New Frontiers in Regional Science: Asian Perspectives 76

Budy Prasetyo Resosudarmo
Yuri Mansury *Editors*

The Indonesian Economy and the Surrounding Regions in the 21st Century

Essays in Honor of Iwan Jaya Azis

Springer

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Budy Prasetyo Resosudarmo • Yuri Mansury
Editors

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Editors
Budy Prasetyo Resosudarmo
Arndt-Corden Dept. of Economics
Australian National University
Canberra, ACT, Australia

Yuri Mansury
Department of Social Sciences
Illinois Institute of Technology
Chicago, IL, USA

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Iwan Jaya Azis

Foreword 1

Iwan Jaya Azis: A Multidimensional Economist

In our journey through life, we encounter individuals who possess extraordinary qualities, leaving a lasting impact on our minds and hearts. Iwan Jaya Azis is one such person, whose multidimensional approach to economics has shaped the way we understand and navigate the complex world of finance, development, and sustainability.

Iwan and I have a significant age difference of 23 years. The story of how I met Iwan is as follows: After completing my PhD in Economics at the University of Berkeley, California, in 1964, I returned to Indonesia and began teaching an undergraduate course on Economic Systems and Development at the Faculty of Economics, University of Indonesia. It was in the early 1970s when Iwan enrolled in my course, marking the first time we crossed paths.

In 1977, my career advanced, and I achieved the position of professor, which granted me the opportunity to have a teaching assistant. Taking into consideration all the students I had observed during my teaching career, I was particularly impressed by Iwan Jaya Azis's personality and performance. As a result, I proposed that Iwan become my teaching assistant at the undergraduate level, specifically assisting in the teaching of Economic Systems and Economic Development.

Besides teaching, I found myself immersed in various additional assignments during the challenging period of revitalizing the economy in the late 1960s. Alongside my esteemed colleagues at the Faculty of Economics, we were summoned to assist in the daunting task of overcoming significant obstacles such as high inflation, debt payment difficulties, and economic stagnation. Given the tremendous scope of responsibilities entrusted to us within the government, I relied heavily on Iwan's support in teaching my course. Throughout this endeavor, I observed a captivating facet of Iwan's character. While it was customary for our teaching assistants to contribute to government work and pursue careers as officials, Iwan diverged from the conventional path. He deliberately chose to prioritize his teaching and research

within the campus, forsaking the pursuit of a political position. It became evident that he had wholeheartedly embraced the calling of a scientist.

His dedication to an academic career became even more evident when he pursued a PhD program at Cornell University. It was during this program that he recognized the significance of mathematical economics and realized its importance as a tool for analysis. Consequently, he devoted himself to developing a strong foundation in mathematical economics and modeling. During his PhD program, he focused on employing mathematical modeling to gain insights into the diversity of regional economies.

Upon returning to the Faculty of Economics at the University of Indonesia, he applied his expertise in mathematical economics and modeling to enhance our understanding of various aspects of the Indonesian economy. His research projects and teaching encompassed regional economics, monetary economics, international economics, and development economics. Through these endeavors, I witnessed Iwan evolve into a multidimensional economist.

I have had numerous interactions with Iwan that have left a lasting impression of his character and scholarly abilities. One particular situation stands out, which occurred during the Asian economic crisis of 1997/98. Although Iwan was already working at Cornell University at the time, he visited Indonesia, and I invited him to join a meeting with IMF officials in Jakarta. During this meeting, I observed that Iwan held a different perspective from the path taken by the IMF. His critical thinking skills were exceptionally sharp, and he expressed his disagreement with the IMF's approach in a polite but firm manner. Iwan systematically presented his arguments, showcasing his diplomatic yet scientifically objective character.

Despite being relatively young, Iwan engaged in discussions with seasoned IMF experts who possessed vast global experience and significant influence on Indonesian policy development. The two parties engaged in a captivating exchange of ideas and arguments. Iwan remained persistent in conveying his motivations, answers, and reasons for criticizing the IMF. While his critique was sharp, it was supported by scientific evidence and rigorous analysis. I could understand and perceive that Iwan's arguments weakened the credibility of the IMF's proposed program. Towards the end of the discussion, Iwan proposed the need for an update in IMF policy in Indonesia.

Another significant moment that stands out to me regarding Iwan is his contribution to understanding the interconnectedness of the environment and development. Knowing my involvement in the environmental sector and my commitment to sustainable development, which emphasizes the integration of environmental management with development patterns, Iwan took a keen interest in this concept. He recognized the need for economists to embrace this mindset in order to achieve desirable development outcomes. Inspired by this, Iwan worked towards further developing and scientifically understanding the concept of sustainable development. While the textbook *Our Common Future* provides a foundation for sustainable development, Iwan expanded on this by incorporating scientific modeling to elucidate the linkages between the environment and the economy in achieving

sustainability. He then shared these insights by teaching the concepts at the undergraduate level at the Faculty of Economics, University of Indonesia.

Despite being at Cornell University, Iwan regularly returned to Indonesia during specific semester times to teach courses on economic theory, development economics, and sustainable development. I always felt compelled to attend Iwan's lectures because they refreshed my economic logic and provided me with new perspectives on development. Having been involved in government administration and political activities for a long time, attending Iwan's courses opened my mind to the possibilities of new and unknown theoretical developments in our homeland. I came to realize that the environment encompasses more than just clean water, fresh air, forests, and nature. It is intricately connected to other developmental processes. Sustainable development ensures that our present actions do not diminish the potential for future welfare improvements. It emphasizes the sustainable use of natural resources over time. These lectures were usually followed by insightful discussions between the two of us, and I learned a great deal from Iwan's expanding knowledge.

The third moment that stands out to me is Iwan's deep concern for regional development, particularly in the lagging regions, especially in Eastern Indonesia and the small island areas. Iwan has shown a remarkable interest in this area, recognizing the need to address the disparities and challenges faced by these regions. He has gained valuable insights into regional development through his studies with Walter Isard, a prominent figure in regional economics worldwide. In fact, Iwan has collaborated with Walter Isard in publishing a textbook on regional economics.

However, what truly impresses me about Iwan is his practical application of regional economic theory in real-world scenarios, particularly within Indonesia. He collaborates with a team from Bank Indonesia and embarks on extensive travels throughout the country, visiting various regions. What sets Iwan apart is his commitment to go beyond relying solely on traditional development parameters, such as numerical data.

In conclusion, Iwan's scientific economic capabilities are truly remarkable. As an economist, he has not only mastered economic theories but also possesses a strong understanding of economic mathematics. Moreover, he effectively applies regional development theories, showcasing his ability to bridge theory and practice. Iwan's profound comprehension of sustainable development allows him to translate it into statistical, realistic, and quantitative terms, further strengthening his expertise. Additionally, his knowledge extends to the field of international finance and monetary economics, where he fluently employs statistical and quantitative analysis to analyze complex economic dynamics. In every aspect, Iwan exemplifies a complete economist, demonstrating expertise across multiple dimensions. He truly embodies the qualities of a paripurna economist.

With this book, we commemorate Iwan's 70th birthday, recognizing his multidimensional nature. It is crucial to understand and appreciate Iwan's diverse contributions. It is through embracing the multidimensional approach in economics that we can foster improvement and progress in the world. As we celebrate Iwan's 70 years, let us not only honor his achievements but also recognize his vision as an

economist that encompasses various dimensions. He serves as an exemplary role model and benchmark for Indonesian economic scholars, not only for the present but also for the future.

As Iwan reaches the age of 70, he must prepare himself to confront the new challenges brought about by climate change, such as rising sea levels, land subsidence, water scarcity, and other emerging issues. These challenges pose a threat to the physical sustainability of Indonesia as an island nation. In light of this reality, I expect Iwan, as a seasoned economist, to guide and inspire young economists to address these growing challenges. Despite his age, Iwan still has many years ahead to follow in the footsteps of his esteemed senior colleagues, including Widjojo Nitisastro, Muhammad Sadli, Ali Wardhana, and Soebroto, who continued to contribute well into their late 80s and 90s. With the same spirit and determination, I believe Iwan is capable of confronting the developmental challenges that lie ahead for Indonesia and the world.

Faculty of Economics and Business,
University of Indonesia, Depok,
Indonesia

Emil Salim

Foreword 2

My Personal and Professional Interaction with Iwan J. Azis

I recently read a review which mentioned "the wonderfully accidental nature of luck when people's lives intersect for a whole swath of unlikely but cherishable reasons". It immediately rang a bell as this quote seems to apply well and captures the essence of my 50-year-long relationship with Iwan J. Azis.

I first met Iwan when he enrolled to take my graduate development economics course at Cornell University in the 1970s. The heart of the course was focused around the newly conceived concept of the Social Accounting Matrix (SAM). Iwan was immediately captivated by this concept which for years became his favourite research methodology. At that time, I was leading a major research and training program with the Indonesian Central Bureau of Statistics (CBS) to teach its staff the SAM methodology which necessitated that I take frequent trips to Jakarta. One day in class, I told my students that I would have to reschedule the next class as I would be travelling to Jakarta. At the end of my lecture, Iwan came to see me and insisted that I see his parents while in Indonesia. I told him that I was planning for a very short visit and therefore had to decline his kind offer. To my great surprise shortly after arriving at my Jakarta hotel, the phone rang and Mrs. Azis, who had come all the way from Surabaya to see me, asked if I would at least have enough time to have tea with her and her husband in the hotel lobby. Of course, I could not refuse.

We had a wonderful conversation in Dutch, and I was greatly impressed by their warmth and erudition. I learned that they had founded and become joint editors of the *Surabaya Post,* at that time the second largest newspaper in Indonesia. They were charming and invited me to tour Indonesia. My strong resistance was no match for their insistence, and they took me to visit Jogjakarta, Bali and Surabaya and opened my eyes to the ancient and beautiful culture of their country. This trip was the start of a deep friendship with them.

Subsequently, there were multiple events and points when our lives intersected. Let me briefly mention some of them. While at Cornell, Iwan had been invited by

one of his co-graduate students to row on a lake. Iwan fell overboard and as he did not know how to swim, Roger Downey S.J. had to save him. This enticed my dear wife Charla to teach him how to swim shortly thereafter on one of our visits to Jakarta and after a few lessons in the hotel pool, she recommended that he should enlist a charming young lady who could finish the task and become his friend. This turned out to be Erina who became his loving and devoted lifetime companion. Other such points of intersection were my arrival in Jakarta exactly on the days (1) both of his children Mirko and Mariko were born; (2) Iwan's father so sadly passed away; (3) the fact that we share the same birthday—February 17; (4) in the 1990s, Iwan decided to move to Ithaca and he and his family stayed in my house until he bought his current house with my help; (5) my supervision of Erina's PhD dissertation under the possible peril of putting myself into a conflict-of-interest situation. In order to avoid the latter, I set high standards and insisted that Erina complete her dissertation when she wanted to give up. I fear that Erina has not yet forgiven me, and it taught me a lesson about the inherent almost unresolvable conflict between friendship and a professional relationship.

Iwan's move to Ithaca and association with Cornell University marked the beginning of our professional association. Around that same time, the team of resident experts that I was leading had successfully helped the Indonesian CBS build one of the very best SAMs in the world and together with some collaborators I wrote a book on *Adjustment and Equity in Indonesia* highlighting how the Indonesian SAM could be used to simulate a more equitable growth process in a period of adjustment and austerity. Together with some of my students, we also constructed a Computable General Equilibrium (CGE) model of the Indonesian economy.

As I remember it, Iwan was immediately enthused by that model and promptly copied it to his computer. We started collaborating and were commissioned by IFPRI and the World Bank to further elaborate the model to assess the impact of the Asian Financial Crisis of 1997 on the Indonesian economy and evaluate the government's policy response which had been largely dictated by the IMF. The damage resulting from the exogenous financial crisis combined with a flawed policy response (i.e. a massive currency depreciation and an enormous rise in the Central Bank interest rate to reduce the outflow of funds) led to a potentially catastrophic 14% fall in GDP and a large increase in poverty. We used the model we completed for IFPRI/World Bank to simulate the impact of various alternative policy packages and concluded that the necessary structural adjustment could have been obtained with much less damage to the economy. I remember vividly how our implied criticism of the IMF standard policy prescription to deal with such crises turned me into pariah in the eyes of their chief economists. Subsequently, Iwan and I presented our findings to the Indonesian Central Bank where they were much better received.

Let me mention one more point of professional intersection among many others. When Walter Isard, the father of regional economics, decided to produce his *magnus opus* on Methods of Regional and Interregional Analysis he invited me and Iwan to be co-editors. My chapter focused on how the SAM methodology lent itself to the analysis of interregional questions and Iwan's chapter focused on CGE modelling.

In conclusion, I cherish my very long friendship and professional association with Iwan. I helped him follow a research track that benefitted his country and many others. I started this preface by mentioning “the wonderfully accidental nature of luck when people’s lives intersect”. Perhaps it was not luck but destiny.

Cornell University, Ithaca, NY, USA Erik Thorbecke

Foreword 3

Iwan Jaya Azis: A True Renaissance Man—and Friend

As we celebrate Iwan's seven decades in the most fitting way with a compilation of papers from his colleagues and former students, the image that comes to mind when I think of my colleague and good friend is a true renaissance man—and friend. He symbolizes the perfect combination of the left side of the brain with his brilliant and curious mind, and the right side of the brain—think beautiful piano music, especially Chopin, without reading notes and his love of the arts—think Van Gogh and the collections in his house. Most of all he was a true friend.

I first met Iwan when I was a PhD student at UC Davis. I visited the Faculty of Economics, University of Indonesia, several times, starting when Pak Dorodjatun was the dean. At the completion of my dissertation, I approached the faculty as to whether I could join as a lecturer and I was welcomed very warmly by Iwan, then the Head of the Development Economics studies in July 1986, and was asked to start teaching the international economics stream shortly thereafter. It was an exciting time to work with Iwan as we were like minded in the pursuit of good teaching and research in economics, upgrading the quality of our lecturers and their research publications. I would like to share three things about the Iwan I know, with whom I have collaborated and built a friendship over nearly four decades.

First his role in *capacity building*, something which is also close to my heart. A few memorable things we did together that I would like to think has had lasting legacy. First was our roles as "dosen terbang" or "flying lecturers" to different universities in Indonesia such as the University Airlangga in Surabaya. We would meet with the faculty and share our thoughts on what are the recent developments in economics and also give lectures. Second was when he headed the Inter University Center (IUC) of Economics at the University of Indonesia around 1987, he asked me to assist him. It was one of the most interesting and rewarding programs funded by the World Bank with the objective of capacity building for economist academics.

The program was exciting and novel in two important ways. First was funding to send potential economists to do post graduate degrees in economics and business. We discussed how to select the candidates and came up with a simple and effective way. We would consider those who have acceptance into a graduate program in the top 40 universities in various countries. As a result, this program sent around 40 students to get their PhDs and master's programs in various universities abroad, and they became the next generation of economists and business studies. One of the most notable economists who came out of this program was Sri Mulyani Indrawati, who of course became one of the bright stars among the faculty, went on to become the Minister of Finance (a post she currently holds) and Managing Director of the World Bank.

However, this process had the shortcoming that the potential lecturers and economists from the regional universities were at a disadvantage. In response to this challenge, we developed another program which was capacity building for regional professors where we held intensive upgrading programs in quantitative methods and other economic disciplines conducted by Indonesian economists as well as renown international economists. The idea was to prepare them for potential studies abroad, and if they did not make it, they would receive a lot of capacity building. We also designed a number of research programs that involved economists from regional universities.

Iwan continues his pursuit of capacity building till today, through teaching and his continued involvement with the faculty even after he went to Cornell University. He has nurtured and supervised many students who went on to excel themselves as scholars and in the last few years, he has devoted a few months in Indonesia to teach courses as well as research through the Bank Indonesia Institute. He was also supportive of the idea of building a network of economists in East Asia and linking them with universities in Indonesia when he was heading the regional integration unit in the Asian Development Bank (ADB), and also more recently when a number of us created the Indonesia Bureau of Economic Research (IBER) modelled after NBER.

Second is of course his *brilliant mind* and the ability to continue to evolve in terms of knowledge, methodology and insights to follow the major challenges and shifts in economic thinking. Iwan is well grounded and strong in his quantitative and modelling capability, but more importantly I believe is his ability to ask the right policy and institutional questions. I have witnessed his evolution from a focus on regional science and modelling methodologies, such as the Analytical Hierarchy Process (AHP) and Computable General Equilibrium (CGE) models, to a much broader economic and developmental approach. The Asian Financial crisis and the Global Financial crisis led to a body of work which spanned the interlinkages between macroeconomics, financial economics, social institutions and spatial inequality. I believe his stint at ADB provided him with a lot of insight into regional integration, spillovers and linkages that are important, and the key policies and institutions that matter. He was also active in giving advice to different governments, including the Government of Indonesia and one thing you can count on is his objective views and talking the "truth" even if we may not like what we hear.

I also witnessed and participated in many international conferences and networks of which Iwan was a part of and provided the shining example of good analytical work combined with policy and institutional messages. For instance, Iwan and I participated in the tripartite Pacific Economic Cooperation Council. From 1991 to 2003 Iwan was responsible for the annual projections for Indonesia in their State of the Region publication, and I was involved with a lot of the international trade work.

Third Iwan *the person and friend*—a warm and welcoming person I first met and a demanding person I worked with on many occasions. He has always been warm and welcoming since I first came to the faculty, and our friendship has grown—seeing each other get married, have children—I still recall Mirko as a baby in the Kertosono house. There will be many occasions when he would play the piano for us—either after a meeting at his house or just when we were meeting up. I always marvelled at how he could play without reading notes, this is legendary among those who know him. He loved art and one of his favourite artists was Van Gogh and you could see many attributes to Van Gogh. His Kertosono house was also filled with wonderful arts and artefacts, a fraction of what you would find in his house in Surabaya. I had the opportunity to visit his mother, the gracious, elegant and well-spoken Ibu Toety at her house in Surabaya on one of our Universitas Airlangga trips—and it was a memorable time.

Yes, Iwan can be very demanding, but demanding for the high quality and outcomes. Iwan was always striving for excellence, not for himself, but for his students, for the faculty and for the economics profession in his sphere. I always admired the way his mind worked and how sharp his comments are—whether in responding to an academic discussion among peers, questions to students presenting their thesis, government officials who are looking for solutions to challenges and crises, and international agencies who have development objectives.

To my dear friend and often partner in crime for the good of economics and economists in Indonesia and the region, Happy 70th Birthday—since 70 is the new 60, we expect many more years of productive output delivered with passion from you.

The World Bank, Washington, DC, USA

Mari Pangestu

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Canberra, Australia — Budy P. Resosudarmo

Chicago, IL, USA

Canberra, Australia — Yuri Mansury

Chicago, IL, USA

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Contributors

Takahiro Akita International University of Japan, Nigata, Japan

Armida Salsiah Alisjahbana Faculty of Economics and Business, Padjadjaran University, Bandung, Indonesia

Paul Brenton Global Unit for Trade and Regional Integration, The World Bank, Washington, DC, USA

Bambang Brodjonegoro Faculty of Economics and Business, University of Indonesia, Jakarta, Indonesia

Javier Perez Burgos Alberto Lleras Camargo School of Public Policy, Universidad de los Andes, Bogotá, Colombia

Vicky Chemutai Global Unit for Trade and Regional Integration, The World Bank, Washington, DC, USA

Kieran P. Donaghy Department of City and Regional Planning, Cornell University, Ithaca, NY, USA

Firman Hidayat Ministry for Maritime Affairs and Investment of the Republic of Indonesia, Jakarta, Indonesia

Hal Hill Arndt-Corden Department of Economics, Australian National University, Canberra, Australia

Atsuyuki Kato Faculty of International Studies, Institute of Human and Social Sciences, Kanazawa University, Kanazawa, Japan

Haider A. Khan Josef Korbel School of International Studies, University of Denver, Denver, CO, USA

Tschangho John Kim Department of Urban and Regional Planning, University of Illinois at Urbana-Champaign, Champaign, IL, USA

Ari Kuncoro Faculty of Economics and Business, University of Indonesia, Jakarta, Indonesia

Yuri Mansury Department of Social Sciences, Illinois Institute of Technology, Chicago, IL, USA

Hee Hwa Min Christie's International Real Estate Group, Tenafly, NJ, USA

Sachiko Miyata Graduate School of Business Administration, Ritsumeikan University, Kyoto, Japan

Mari Pangestu Development Policy and Partnerships, The World Bank, Washington, DC, USA

Donny Pasaribu ACT Government, Canberra, Australia

Arianto A. Patunru Arndt-Corden Department of Economics, Australian National University, Canberra, Australia

Viktor Pirmana Faculty of Economics and Business, Padjadjaran University, Bandung, Indonesia

Nattapong Puttanapong Faculty of Economics, Thammasat University, Bangkok, Thailand

Rasi Tamadhika Fajar Ramadhan Ministry of National Development Planning/ Bappenas of the Republic of Indonesia, Jakarta, Indonesia

Budy P. Resosudarmo Arndt-Corden Department of Economics, Australian National University, Canberra, Australia

Kanit Sangsubhan Eastern Economic Corridor (EEC) Office, Bangkok, Thailand

Christopher Silver Department of Urban and Regional Planning, University of Florida, Gainesville, FL, USA

Willem Thorbecke Research Institute of Economy, Trade and Industry, Tokyo, Japan

Jati Waluyo Bank Indonesia, Jakarta, Indonesia

Gunawan Wicaksono Bank Indonesia, Jakarta, Indonesia

Amalia Adininggar Widyasanti Ministry of National Development Planning/ Bappenas of the Republic of Indonesia, Jakarta, Indonesia

Clifford R. Wymer International Monetary Fund, Washington, DC, USA

Arief Anshory Yusuf Faculty of Economics and Business, Padjadjaran University, Bandung, Indonesia

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Chapter 1
Iwan Jaya Azis: A Person, an Economist, and a Regional Scientist

Budy P. Resosudarmo and Yuri Mansury

Abstract This chapter provides an overview of Iwan Jaya Azis' life and contributions, highlighting his roles as a teacher, an economist, and a regional scientist. Azis began his academic career in economics at the University of Indonesia (UI), joining the faculty immediately after graduation. Later, while studying in the graduate program in Regional Science at Cornell University, he focused on economic inequality among regions in Indonesia. When he returned to UI, Azis attained the position of the chair of the Department of Economics. There, he encouraged the adoption of formal modeling techniques, and his tenure overall was marked by changes in curricula that would align economics education at the University of Indonesia with global standards. Azis instilled a "publish or perish" ethos into the minds of Indonesian economists, initiating a new focus on publication in international journals. Through his work, Azis advanced regional science in Indonesia and made a lasting impact on those he mentored.

1.1 As a Person

Iwan was born on 17 February 1953 to a well-known journalist couple, Abdul Azis and Toety Amisutin Agusdina (or Toety Azis). He was raised in Surabaya, Indonesia, where he also completed his elementary, middle, and high school education. From his formative years, Iwan's talent in academics was evident. Not only did he consistently achieve the highest grades, but he also wrote well. His teachers noted that Iwan's writing assignments were the best among their students.

B. P. Resosudarmo (✉)
Arndt-Corden Department of Economics, Australian National University, Canberra, Australian Capital Territory, Australia
e-mail: budy.resosudarmo@anu.edu.au

Y. Mansury
Department of Social Sciences, Illinois Institute of Technology, Chicago, IL, USA

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The Azis family is well-educated. Not only did Iwan's parents send their children to prestigious schools in Surabaya, but they also understood the importance of nurturing creativity and athletic talent. The family's commitment to fostering diverse talents shaped Iwan's abilities. Even today, Iwan continues to dazzle colleagues and friends with his musical skills as a virtuoso pianist. Many of them have also witnessed how good Iwan is at tennis. His long forehand shots are dangerous.

During high school, Iwan and his brother shared musical sessions at home with some of Surabaya's most talented musicians, including Gombloh, Leo Kristi, and Franky Sahilatua, who later became famed musicians in Indonesia. Although his mother welcomed these young musicians to play music together with her boys, she never allowed the brothers to perform in public. The Indonesian economist community owes a debt of gratitude to Bu Azis for steering Iwan away from a career as a professional musician, thus preserving one of the country's finest economists!

In 1972, Iwan moved to Jakarta to pursue a bachelor's degree in economics at the University of Indonesia (UI). He excelled academically and actively participated in student organizations, showcasing exceptional leadership skills. Iwan's influence as an undergraduate student activist led to his election as chair of the student senate for UI's Faculty of Economics.

Recognizing Iwan's dedication and academic achievements, Professor Emil Salim offered him both a teaching assistantship at the Faculty of Economics and a research fellowship at the prestigious Institute for Economic and Social Research (*Lembaga Penelitian Ekonomi dan Masyarakat*—LPEM) at UI's Faculty of Economics, even before Iwan completed his bachelor's degree. Iwan's dedication and commitment to academia and student life set him apart and opened up valuable opportunities.

Iwan graduated with distinction from UI in 1978, earning a bachelor's degree in economics, and, at the same time, he was awarded the Outstanding Student Award. Under Rustam Didong's guidance, he wrote his thesis on "Foreign Resources and Oil: Roles and their Implications for Indonesia." Addressing a critical challenge faced by his country in the 1970s, the undergraduate thesis examined the significant influx of income from natural resources and its consequential impact on Indonesia's economic structure. Iwan's exceptional thesis and performance led to his immediate recruitment as a faculty member at his alma mater.

In 1979, Iwan was awarded a Ford Foundation scholarship to pursue graduate studies in Regional Science at Cornell University. He earned his MA in January 1982 and his PhD in January 1983. His doctoral committee, chaired by Professor Stanislaw Czamanski, also included as members Professors Walter Isard, Erik Thorbecke, and Henry Wan. Iwan's dissertation, "A Study of Interregional Capital Movements," sought to address Indonesia's persistent regional inequality through a theoretical lens.

After completing his PhD, Iwan returned to UI's Faculty of Economics and assumed leadership of the Development Studies Program (later the Department of Economics). He served as the department's chair from 1984 to 1991. Upon his return to the University of Indonesia, Iwan's reputation as a talented economist grew

rapidly. In the late 1980s, his insights on the Indonesian economy were regularly featured in various newspapers.

Iwan quickly distinguished himself as a lecturer in the Faculty of Economics. His teaching style, insightful economic explanations, and in-depth analysis attracted students to his courses. Many vied for front-row seats, especially his female students. However, Iwan's attention was given to a female student, Erina Ekawati, who always sat at the back with her male friends.

Erina was not only Iwan's student but she also became one of his research assistants. An article in Tempo magazine's *Pokok dan Tokoh* section (22 September 1990 edition) recounted their story. Becoming assistant to Iwan, who was considered the top economist in the country, was an achievement reserved for only the most talented students. At the same time, Iwan was known to be very demanding. His assistants had to work hard and often long hours while producing good work. Iwan and Erina married in September 1990 and have been blessed with two children, Miroslav (Mirko) and Mariko.

An important distinction between Iwan and his colleagues at the Faculty of Economics was that while many aspired to high-level government positions, Iwan steadfastly committed to academia. He was determined to pursue his passion for economics and instilled in his students the importance of excelling as a researcher and publishing impactful academic contributions. Even when presented with opportunities for the top economic posts in Indonesia, Iwan consistently remained dedicated to his academic pursuits. His commitment to research, teaching, and the advancement of economic knowledge solidified his legacy and distinguished him in the Indonesian academic circles.[1]

In 1992, Iwan moved to Ithaca, NY, to become a visiting scholar in the Graduate Field of Regional Science at Cornell University. Erina and their young children joined him, and Ithaca has been their home ever since. After raising the two children, Erina pursued her academic aspirations, earning her PhD in Regional Science from Cornell University in 2004.

By the mid-1990s, Iwan had become a full-time faculty member in the Graduate Field of Regional Science at Cornell University. Despite being appointed a full professor by UI's Faculty of Economics in 1996, Iwan chose to continue his career at Cornell. There, he taught a range of courses, including Public and Spatial Economics for Planners, Planning and Policy Analysis, Macroeconomics and International Trade, Economics of Financial Crisis, Contemporary Development of Southeast Asia, Methods of Regional Science and Planning, and Regional Economic Impact Analysis. From 2005 to 2010, Iwan served as the Director of Graduate Studies for Regional Science.

At Cornell, Iwan continued to wield a substantial influence and served as a mentor for numerous young Indonesian economists, particularly those pursuing PhDs in the United States. In the 1990s, his home in Ithaca became an informal training retreat for his former UI students during summers. These students would

[1] See the Foreword by Emil Salim.

travel for days to be in Ithaca, immersing in extensive discussions about the various aspects of the Indonesian economy. Iwan's guidance significantly influenced their intellectual development and careers, leaving a long-lasting impact on those he mentored.

For Indonesians studying at Cornell in the 1990s, including the authors of this article, Iwan's insights into both the Indonesian and global economies were invaluable. Often, enlightening discussions would start on the tennis court, one of Iwan's favorite sports. He would invite students to play with him a few times a week. Budy recalls the challenging yet rewarding games with Iwan. The chance to discuss the Indonesian economy, coupled with the occasional meal treat, made it a worthwhile experience for this poor student, even when repeatedly defeated by the tennis maestro.

Yuri had the privilege of being Iwan's PhD student. During his time at Cornell, Yuri learned more modeling skills from Iwan than from any other academic advisor. Iwan supervised and co-authored Yuri's first paper published in an economics journal and continued to generously provide advice throughout his career. Iwan's mentorship had a lasting impact, both on Yuri's academic pursuits and on his personal growth.

Iwan held visiting appointments at several institutions, including the Australian National University, Nanyang Technological University, and Gakushuin University. In September 2010, he moved to Manila to become the Head of the Asian Development Bank's Office of Regional Economic Integration (OREI), a position he held until 2014. Subsequently, he returned to Cornell as an adjunct professor at the Dyson School of Applied Economics and Management. Since 2015, Iwan has also been a professor at the Faculty of Economics and Business (previously Faculty of Economics) at the University of Indonesia, where he teaches Research Methods, Regional Economics, Microeconomics, and Macroeconomics.

1.2 As an Economist

After completing his PhD at Cornell, Iwan introduced the Indonesian academic community, notably his peers at UI's Faculty of Economics, to formal modeling approaches in economic analysis. During his tenure as the department's chair from 1984 to 1991, he astounded his colleagues with his extensive use of general equilibrium modeling and optimization techniques—an approach considered revolutionary in Indonesia then. With his natural gift for articulating the predictions of his mathematical models in clear, accessible terms, Iwan paved the way for their eventual acceptance. But at that time, his novel approach ignited discussions and debates among his fellow Indonesian economists, who traditionally relied more on historical methods and verbal reasoning in their analyses. In a marked departure, Iwan employed formal quantitative methods for his insights into the Indonesian economy (Azis 1985, 1989, 1990a, b, 1992a, b).

As the department's chair, Iwan led an initiative to align the economics core curriculum at the University of Indonesia with the standards of top-tier universities worldwide. The program overhaul placed significant emphasis on the application of mathematical economics to policy analyses. The curriculum changes that Iwan introduced had a far-reaching impact, inspiring similar transformations in economics programs throughout the country.

Iwan also shifted the perspective of the Indonesian academic community, particularly the younger scholars, by stressing the importance of publishing research in international peer-reviewed journals. At that time, many of the country's economists were more inclined to contribute opinion pieces for newspapers or consult for the government. Iwan sought to reorient the goals of the country's budding academics, urging them to prioritize research publication over governmental roles. Leading by example, Iwan himself penned numerous peer-reviewed papers, notably on Indonesian regional development (Azis 1989, 1990a, b, 1992a). In doing so, he instilled the "publish or perish" ethos into the next generations of Indonesian economists.

While at the University of Indonesia, Iwan worked tirelessly to promote networks of international scholars for the budding economists in his program as well as at other universities across the country. These networks proved invaluable, expanding their knowledge and exposing them to the latest developments in the field. The connections opened up opportunities for collaboration with prominent international academics, often initiated through short-term research assistantships during their visits to Indonesia. Many young economists benefitted from this experience and continued as graduate students under the guidance of their eminent mentors. Iwan's efforts thus played a significant role in facilitating knowledge exchange, setting the stage for the next generation of Indonesian economists to excel on the global stage.

The drive to cultivate international networks received a significant boost when Iwan successfully secured funding from the World Bank to establish an Inter-University Centre (IUC) in Economics for Indonesia during the late 1980s and early 1990s. The primary goal of this Center was to elevate the standard of economics education throughout Indonesian universities. As part of this initiative, Iwan invited junior lecturers from various universities across the country to participate in economic training and enroll in courses at IUC. The instructions were led by distinguished international economists, including prominent names such as Walter Isard, Erik Thorbecke, Geoffrey Hewings, Leonid Hurwicz, Robert Repetto, Thomas Saaty, and many more.

Iwan's encouragement to collaborate with such renowned experts motivated many junior economists to further their studies after attending IUC. He also mentored and prepared the emerging generation to gain admission to reputable universities worldwide. Among Iwan's notable protégés were Ari Kuncoro, who went on to obtain his PhD from Brown University, Sri Mulyani and Bambang Brodjonegoro, who attended the University of Illinois, and Anton Gunawan, who studied at the University of Chicago. Subsequently, many of them became prominent professors at UI's Faculty of Economics, while others took high-ranking

positions in the Indonesian Ministry of Finance and the National Agency for Development Planning (BAPPENAS).[2]

1.3 As a Regional Scientist

Iwan introduced the Indonesian economist community to various methods of regional science analysis. Notably, he had a significant role in popularizing the use of Input-Output (IO) and Social Accounting Matrix (SAM) data systems for impact analysis at both the national and regional levels. Iwan showed how these methods can be used to gain insights into the intersectoral linkages and interdependencies that give rise to various multiplier effects. He was also instrumental in introducing the framework of Analytical Hierarchy Process (AHP) and Computable General Equilibrium (CGE) models to the Indonesian research community.

The institutionalization of regional science in Indonesia can be attributed to Iwan's involvement in the second Pacific Regional Science Conference Organisation (PRSCO) Summer Institute in Bandung, marking a significant milestone for the field in Indonesia. At the Bandung conference, the idea of founding a regional science association in the country was discussed for the first time. Although the idea took time to materialize due to the relatively small size of the regional science community then, Iwan's work on spatially related topics attracted a new wave of aspiring economists. Inspired by Iwan, this new generation embraced regional science methods in their research to explore diverse fields, including international, fiscal, and environmental economics.

The number of Indonesian economists interested in the spatial aspects of economic development, together with a parallel cohort of engineers and other social scientists, steadily increased. This growing community eventually reached a tipping point, culminating in the formation of the Indonesian Regional Science Association (IRSA) in 1997. Since its inception, the IRSA annual conference has drawn substantial attendance from a multitude of Indonesian institutions, creating a vast network of academics and policymakers dedicated to addressing regional development challenges. This accomplishment stands as a testament to Iwan's role in institutionalizing regional science in Indonesia.

Iwan is a prolific scholar who has made an impact in the international regional science community. As of August 2023, he has contributed to over 40 articles in peer-reviewed journals, including the *Annals of Regional Science*; *ASEAN Economic Bulletin*; *Asian Economic Journal*; *Bulletin of Indonesian Economic Studies*; *European Journal of Operational Research*; *Papers in Regional Science*; *Peace Economics, Peace Science and Public Policy*; and *Planning Theory and Practice*. His insights have also appeared in more than 35 book chapters, as well as numerous policy papers and expert commentaries in the popular media.

[2] Based on interviews with Iwan's former students from the 1980s at UI's Faculty of Economics.

He is the author of eight books, with two written in Indonesian and the rest in English. Notably, in 1998, he collaborated with Professors Walter Isard, Matt Drennan, Ron Miller, Sid Saltzman, and Erik Thorbecke to write *Methods of Interregional and Regional Analysis*. This book covers a variety of numerical methods that defined the field at that time and was conceived primarily as a textbook for graduate students in regional science (Isard et al. 1998). It was well received and has been regularly cited since its publication. *Methods* features a chapter co-authored by Iwan and Professor Isard that presents an introduction to the CGE modeling techniques, an empirical method central to Iwan's academic pursuits.

Iwan's ability to merge ground-level insights with the big picture is on full display in his 2022 work (Azis 2022). The book, *Periphery and Small Ones Matter*, addresses the perennial disparities between the core and peripheral regions in Indonesia, a subject Iwan is deeply passionate about. In *Periphery*, Iwan presents the problem of a dual-dual economic structure, where spatial inequalities coexist with the substantial performance gaps between small and large businesses. He argues that agglomeration economies can promote both growth and equity, but only if the right set of policies are in place to assist cottage industries in lagging regions.

The book employs oral narratives to show the importance of grassroot institutions in enabling small businesses to thrive. Iwan traveled to remote Indonesian regions to immerse himself in the experiences of marginalized indigenous groups. Drawing on personal conversations with small business owners, Iwan concluded that policy interventions are crucial for directing agglomeration forces toward less-developed areas, thereby enhancing the competitiveness of small enterprises. The seamless transition from a macro-perspective, evident by the use of a multiregional input–output (MRIO) model, to the micro-details of qualitative interviews, is vintage Iwan. *Periphery* uses a bottom-up approach to deliver a message for economies around the world that have historically faced the challenges of multiple dualisms.

In 2006, the Instituto Superior de Ciências do Trabalho e da Empresa (ISCTE) in Lisbon, Portugal, recognized Iwan's contributions to regional science. The business school bestowed upon him the title of Distinguished Scholar for his work in financial economics and economic modeling. Iwan's impact indeed transcends borders. He was one of the original founders of the Asian Peace Science Network, established in 2008 to foster cooperation and understanding in the region. In 2022, Cornell University honored him with the Wharton Award, named after the economist Clifton R. Wharton. The award ceremony took place at the Dyson School of Applied Economics and Management, where Iwan was commended "for his contributions to the economic integration of Asia and human capital development in Indonesia."

References

Azis IJ (1985) Interregional input-output analysis of ASEAN-USA and ASEAN-Japan interrelations. In: Sundaram JK (ed) Asean economies: crisis & response. Malaysian Economic Association, Kuala Lumpur

Azis IJ (1989) Key issues in Indonesian regional development. In: Hill H (ed) Unity and diversity: regional economic development in Indonesia since 1970. Oxford University Press, Oxford

Azis IJ (1990a) Analytic hierarchy process in the benefits/cost framework: a post-evaluation of the trans-Sumatera highway project. Eur J Oper Res 48(1):38–48

Azis IJ (1990b) Inpres' role in the reduction of interregional disparity. Asian Econ J 4(2):1–27

Azis IJ (1992a) Econometric model for simulating alternative external trade in Indonesia. In: Ichimura S (ed) Econometric models of Asia-Pacific economies. Springer

Azis IJ (1992b) Interregional allocation of resources: the case of Indonesia. Pap Reg Sci 71(4): 393–404

Azis IJ (2022) Periphery and small ones matter: interplay of policy and social capital. Springer Nature

Isard W, Azis IJ, Drennan MP, Miller RE, Saltzman S, Thorbecke E (1998) Methods of interregional and regional analysis. Ashgate