 3, No. 5-6 (2008): 403-418.

Wang, H.J., C.C. Chang, and P.C Chen. “Government Subsidy and Cost Efficiency of Financial Institutions: The Case of Farmers’ Credit Unions in Taiwan.” Journal of Agricultural Economics 59(2008):132-149.

Yu, M.M., S-H Hsu, C.C. Chang, and D.W. Lee, “Productivity Growth of Taiwan's Major Domestic Airports in the Presence of Aircraft Noise.” Transportation Research Part E: Logistics and Transportation Review 44(2008): 543-554.

Lee, D.H., H.C. Lin, C.C. Chang, S.H. Hsu, C.C Chen, and J. C.H. Sun, “Impact Assessments of High Oil Prices on the Agro-Food System and the Role of Bioenergy Crops.” Environmental and Resource Economics Review, 16, No.3 (2007): 653-682.

Hsu, S.H., C. C. Chang, T. Z. Yang, D.H.Lee. H. C. Lin, “Ex Post Analysis of the Economic Impact of SARS on Taiwan.” Taiwan Economic Forecast and Policy , Vol. 38, No. 1 (2007): 1-34. (in Chinese)

Weng, Y., H.W. Su, and C.C. Chang, “The Impact of Reducing Tariff Escalations on Taiwan's Agricultural-related Upstream and Downstream Industries in the WTO Doha Round Negotiations.” Journal of Agricultural Economics, No. 81(2007):27-56. (in Chinese)

Chen, P., M-M Yu, C.C. Chang, and S.H. Hsu “Productivity Change in Taiwan’s Farmers’ Credit Unions: A Nonparametric Risk-Adjusted Malmquist Approach”, Agricultural Economics 36(2007): 219-229.

Chang, C.C., M. D. Su, J.L. Kang, W.K. Hsu, W.H. Teng, and L. Chou, “The Cost-Benefit Analysis and Risk Assessment of Public Projects: A Case Study of the Keelung River Basin Integrated Flood Control Plan.” Taiwan Economic Forecast and Policy, Vol. 37, No. 2 (2007): 111-137. (in Chinese)

Wu, C.H., and C.C. Chang, “Economic Impacts of Consumers’ Preference Change and GM Food Mandatory Labeling Policy: A General Equilibrium Analysis.” Taiwanese Agricultural Economic Review, Vol. 12, No. 1 (2006): 23-60. (in Chinese)

Lee, S.Y., Y.C. Chen, and C.C. Chang, “The Impacts of WTO Doha Round Agricultural Negotiations on Taiwan's Overall Economy and Agricultural Sector: A General Equilibrium Assessment” , Taiwanese Agricultural Economic Review, Vol. 11, No. 2 (2006): 267-308. (in Chinese)

- Chen, C.C., B. A. McCarl and C.C. Chang, "Estimating the Impacts of Government Interventions in the International Rice Market." Canadian Journal of Agricultural Economics, 54 (2006): 81–100.
- Chen, C.C., and C.C. Chang, "The Impact of Weather on Crop Yield Distribution in Taiwan: Some New Evidence from Panel Data Models and Implications for Crop Insurance" Agricultural Economics 33 (2005): 503-511.
- Luh, Y.H., C.C. Chang, J.L. Yang "FDI and the Hollowing-Out of Taiwan's Food Industry" , Taiwanese Agricultural Economic Review, Vol. 11, No. 1(2005): 1-34. (in Chinese)
- Chen C.C., C.C. Chang, H.C. Lee, and H.T. Yen "The Economics Impacts of Rice Policy Adjustment on Its Market in Taiwan", Taiwanese Agricultural Economic Review, Vol. 10, No. 2(2005): 163-197. (in Chinese)
- Lin, H.C., and C.C. Chang. "A Study on Agriculture Value Added and Input-Output Analysis in Taiwan." Taiwanese Agricultural Economic Review, Vol. 10, No. 1 (2004):.1-24 (In Chinese)
- Chang, C.C., and W.F. Shie. "The Export Promotion and Marketing of Agri-food Products: The Role of Government." Agriculture and Economics, No. 32 (2004): 1-28. (In Chinese)
- Lin, K.J., C.C., Chnag, and S.H.Hsu. "The Impacts of Taiwan's WTO Accession on Female-Male Labor Demand: A Dynamic CGE Analysis." Journal of Population Studies, No. 27 (2003): 1-36. (in Chinese)
- Ju, L.F., C.C., Chen, and C.C. Chang, "The Impacts of ENSO on Taiwan's Climate and the Value of ENSO Forecast." Taiwanese Agricultural Economic Review, Vol. 8, No. 2 (2003): 141-178. (In Chinese)
- Chen, C.C., C.C., Chang, and L. Chou." The Potential Benefit of ENSO Forecasts-The Case of Rice Trade." Academia Economic Papers, Vol. 31, No.1 (2003): 31-72. (in Chinese)
- Hsu, S.H., C.C. Chang, and H.S. Lin. "A Quantitative Assessment on the Economic Interaction between Taiwan and the U.S." Industry of Free China, Vol. 93, No.1, pp. 1-96, Jan. 2003. (in Chinese)
- Chang, C.C., J.C. Lo, and Z.F. Lin. "The Willingness to Participate in Flood Insurance of the Residents in the Shijr and Wu-doo Area of Keelung River." Taiwan Economic Forecasts and Policies, Vol. 34, No.1 (2003): 39-72. (in Chinese)
- Chang, C.C. "The Potential Impact of Climate Change on Taiwan's Agriculture." Agricultural Economics, Vol. 27, No.1 (2002): 51-64.
- Chang, C.C., "Water Management and the Outlook for Water Adequacy in Taiwan's Agricultural Sector." Industry of Free China, Vol. 91, No.11, pp. 47-58, Nov. 2001. (in Chinese)
- Chang, C.C., T.T. Fu, Y.H. Lee, and S.Y. Shei. "Taiwan's Rice Policy Adjustment after Joining the WTO: Market aand Non-Market Oreiented Analysis", Industry of Free China, Vol. 91, No.7, pp. 15-40, Jul. 2001. (in Chinese)
- Chang, C.C., T.T. Fu, Y.H. Lee, and S.Y. Shei. "The Challenge and Opportunity fir Rice Industry under the WTO", Industry of Free China, Vol. 91, No.2, pp. 1-24, Feb. 2001. (in Chinese)

- Chang, C.C. and D. H Huang, "The Relationship between Intra-regional Trade and Economic Dependency: An Empirical Studies for Taiwan and Southeast Asian Countries", Industry of Free China, Vol. 90, No.11, pp. 1-48, Nov. 2000.
- Chang, C.C. and Y.H., Luh. "Efficiency Change and growth in Productivity: The Asian Growth Experience." Journal of Asian Economics, Vol 10 (2000): 551-570.
- Chang, C.C. "The Nonparametric Risk-Adjusted Efficiency Measurement: An Application of Taiwan's Credit Department of Farmers' Associations." American Journal of Agricultural Economics, 81(1999): 902-913.
- Chang, C.C. "The Carbon Sequestration Cost by Afforestation in Taiwan." Environmental Economics and Policy Studies 2(1999): 199-213.
- Chang, C.C., and T.C., Hsieh. "The Economic Efficiency of the Credit Departments of Farmers' Associations in Taiwan." Applied Financial Economics 8(1998): 409-418.
- Chang, C.C. and Y.H., Luh. "Sources of Productivity Growth: A Cross-Straite Comparison." Agriculture and Economics 20(1998): 1-20.
- Chang C.C., T.T. Fu, and S.Y. Shei. "WTO and the Emerging Rice Issues in Taiwan", Industry of Free China, 88(1998): 17-60.
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- Chang C.C. and H.I. Hsu. "The Impact of Tariffi Reduction on Vegetable Oil Trade between Taiwan and ASEANs." Conference Proceeding of Taiwan Economics Association (1995): 19-52.
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- Chang, C.C. "The Taiwan Agricultural Sector Model and Its Applications in Policy Analyses." National Science Council Annual Conference Proceedings on Economics (1995): 27-56.
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- Tanyeri-Abur A., B.A. McCarl, C.C. Chang, R.D. Knutson, and W.E. Peterson, "An Analysis of Possible Sugar Import Policy Revisions." Review of Agricultural Economics 15(1993): 255-268.
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Chang, C.C., and B.A., McCarl. "Distortions of Public Agricultural Investment Incentives by Farm Programs: The Case of Agricultural Research." Agriculture and Economics 13(1992): 91-120.

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Coble, K., C.C. Chang, B.A. McCarl, and B.R. Eddleman. "Assessing Economic implications of New Technology: The Case of Cornstarch- Based Biodegradable Plastics." Review of Agricultural Economics 14(1992): 33-43.

Chang, C.C., B.R. Eddleman, and B.A. McCarl. "Potential Benefits of Rice Variety and Water Management Improvements in the Texas Gulf Coast." Western Journal of Agricultural Economics 16(1991): 185-193.

Hsu, S.H. and C.C. Chang, "An Adjustment Cost Rationalization of Asset Fixity Theory." American Journal of Agricultural Economics 72(1990): 290-298.

Chang, C.C. and S.E. Stefanou, "Specification and Estimation of Asymmetric Adjustment Rates for Quasi-fixed Factors of Production." Journal of Economic Dynamics and Control 12(1988): 145-151.

Chang, C.C. and S.E. Stefanou, "Supply Growth and Dairy Industry Deregulation." Northeastern Journal of Agricultural and Resource Economics 16(1987): 1-9.

## **2. Book and Book Chapter:**

Chang, Ching-Cheng, Huey-Lin Lee, Shih-Hsun Hsu, (2015). "The potential impact of climate change-induced sea level rise on the global rice market and food security," in Aziz Elbehri (eds), Climate Change and Food Systems: Global Assessments and Implications for Food Security and Trade, Food and Agriculture Organization (FAO) of The United Nations, Rome, 2015.

Chang, C.C. "Food Security: The Taiwan Perspectives." Chapter 8 in Prospects and Perspectives 2011, PP. 51-56, eds., Liu K-C, Prospect Foundation, Taipei, Taiwan R.O.C., 2012.

Chang, C.C. and S.H. Hsu, "Economy-wide Impacts on Taiwan's Economy of China and Taiwan's WTO Accession: A Computable General Equilibrium Analysis" in China's Accession to the WTO: Impacts on China and the Asia-Pacific Region, eds., Chu T., and K.Y. Wong, Edward Elgar Pub., U.K., 2007.

Chang, C.C., and B.L. Chen. "Productivity Growth and Catch-up in Less-Developed Economies," Chapter 5 in Human Capital, Trade and Public Policy in Rapidly Growing Economies, eds., M. Boldrin, B.L. Chen, and P. Wang, Edward Elgar Pub.,U.K., 2004.

Chang, C.C., D.G. Shaw, and R. Mendelsohn (ed.), Global Warming and the Asian Pacific, Edward Elgar Pub.,U.K., Nov., 2003.

Chang, C.C., and C.C. Chen. "Climate Change and Crop Yield Distribution in Taiwan." Chapter 10 in Global Warming and the Asian Pacific, eds., Chang, C.C., D.G. Shaw, and R., Mendelsohn, Edward Elgar Pub.,U.K., Nov., 2003.

Chang, C. C., C. C. Chen, and C. W. Yang, "The Potential Economic Benefit of Weather Forecast on Taiwan's Agriculture-The Case of ENSO Forecast on Rie" eds., C. M. Yang, C. Y. Lee, F. X. Lin, Chapter 3 in Application and Development of Agro-meteorology, PP.17-32 ,Taiwan Agricultural Research Institute, Council of Agriculture Executive Yuan and the Meteorological Society of the Republic of China, July, 2001.



Chang, C.C., C-C. Chen, B.A. McCarl, "The Potential Value of ENSO Forecasts to Rice Sector in Taiwan." Proceedings of the International Forum on Climate Prediction, Agriculture and Development, pp.252-253, International Research Institute for Climate Prediction, New York, 2000.

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McCarl, B.A., W. Rosenthal, C.C. Chang, and R.M.Adams. "Climate Change and Texas Agriculture." Book chapter in Implications of Climate Change for Texas. North, G.R., J. Schmandt, and J. Clarkson, eds., University of Texas Press, Austin, Texas, 1993.

Adams, R.M., C.C. Chang, B.A. McCarl, and John M. Callaway. "The Role of Agriculture in Climate Change: A Preliminary Evaluation of Emission Control Strategies." Chapter 15 in Economic Issues in Global Climate Change: Agriculture, Forestry, and Natural Resources. J.M. Reilly and M. Anderson, eds., Westview Press, Boulder, Colo., 1992.

## FUNDING RECEIVED

Project Name	Position	Period	Source
Taiwan Agricultural Sector Model and Its Applications in Policy Analysis (NSC83-0301-H002-008)	Principal investigator	July 1993~ June 1994	National Science Council
Incorporating Risk into Agricultural Sector Model (NSC84-0301-H001-030)	Principal investigator	July 1994~ June 1995	National Science Council
The Impact of Rural Development Advancement Loan on Taiwan's Agricultural development	Cooperative investigator	July 1993~ June 1994	Council of Agriculture
An Investigation of Young Farmers' Low Willingness to Stay in Farming in Taiwan (NSC84-2415-H001-021)	Principal investigator	July 1994~ June 1995	National Science Council
The Food Security Management System in Taiwan	Principal investigator	July 1994~ June 1995	Council of Agriculture
The Impact of the Credit Department of farmers' Associations on Rural Development in Taiwan	Cooperative investigator	July 1994~ June 1995	Council of Agriculture
The Impact of Greehouse Gas Emission Reduction on agriculture-Cost Analysis	Principal investigator	July 1995~ June 1996	National Science Council
On Wolrd Agricultural Trade Modelling-Emphasis on Taiwan's agricultural Sector	Principal investigator	July 1995~ June 1996	National Science Council
The Cost-Benefit Analysis of Carbon Sequestration by Planting Trees on Agricultural Land	Principal investigator	July 1996~ June 1997	National Science Council
The Impact of Greehouse Gas Emission Reduction on agriculture in Taiwan-Cost and Benefit	Principal investigator	July 1997~ June 1998	National Science Council
Risk-adjusted Efficiency and Productivity Analysisin financial Institutions	Principal investigator	July 1997~ June 1998	National Science Council
The Impact of AFTA on Taiwan's Agricultural Trade	Cooperative investigator	July 1997~ June 1998	Council of Agriculture
The Establishment of Regional Water Transfer and Management Fund	Cooperative investigator	December 1997 ~June 1998	Provincial Water Bureau

The ENSO Effect on World Rice Production and Trade	Principal investigator	July 1998~ June 1999	National Science Council
WTO and the Emerging Rice Issues in Taiwan	Cooperative investigator	July 1997~ June 2000	Academia Sinica
A Study of Improving Taiwan's Farm Household Income Statistics	Principal investigator	Jan 2001~ Dec 2001	Council of Agriculture
Potential Economic Values of ENSO Forecast on Taiwan's Agricultural Sector (I)~(III)	Principal investigator	July 1999~ June 2002	National Science Council
A Dynamic CGE Analysis of Taiwan's Manpower Planning (I)~(II)	Principal investigator	July 1999~ June 2002	National Science Council
Flood Damage Evaluation and the Design of Risk Sharing and Mitigation Mechanism in the Public Sector (I)~(II)	Principal investigator	July 2002~ June 2004	National Science Council
A Dynamic Analysis of the New WTO Round and Trade Liberalization on Taiwan's Agriculture	Principal investigator	Jan 2002~ Dec 2002	Council of Agriculture
The Comparison between Japan's Rice Operation-Supply-Demand Stabilization Policies and Taiwan's Rice Purchase Program (I)~(III)	Cooperative investigator	July 1998~ Dec 2002	Council of Agriculture
A Study of APEC Agriculture-The Effect of Trade Liberalization on Food Safety	Cooperative investigator	Jan 2002~ Dec 2002	Council of Agriculture
Study on the Strategies for Negotiating Issues of International Trade Organizations	Cooperative investigator	Jan 2002~ Dec 2002	Council of Agriculture
An Analysis of the Structural Adjustment and Related Policies on Taiwan's Agricultural and Fishery Sectors	Principal investigator	Jan 2003~ Dec 2003	Council of Agriculture
On Structural Adjustment and Input-Output Linkage Effect - A Sectorwide Model and Applications on Taiwan's Agricultural and Fishery Sectors.	Principal investigator	Jan 2004~ Dec 2004	Council of Agriculture
The Financial Risk Management and Residents' Willingness to Pay for Insurance	Principal investigator	Aug 2004~ July 2005	National Science Council
The Impact of Climate Change on Resource Allocation on Natural Disaster Prevention and Risk Management Policy Decisions(I)~(III)	Principal investigator	Aug 2006~ July 2009	National Science Council
A Study of Export Potential, Import Risk Assessment and Economic Impact Evaluation Method on Agricultural Products	Principal investigator	Nov 2010~ Dec 2010	Council of Agriculture
The Impact of Climate Change on Natural Disaster Analysis and Risk Management Policy Development(I)~(III)	Principal investigator	Aug 2009~ July 2011	National Science Council
The Agricultural Sectoral Impacts of Trans-Pacific Strategic Economic Partnership (TPP) and Response Strategies in Taiwan	Principal investigator	May 2011~ Dec 2011	Council of Agriculture
Households' Willingness To Pay for Mitigating Environmental Hazard in Landslide Prone Regions in Taiwan	Principal investigator	Aug 2012~ July 2013	National Science Council
Decision Making Model of Risk Management in Climate Change Adaptation Policy and Applications (I)~(III)	Principal investigator	Aug 2011~ July 2014	National Science Council
Remote sensing of Rice Agriculture for Food Security Monitoring: A Case Study from Mekong Delta, Vietnam	Co-investigator	Jan 2013~ Dec 2015	National Science Council

Taiwan Integrated Research Programme on Climate Change Adaptation Technology, TaiCCAT(II)	Co-investigator	Jan 2014~ Feb 2015	Ministry of Science and Technology
Taiwan Integrated Research Programme on Climate Change Adaptation Technology, TaiCCAT(II): The Governance of Climate Change Adaptation Science and Technology: The Establishment of a Decision Support System and Applications	Principal investigator	Jan 2014~ Feb 2015	Ministry of Science and Technology
Establishment of Cost Analysis and Financing Mechanism of Major Green Energy Industry in Taiwan (I)	Co-investigator	Apr 2014~ Dec 2014	Ministry of Science and Technology
An Integrated Computable General Equilibrium (CGE) Model and Database for Appraising Policies toward Sustainable Development (I)~(III)	Principal investigator	Jan 2012~ Dec 2014	Academia Sinica
Unlock the Development of Plant Factory Industry and Its Market Potentials in Adapting to Climate Change	Principal investigator	Aug 2014~ July 2015	National Science Council
Taiwan Integrated Research Programme on Climate Change Adaptation Technology, TaiCCAT(III)	Co-investigator	Jan 2015~ Jul 2016	Ministry of Science and Technology
Taiwan Integrated Research Programme on Climate Change Adaptation Technology, TaiCCAT(III): The Governance of Climate Change Adaptation Science and Technology: The Establishment of a Decision Support System and Applications	Principal investigator	Jan 2015~ Feb 2016	Ministry of Science and Technology
The Development of Applicable Climate Risk Assessment Methodologies in Taiwan (I)~(III)	Principal investigator	Apr 2015~ Dec 2017	Central Weather Bureau
Enhanced GEMTEE (General Equilibrium Model for Taiwan Economy and Environment) for IAM Framework-An Integrated Computable General Equilibrium (CGE) Model and Database for Appraising Policies toward Sustainable Development (I)~(III)	Principal investigator	Jan 2015~ Dec 2017	Academia Sinica
An Integrated Study of the Water-Energy-Food Nexus and a Decision Support System for Sustainable Urbanization in Taiwan-Establishing Tools of Policy Assessment and Indicators Toward Sustainable Development	Principal investigator	Aug 2016~ Jul 2018	Ministry of Science and Technology
Enhance the International Cooperation with APEC on the Technology of Reducing Food Losses and Industry Development	Co-investigator	Apr 2015~ Dec 2018	Council of Agriculture
PIER:Building Extreme Weather Resiliency through Improved Weather and Climate Prediction and Public Response Strategies	Co-investigator	Sep 2015~ Aug 2020	Ministry of Science and Technology
The Establishment of a Performance Evaluation System and Database for Natural Disaster Prevention and Mitigation in Taiwan	Principal investigator	Jan 2018~ Dec 2018	Ministry of Science and Technology
An Economy-wide Impact Assessment of Paris Agreement on Taiwan's Environmental Governance and Renewable Energy Development Strategies Towards a Low-Carbon Society (I)~(III)	Principal investigator	Jan 2018~ Dec 2020	Academia Sinica

