



2 *the*

A Conversation with Irma Adelman

Irma Adelman,¹ David Zilberman,¹
and Eunice Kim²

¹Department of Agricultural and Resource Economics and ²Master of Development Practice, University of California, Berkeley, California 94720; email: irmaadelman@berkeley.edu, zilber11@berkeley.edu, eunicemikim@berkeley.edu

Annu. Rev. Resour. Econ. 2014. 6:1–16

First published online as a Review in Advance on
June 4, 2014

The *Annual Review of Resource Economics* is
online at resource.annualreviews.org

This article's doi:
[10.1146/annurev-resource-100913-012454](https://doi.org/10.1146/annurev-resource-100913-012454)

Copyright © 2014 by Annual Reviews.
All rights reserved

JEL codes: B31, D58, F63, O1, O19

Keywords

international development, development economics, history of
economic thought, international trade

INTRODUCTION

Irma Adelman was born in Czernowitz, Romania, in March of 1930. Her father was a Jewish businessman with socialist leanings, and although her mother was educated to be a lawyer, she never practiced and thus concentrated her energies on her only daughter, Irma. Despite Irma's Jewish background, she was educated by French Catholic nuns, and her family lived in affluence in her early life. It was not long before her family encountered anti-Semitism and discrimination in the late 1930s, her father foresaw the dark shadow of World War II, and the family immigrated to Palestine in 1939. Irma attended high school in Palestine and also fought in the Israeli war of independence. After the war, she immigrated to the United States, where she enrolled as an undergraduate at the University of California, Berkeley (UC Berkeley), as a business administration major. Soon after her arrival at Berkeley, she met and married her husband, an American physics PhD candidate. They decided to settle in the United States and had one son, Alex.

After her undergraduate studies, Irma enrolled at UC Berkeley as a PhD student in economics. Given her strong quantitative skills, she benefited from training by Robert Dorfman in mathematical models in economics and from courses in econometrics and statistics offered by George Kuznets in the Department of Agricultural Economics. Her classmates in Kuznets's courses included Arnold Zellner, Zvi Griliches, and Yair Mundlak.

After graduating at the top of her class in 1955, Irma faced considerable difficulties in landing a tenure-track academic position, which was typical of the discrimination against professional women at the time. She held various nontenure appointments at UC Berkeley, at Mills College, and at Stanford for several years. During this period, she published her first book (Adelman & Morris 1973), the classic Klein-Goldberger paper (Adelman & Adelman 1959), and the pathbreaking hedonic pricing paper (Adelman & Griliches 1961), as well as many other publications in leading journals. Yet she was still unable to land a tenure-track position in the Bay Area. She and her husband decided to relocate due to her husband's job offer, and thus she moved to Washington, DC, where she obtained a regular associate professorship at John Hopkins University. There she also met Cynthia Taft Morris, who would later become a lifelong friend and collaborator. While in Washington, DC, she became acquainted with agencies such as USAID and the World Bank. In 1966, she moved to Chicago for a position at Northwestern University, where she stayed until 1971. In 1973, she joined the World Bank along with having a professorship at the University of Maryland. From Maryland, in 1979 she returned to UC Berkeley's Department of Agricultural Economics, where she stayed until her early retirement in 1995. She has been a professor emeritus of the Graduate School ever since.

WORKS

The hallmark of Irma's work is a holistic, systematic approach to economic development. She was one of the first to realize that economic analysis, although rigorous, is partial. It may omit crucial elements and thus bias our understanding of development processes. She therefore pioneered general equilibrium methodologies that incorporated multiple markets, institutions, and qualitative elements such as culture. Recognizing the limitations of economic research alone, she has been a lifelong champion of interdisciplinary approaches, borrowing ideas from sociology, psychology, anthropology, and political science. She has realized that some of the traditional econometric estimation methods may constrain the predictive capacity of a wide range of available data, and she therefore applied various methods such as nonparametric factor analysis that had not been considered before in quantifying development processes.

Irma has made both conceptual and policy breakthroughs throughout her career. Early in her career, her research emphasis was more methodological, addressing dynamic and stochastic

processes. Her classic paper, “The Dynamic Properties of the Klein-Goldberger Model” (Adelman & Adelman 1959), resulted from a pioneering simulation that confirmed Ragnar Frisch’s theory of business cycles, in which basically stable economies are driven through cycles by random shocks. She also made another important contribution by developing a creative methodology to compute price indices that emphasizes sampling within categories and accounting for product quality differentials. This approach was applied to address differences in product quality and to estimate automobile prices (Adelman & Griliches 1961). This seminal paper was the first manifestation of the notion of hedonic pricing, which was later popularized by the works of Rosen and Lancaster and which would later become a mainstay of applied economics. In *Society, Politics and Economic Development: A Quantitative Approach*, Cynthia Taft Morris and Irma (Adelman & Morris 1967) championed the use of joint principal-component models to integrate a broad range of both quantitative and qualitative data on the characteristics and properties of development processes to identify the key factors affecting various countries at different levels. This was a pioneering application of principal-component models, quantifying the role of institutions and income distribution in development processes.

Perhaps Irma’s most important methodological contribution was the creation of a pioneering large-scale computable general equilibrium (CGE) model. This modeling approach was the result of understanding the forces that shaped the Korean development process. The final product, *Income Distribution Policy in the Developing Countries: A Case Study of Korea*, coauthored with Sherman Robinson, includes 3,000 endogenous variables that quantified how individual sector behavior (including noncompetitive behavior), the macroeconomy, income distribution, and various neoclassical and structuralist features changed the process of development (Adelman & Robinson 1978). Unlike the Johansen (1982) model that solved for rates of changes of key endogenous variables, the CGE model actually solved for the levels of these endogenous variables over time. The high degree of detail and specifications of the model allowed for sophisticated policy experiments, especially with respect to alternative policies to reduce poverty. The results suggested that absolute poverty was easier to reduce than relative poverty. CGE models have evolved and have been put to wide use over time. Although the features of the Adelman-Robinson model have been streamlined, this classic model is a bedrock for modelers of general equilibrium systems that try to capture the complex interactions within the economy and society.

Irma’s work has left an indelible mark on the thinking of development economists. She realized that, although development economics was emphasizing and quantifying aggregate levels of performance and rates of growth, there was little quantitative knowledge about the impact of income distribution on growth. The leading paradigm among policy makers and development economists alike was growth before distribution. Irma’s work on Korea as well as on other countries has shown that increasing equality and the buildup of human capital among the poor can be a key feature that can lead to economic growth with equity. Irma also realized that one cannot separate economic and political processes and studied their evolution simultaneously. In *Economic Growth and Social Equity in Developing Countries* with Cynthia Taft Morris (1973), Irma confirmed Kuznets’s U-hypothesis that the share of income going to the poor during a development process may decline before it partially returns, if at all. However, she also found that greater political participation resulting from the development process does not necessarily benefit the poor but benefits the middle class at the expense of both the poor and the rich (Adelman & Morris 1973).

Irma’s strength as a scholar derives from her wisdom and capacity to observe development processes on the ground. Much of her analytical and generalized insight originated from her work as a practitioner. In her 1963, she was sent by USAID to Vietnam to design an income expenditure survey. She observed that the Vietnamese population was not committed to the war against the North and realized that “with existing tenurial conditions, the rural population had a large positive

incentive to keep a low level of military activity going. Due to the war, most of the landlords had left the rural areas and rents had not been collected for as much as three years. At existing rents, rural pacification would mean an indebtedness of about 1.5 years output!” (Szenberg & Ramrattan 2004, p. 19). This observation led her to recommend an important policy suggestion: a US-supported land reform policy to buy land from the owners at market prices and to redistribute it to previous tenants. This policy would help to secure the loyalty of the peasant class and would therefore help to hasten the end of the Vietnam War. Irma advocated this position to no avail. However, this policy recommendation is indicative of Irma’s keen observations.

Irma’s major policy contribution was her work in Korea, where she wrote a proposal for institutional reform and for a change in priorities. Among her recommendations were a shift toward export-led growth, a reduction of tariffs, and the doubling of interest rates to reduce inflation. This policy was incorporated into Korea’s Second Five-Year Plan and became an essential element of Korea’s upward economic growth swing. In 1972, Irma’s contribution was recognized by a presidential decoration, the Order of the Bronze Tower, from President Park. The citation reads:

With deep interest in the wellbeing of the Korean people, Mrs. Irma Adelman, the professor at Northwestern University, has devoted her efforts with superb competence to the economic development of the Republic of Korea and thereby greatly contributed towards attaining the goals of economic self-sufficiency pursued by the Government of the Republic of Korea. Her valuable donation and service has gained for her the appreciation and admiration of the Korean people.

Irma’s work on growth and distribution led her to conclude that development policy should not pursue economic growth per se but should rather pursue “the creation of the social and material conditions for the realization of human potential by all.” She was an early advocate of the idea that development should not be growth alone but should also include poverty reduction (Adelman 1974, 1975). Although this was a minority opinion in her day, it has become mainstream thinking over the years. Irma’s work as a consultant to the World Bank was crucial in making this shift in priority; as such, her words found the ear of Robert McNamara, who signaled this shift in the World Bank’s lending policy toward an emphasis on poverty alleviation in his speech at the UNCTAD meeting in Chile in 1972 (Szenberg & Ramrattan 2004, p. 20).

We had the privilege to speak with Irma at her home recently. Excerpts of these fascinating conversations are presented below.

CONVERSATION WITH IRMA ADELMAN

David Zilberman: How did your background prepare you for your academic career?

Irma Adelman: My father believed that the only enduring legacy one can give one’s children is education. And as he said then, everything material can be taken away from you by the bellow of a dictator, but what’s in your head cannot. That’s enduring.

Zilberman: So you grew up in Romania, you moved to Israel. . . . How has your personal life affected your education and prepared you for where you are?

Adelman: When I was about 9 years old, the Russians had just annexed part of Romania (Moldova), and the Romanians were rioting, blaming the annexation on the Jews. Our house was right across the street from the police station where they brought Jews that they had gathered from the city in order to shoot them. Right across the street from our house was a bodega [inn], and the proprietor and his wife were childless. They sent the boy who ran errands to our house for them to

say, “Give me your daughter; I will adopt her and bring her up.” My parents were terrified, so they did just that. At the inn, I was given a cross, which they hung on my neck. Later on, the father of a school friend of mine who was a major general in the Romanian army helped us to find shelter from the police until we could move from a provincial city to the capital, Bucharest. Once in Bucharest, my father, who was a Zionist, wanted to go to Palestine, which required a visa from the British. My father had been preparing for that eventuality for years, by depositing money in Lloyds Bank of London, so he managed to get a capitalist visa because of these deposits. However, that path wasn’t simple; we had to pay a ransom to Turkish officials in order to pass through the Black Sea and reach Istanbul, from where we took a railroad and then a car to get into Palestine.

Zilberman: So, in Palestine, where were you, and what did you do? What type of education did you get?

Adelman: We were in Tel Aviv, because that was the commercial center of the country, and I went to a school, a public school, called Gymnasium Balfour. At school, they were preparing us for an Arab-Israeli war, so they looked at me and realized I was physically a mess—I was really not coordinated—so that I would be more of a liability to a fighting unit than an asset. So they decided that I should learn Morse code where I could, using my brain, to help transmit vital information from one mountain range to another so that the ground troops would have the information they needed in order to plan their defense and attack. The learning process involved copying pages and pages of information into a notebook in the Morse code, and then using the copybook Morse code to transmit the information via telegraph.

Zilberman: So when did you graduate from high school?

Adelman: I graduated high school in 1947, just before the British left Palestine, and then went to Jerusalem to study at the Hebrew University. I wanted to study social sciences; there was no such major. So I chose French literature (a love of mine) as a major, with social sciences as a minor. This gave me an eclectic intellectual background.

Zilberman: What else do you remember about growing up in Israel?

Adelman: My uncle and family in Romania wanted to flee to Palestine after the war, and they, with 700 other Jews, went on a boat called the Struma, so I went to the Wailing Wall in Jerusalem and put a note in the appropriate crack where God was supposed to read all the petitions to him praying for their safety. Anyhow, as you know, the Struma and everybody on it perished; at that point, I became an agnostic. The way I reasoned [was that] there was no question that God got my prayer, because it was in the proper part of the Wall. If he didn’t react, he was either an SOB who didn’t care or he was impotent. In either case, why should I believe in him and worship him? And I knew that I didn’t have a proof of either which of the two possibilities it was, so I didn’t become an atheist—because it’s still possible that God exists—but rather I became an agnostic.

Zilberman: So then you moved from the Hebrew University to the United States. So did you get a BA in Israel?

Adelman: Well, there’s a story in that. All the Israelis who had been enrolled in the Hebrew University when the conflict broke out were given the equivalent of 2 years of university credit when the armistice was signed, but they didn’t give me a degree. I got my degree at Berkeley, but I used this credit to start as a junior rather than a freshman. So anyhow, I wanted to graduate as soon as I could possibly manage. So what I did [was,] I had this certificate in Hebrew, and who at Berkeley could read Hebrew at the time? When I came to Berkeley, I was asked by an

administrator, “What’s your major?” I said, “Social Sciences.” She turned to me and said, “Make up your mind. Is it Sociology or Economics?” I decided at the time that Economics would be more useful, so I said “Economics.” So I chose the Economics major, with Public Administration as a minor. I finished my undergraduate years at Berkeley in a year and a half and did well.

Zilberman: When did you go to graduate school?

Adelman: Well, I was very insecure, and I didn’t believe that I could make it to the PhD. So I decided to take a Masters. For the Masters, I genuinely studied and took exams, etc. And when I got my Masters, that’s when I had enough courage to enroll for a PhD at Berkeley.

Zilberman: What was your dissertation?

Adelman: My dissertation was “The Monetary Theory of Leon Walras.” There was not a lot of expertise on this subject at Berkeley at the time, so I relied mostly on the literature. I had very good mathematical training from Israel, and I could read and think. So I managed. Don Patinkin was a major influence on me through his writings. He was an interpreter of Keynes, and I was anti-Hicks and pro-Patinkin.

Zilberman: Where did you meet your husband?

Adelman: In Berkeley, a couple of months after I arrived. We met at the Hillel center, where he saw this interesting young girl (me) who was standing kind of aloof, and decided he would approach me. So when there was a break in his ping-pong playing, he came to me and introduced himself, and we started talking. I found out later that he went home to his mother, with whom he was living, and said, “Mother, I’ve met the girl that I’m going to marry.” And she said, “Is she Jewish?” And he said, “Not only is she Jewish, she’s from Israel.” So his mother breathed a sigh of relief and was ready to give her approval. And, well, he decided that he didn’t want any competition for me to develop, so he took me out every Saturday, and we would go to this spot on Grizzly Peak Boulevard, which has a view, and then we’d proceed to neck. I thought, “Jesus, Americans are funny. They take you for a view, and then you close your eyes and don’t see anything.” So that was our courtship until Valentine’s Day.

Zilberman: Did you take classes in Ag Econ at the time?

Adelman: Yes, I took classes from Kuznets with Zellner, Griliches, and Mundlak. Griliches then went to Chicago. Later, I also collaborated with Griliches. When I was at Stanford, I wrote a paper on the construction of index numbers. Houthakker liked that idea, but I didn’t have an empirical example, so Griliches contacted me and said, “Look, I have an empirical example of the qualitative attributes in automobiles with an assessment from AAA. Why don’t we publish a joint paper, and I will provide the example, and you provide the theory.” So that’s how we wrote the paper on the construction of index numbers [Adelman & Griliches 1961]. This paper was 20 years ahead of its time.

Zilberman: How did you move to Stanford?

Adelman: Well, it’s an interesting story. You know Andreas Papandreou was Chair at Berkeley, and the tradition in Berkeley was that “we don’t hire them unless they prove themselves elsewhere.” So, you know, he sent me to Stanford so that I could prove myself so that I could get rehired by my alma mater, Berkeley. At Stanford, I was the first woman to be hired at academic rank. There were the Physical Education instructors, some of whom were women. But there was no woman of academic rank. So anyhow, I stayed at Stanford for two years as an assistant professor.

Zilberman: And then you moved to Johns Hopkins?

Adelman: The reason I moved to Johns Hopkins is because one of Frank's colleagues came to me and said, "Look, I want you to know that Frank is stagnating where he is, and I think you should move." So Frank got a job at the Institute of Defense Analysis in Washington, and I moved to Johns Hopkins, and that's how I made my way to the East Coast.

Zilberman: How did you enter economic development?

Adelman: Economic development didn't exist as a discipline at the time. The thing closest to economic development was international trade. I, therefore, studied international trade with an emphasis on what's happening to the welfare and income of the poor, and I was always interested in benefiting the poor, probably because of my guilt complex at having survived the Holocaust.

Zilberman: Now let's move to your work in development. You did a lot in Korea; how did you arrive there?

Adelman: My colleague from Stanford, Hollis Chenery, was asked to be the director of the research division of USAID. This was just at the same time that we moved from Berkeley to Washington, DC, and I started teaching at Hopkins. Hollis was kind of appalled at the low level of economic research in his division and asked me to become a consultant in his division and look around for whatever material I thought there was at USAID that could support a research program. At the time, the South Korean unit of USAID turned to HQ and asked them to send out somebody to Seoul to advise South Koreans on development strategy, and Hollis sent me.

Zilberman: How did you prepare to go? Did you read a briefing?

Adelman: No, not at all. Tibor Scitovsky, who was my colleague at Stanford, told me that he never briefed himself [on] a country before going there because he wants to be able to look at the situation with new, fresh eyes. At the time, South Korea was considered as the hellhole of foreign assistance and as a bottomless pit for money and assistance. I was totally ignorant of this, and when I got there, what I saw was a population which was very highly motivated—walking fast on the street, no stooping, you know—and I also knew that, like in Judaism, education had the highest value. So, for example, you know, in Judaism, if you are a rich merchant, your priority for a son-in-law is a poor but educated man. Same thing was true in South Korea. And so I felt very much at home in terms of the philosophy of social organization. Also, like in Judaism, women don't matter.

Zilberman: Did they treat you as a World Bank expert or a woman?

Adelman: They treated me as an expert.

Zilberman: Why?

Adelman: The reason was that a former colleague from HQ at USAID, David Cole, had briefed them and said, "She speaks softly, but what she says carries a big wallop." So the immediate morning after I arrived, I met the Deputy Prime Minister of South Korea. The Deputy Prime Minister had previously been a journalist and knew nothing about economics. My first question to him was, "Sir, what are your ambitions for South Korea?" And he didn't expect that but was in a rocking chair, and he rocked back and forth and was quiet for about 20 seconds, and then he said, "I see South Korea like a boat that is being buffeted by the waves of the sea. What I want is a stable boat." And I fell in with this metaphor and said, "Sir, if you have a choice between the

size of the boat and the stability of the boat, which would you opt for?” And again he rocked back and forth, was quiet for a few seconds, closed his eyes, and said, “I want a stable boat.” So I had my orders.

Zilberman: What was the first recommendation, and did they follow it?

Adelman: I realized that the economic planning bureau was reporting to the Minister of Finance rather than directly to the Prime Minister. I thought, “This is not going to work,” because the finance minister, when faced with a choice between the short run and the longer run, will always opt for the short run. It was necessary for the planning bureau to report directly to the Deputy Prime Minister so that the long run has a chance of being considered and traded off against the short run. I made this recommendation and never expected that they would follow it, but within 3 weeks after I returned to the US, I got a cable saying, “We followed your recommendation; now come back and advise us on economic policy.” So that’s how, you know, my involvement with development was sparked.

Zilberman: What were some of the other things that you recommended, and why?

Adelman: There is one further item—when I came back to Seoul, I did not want the South Koreans to think that I represent American views and desires for their economic development. So I said to the head of the planning bureau: I do not want to report to USAID. I want to report directly to you, and I want you to know that you have the authority to hire me or fire me at your will. And it’s only under those conditions that I will accept the position of advisor to the Bureau of Economic Development. They were surprised, but they agreed. It was the first foreign aid project to be taken over from the US by the Koreans.

Zilberman: So what were your first recommendations?

Adelman: Well, the problem was that, in the partition of the Koreas, North Korea was left with all the natural resources, including level, arable land, and the South consisted of roadways, which were at the bottom of steep, terraced mountains that supported subsistence farming. The conventional wisdom of economic development was to start with agricultural development, but that was clearly not an option, and to start with import substitution again was no option in South Korea, because of the degree of poverty and small size of South Korea. My observation was that the Korean people were highly motivated, and for the immediate future I recommended a development strategy that would emphasize human resource-based development and export-oriented development, which was highly unusual at the time.

Zilberman: Now wasn’t Japan following the same route?

Adelman: Japan had followed the same route. However, you know, relations between South Korea and Japan were strained since imperial times, and by then Japan was considered a developed country already. Taiwan started pursuing a similar policy around the same time as Japan, but Taiwan did have large agricultural plains, so they had the possibility of pursuing an agriculture strategy first, and by 1973 they were at a turning point from an agricultural strategy to human resource development industrialization. They hadn’t quite started it yet but were on the verge of starting. Singapore, however, had no land, so agricultural development was not an option, but they had received a large influx of human resources from when they split off from Malaysia. Since they were a small city-state, they actually emphasized foreign trade and industrialization.

Zilberman: What happened next in Korea? Did they get capital from the US? Did you recommend that the US provide support?

Adelman: I learned from observation that their capital-output ratio was extremely low, so low that I couldn't even believe it. Especially after the head of the planning commission took me for a walk in Seoul—it turned out that what they were using hibachis to cook and heat the houses—so I told him that this was a very auspicious environment for a human resource export-oriented development strategy and they needed as much aid from the US. Thus, I recommended that they ask USAID to provide support for that strategy.

Zilberman: What did they start producing first?

Adelman: I looked for the least capital-intensive and most human resource-intensive sectors, and they had an old input-output table. I looked at the category which was the most labor intensive and least capital intensive, and I found that toys and wigs fell in that category. So I remember recommending to the Deputy Prime Minister to emphasize these sectors, and he looked at me and smiled sweetly and said, "It is only because you are a woman that you will think of toys and wigs as being a possible. . . ." Anyhow, again as part of my recommendation, I wanted them to form an advisory group on industrialization policy and development policy, which would include the ministers of labor, finance, and trade to discuss my recommendations and go from there. That became the basis on which Korea's first 5-year development plan was formulated.

Zilberman: How successful was the plan?

Adelman: It was felt after 3 years that they had accomplished the goals of the Five-Year Plan and it was now time to turn to a subsequent stage from labor intensive to skill intensive. And again, they agreed, and we proceeded accordingly. Also, the governmental structure left over from the previous dictator was highly corrupt. And then President Park—who was very much anticorruption—so his response was first to throw all capitalist owners of enterprises in jail and give them the condition for getting out of jail that they would commit themselves to managing their enterprises in the interest of the Korean people rather than in the interest of their own profits. And that if he found them not acting in the spirit, he would throw them back in jail. So obviously all the Korean enterprise owners agreed to this condition, and they actually kept it. They pursued a strategy that would benefit the GDP of the country, and not only their own profit.

Zilberman: How did the Park regime actually work?

Adelman: Let me give you an example. The Korean exchange rate was floating, and it wasn't clear to me what principles Korea was pursuing to determine the exchange rate. So I turned to the then-Minister of Finance, and I said, "Sir, what were the policy considerations in setting the exchange rate?" He was puzzled by this question and said, "one moment, please," and called in the head of the exchange rate division and relayed to him the question I had just posed. The head of that division again was puzzled by the question and said, "one moment, please," and called in his chief advisor and asked him the same question. And it was only he who actually explained to me what principles they were pursuing. What this illustrates is that President Park was pursuing a policy of anticorruption by rotating the heads of divisions because his theory was that it would take a certain amount of time to develop the kind of relationships that would enable corruption. What Park wanted to avoid was officials who would get kickbacks and hinder the development plan. Actually, I never met President Park directly during the implementation of the plans, but after it was highly successful, that's when I received the Order of the Bronze Tower, which was the highest nonmilitary medal which could be given to a foreigner.

Another thing on Korea that was unique was the structure of the firm. They were conglomerates, chaebols, and that was one of the strengths of the original development, because firms could finance investment internally without having to borrow from the banking system.

Zilberman: What you think about the difference between Korea and the other Asian tigers?

Adelman: They were at different stages of the same process. By the 1970s, Japan had essentially completed the process. Taiwan had started along the same path that I was recommending for South Korea but had not gone very far by the 1970s; Taiwan had agricultural potential, which South Korea did not have because of its topography, and that enabled it [Taiwan] to start with agricultural development. Singapore was very much like South Korea—no agricultural potential and a very highly educated and highly motivated set of human resources—and Singapore relied on its exports. All three followed similar strategies, adjusting for their differences.

Zilberman: How do you feel about China and prospects for India?

Adelman: China is very much following the South Korean development path. When Mao died and his wife was jailed, they invited me, together with Larry Westphal, to give a set of lectures on the South Korea development process [that] were taped and distributed to all provincial planning agencies in the country. It is my opinion that they were trying to follow the South Korean path of first labor-intensive, then human capital-intensive, then the last stage being innovation-based development.

Zilberman: Okay, so what are the lessons from here? What did you learn as an economist from this experience?

Adelman: To trust your common sense and make sure that the goals you are pursuing are consistent with the goals of those who implement the strategies you recommend. Basic incentive compatibility.

Zilberman: When you look now at companies like Hyundai, Kia, and Samsung, can you trace the movement from toys and wigs to cars and electronics?

Adelman: Well, slowly they moved to energy-intensive products and white goods. Initially, they produced goods which were of very different technologies with licenses from very different countries. So, for example, they had a license for small fans from Germany and a license for producing large ships from Japan. This was after the normalization of relationships with Japan, and the Japanese never expected that the South Koreans would develop the ship industry to such an extent that they would become competitors, but Korea had an equally educated but cheaper labor force, and this was a labor-intensive industry.

Zilberman: Did you see the [Koreans] start developing their own R&D?

Adelman: Oh yes, and what they did was very interesting. Companies financed their own R&D. The profits of the fan export division would support R&D so they didn't have to go to the bank or the government. Also, the banking system and the export licensing system were organized to support development rather than profits for the bank or bribes.

There was a man with a telephone in the Ministry of Finance who was observing the export performance of each firm, and if their export performance [didn't] meet their quota, he would lift the receiver and call whoever was in charge and say, "Hey, what's the matter? If you don't shape up next month, you're out of finance." So, you know, there were a lot of mechanisms for internal oversight in planning, all of which had the same aim. They were also concerned about egalitarian

development. Initially, all the rich people had been allies of the Japanese, so expropriating their capital was a popular thing to do, so that was in part the initial source of finance.

Zilberman: Did you recommend this?

Adelman: No. By the time I arrived, all the previously rich people had been expropriated. There were no rich people in South Korea; the entire country was poor; so there was no conflict. The previously rich people might have possessed human capital, but not money. So the government used both the resources that it expropriated as well as foreign aid to rebuild the country, and then they allocated these resources to export-oriented industry while trying to maintain equity. There was a tradition of lifetime employment in a firm, and you didn't change firms, which was considered, in effect, social treason. So if your father worked in an energy firm, you also worked in the same firm, and one could not be paid more than your father because that was socially unacceptable. So what this meant is that the growth in wages was slow, and development was egalitarian.

Zilberman: But what happened to the profits? What about the owners of these companies?

Adelman: President Park did not trust the former industrialists, so he appointed his former generals to be the heads of each company. He said to the generals, "I don't care that you don't know how to manufacture shoes; you have a hierarchy under you who knows how to manufacture shoes. What I want you to do is make sure that they work in such a way that they do not enrich you or themselves at the expense of the country." So basically the money belonged to the company, but not its workers. The generals got high salaries, but they didn't have real ownership. In the early stage, it was almost socialist growth within a global, market-oriented system. The stock market and large-scale public ownership developed much later.

Zilberman: One of your main areas of work was related to basic methodologies: the use of a social accounting matrix and the use of CGE. What was your contribution to the use of a social accounting matrix?

Adelman: The first conceptual developer of a social accounting matrix was Karl Fox, a student of George Kuznets. What distinguishes a social accounting matrix from the usual input-output table is that it has sectors; it also has classes of individuals—the people that produce and the people that consume—and how they interact. When the first Korean development plan was formulated, [it] was formulated using a detailed input-output table. At the time, the only computer that could invert the matrix was in Japan, and the Koreans did not want to use a Japanese machine for a Korean development plan. So we did it the old-fashioned way using an abacus operating successively until you have reached 1 second in the diagonals and zeros everywhere else. It took a week of constant abacus use until the input-output matrix was inverted so it could be applied to the planning of economic development. And guess what? I made them do it twice to ensure accuracy. This was in 1958.

Zilberman: What do you get with a social accounting matrix that you can't get from an input-output model?

Adelman: Distribution among classes.

Zilberman: Okay, now let's go to CGE. How did you come to develop it?

Adelman: I always had a focus on what happens to the poor, so this was kind of in my blood, and I needed a model that combined industry and people. I even had it in my dissertation when I studied more conceptually how you can solve Walrassian systems.

I remember, you know, the real question was whether one could solve CGE. And I remember Sherman Robinson expressing doubts as to whether it could be solved, and I turned to him and said, “Sherman, prices are solved by economics in reality, and if the model doesn’t solve for them, then it just happens to be a poor representation of the real world. The test of the methodology is whether it solves or doesn’t solve.”

Zilberman: How did you get to know Sherman Robinson, your collaborator on CGE?

Adelman: Sherman was writing his dissertation at Harvard on labor-intensive development strategies, and he asked me for data on Korea’s Second Five-Year Plan. I remember taking a stack of computer cards, something that doesn’t exist now, and a printout, which I sent Sherman for him to use as he wished, only asking him to acknowledge me as the source of the data.

Zilberman: This led to the paper on CGE [Adelman & Robinson 1988]?

Adelman: I always knew that, as a woman, I wouldn’t be taken seriously as an economist unless I demonstrated that I had both straight and narrow technical mastery. So I started to show how to convert a macro-static model into a dynamic model. I developed the first CGE for its own sake as well as to show that I could. I figured out that to be accepted as a woman, you need to solve a difficult problem for men.

Helen Hughes was the only woman who was a head of a division in the State Department. And I was a consultant for that division, and I asked her, “Helen, how did you become head of a division?” And she smiled sweetly and said, “We just have to be a little bit better than the competition.” So I learned from her.

And my work with Sherman on CGEs was the basis of the citation for the Nobel Prize of Gérard Debreu because the Nobel Prize is supposed to be given not for purely theoretical work but for work which has an impact on the economy and society. Gérard’s work was purely theoretical, so to show that it had applications to the real world, the Nobel Committee cited our CGE work.

Zilberman: What inspired you to develop your modeling framework for assessing index numbers, a framework that inspired hedonic pricing models?

Adelman: Ken Arrow invited me to present a paper on price indices at the Econometric Society meetings. From my experience in Israel, I knew that politicians manipulate price indices for their own needs, for example, to reduce cost-of-living adjustments. I realized that price indices could be manipulated either by ignoring product quality differences or by giving arbitrary weight to goods within product categories. I introduced a method that emphasized correct sampling within product categories and rigorous estimation of product quality premium, and we used data Griliches obtained to apply [them to] automobile prices.

Zilberman: Let’s ask some questions that are more personal. So you were one of the first women in a prominent position in economics. Can you say or assess the progress women have made in the profession and how much more they need to make?

Adelman: Alice Rivlin was the first prominent woman in economics in the US because she was Chair of the Council of Economic Advisers. I was probably the second, working mostly in academia. Obviously, Joan Robinson was earlier. She was very different from both of us. At one point, she was advising North Korea, whereas I was advising South Korea. My husband joked the battle between the North and South was a battle between two women. He

had a great sense of humor, and in fact in [his] book, he wrote a haiku poem about me and development:

The fabric of society / I say in all sobriety / has a pattern and a texture and design / the warp and the social tapestry / the weave of the nation's polity are intertwined / when threads one tries to separate / to characterize and differentiate / the strands become entangled in a froth / this intersociety napery / is made into a drapery of pure untrammelled integrated cloth

Zilberman: So you, Joan Robinson, and Alice Rivlin and then?

Adelman: Nothing happened next for a good many years, and then affirmative action started. And universities, as usual, tried to comply with affirmative action in the cheapest way possible, which means that they hired assistant professors or lecturers rather than hiring associate professors or full professors. But over time, I feel that affirmative action started to work.

Zilberman: Do you see the difference in perspective between men and women economists? Or is economics gender blind?

Adelman: Women are more concerned with social equality and economic equality than men because women have traditionally been discriminated against; they, in their bones, know the meaning and mechanisms of discrimination.

Zilberman: If I look at what you did, you did a lot of multidisciplinary work when it was not cool, and you expanded the range of issues and techniques used in economics, relying on sociology and psychology.

Adelman: Frank used to say about me that I looked at the world the way it is, and not the way it was modeled. So I was influenced by psychologists because they address the same sort of problem on the individual level that we have, while sociologists address similar issues on the societal level, of course with a different lens. But both disciplines have statistical techniques that are very useful.

Zilberman: Do you see people continue . . . Is there any continuation of these types of work today? Could you mention some names?

Adelman: Sure. I think that Thomas Sargent and Hal Varian followed a similar technique as well as Bronwyn Hall in her work on the economics of innovation and technological change.

Zilberman: What do you think about how development economics is evolving today?

Adelman: Basically, it is confused.

Zilberman: In what way?

Adelman: In the way that economics in general is confused. Basically, economics is kind of Larry Summers versus Paul Krugman, and development economics is split between the top down and bottom up, with the disappearing middle.

Zilberman: How can this be resolved? If you could make a change, what would you do?

Adelman: I would like to see a continuation of the work that is reality based—instead of more emphasis on basic financial considerations and how the structure of firms and industry is changing in developed countries. You see, on the one hand, you have General Electric that is more like a chaebol-type structure. On the other hand, you have Ford that is a single-product structure, which makes Ford vulnerable. I think that the US can benefit much more from diversifying within firms.

Zilberman: What do you think about the financial crisis?

Adelman: Of course, it is the result of short-sighted financial management and bad incentives, but it is also part of a larger crisis of oil and politics. You will be surprised to find that it very much depends on politics in two areas of the world, the Korean peninsula and the Middle East, and I think we have the potential for a major economic and political crisis.

Zilberman: In what way? How do you interpret the events of North Korea?

Adelman: With North Korea, they're not demanding money; they're demanding respect. Not superficial respect, but genuine respect. So electing them to some council won't do it. What will work is genuine consulting and listening to what they have to say.

Zilberman: You think that North Korea would like to see unification? Or would they like to be an independent country but be incorporated in the world?

Adelman: From an economic point of view, there have been attempts to unify the two economies, but right now it is being put on hold by the North Koreans; they want to be integrated into the world and still find a way to be politically separate. The Middle East also is important because of oil, and as long as the rest of the world has a fuel-run economy, they're going to be extremely important. Egypt, Iran, Israel, Palestine, all of these, are potential—I won't say trouble spots—but rather beginnings of international conflagration, and if something big happens, all bets are off. Now what Obama is doing now, developing an independent energy economy, is the right way to go both for the US and the world at large, because it lessens the pressure for fuels in the rest of the world. You cannot do economics without understanding politics.

Zilberman: Now, you were at several universities, starting in Berkeley, then moving to Stanford, Johns Hopkins, Northwestern, Maryland, and finally returning to Berkeley. What were the differences?

Adelman: Stanford was completely segregated until they hired me. However, the Economics department was profeminist, and in many ways because of the individuals there. Ken Arrow was definitely a feminist because his wife had suffered from discrimination, as was Hank Houthakker. Hollis Chenery was a closet feminist. And the reason was because he had a daughter who was a close friend of Joan Baez, and she was very strongly feminist, and she kept hammering on her father for not being sufficiently receptive to the feminist message and cause.

Zilberman: So who hired you at Stanford?

Adelman: I believe that Mo Abramovitch was Chairman when I was hired. And his wife again was a very prominent artist, and she also was suffering from discrimination in the sense that she wasn't taken seriously in the arts, so basically the profeminist attitude of the Stanford department was all motivated by relationships to the women they cared about who were suffering from antifeminist discrimination.

Zilberman: So who did you work with at Hopkins?

Adelman: At Hopkins, I worked with George Dalton, who was a student of Karl Polanyi's. As you know, Karl Polanyi was definitely an interdisciplinary man who was both a historian and an economist who was committed to the view that society is made up of, as Frank says, out of an integrated cloth. The Chair at Hopkins, Karl Krist, was wonderful. However, after two or three years I didn't get a raise, and he took me aside, and I sort of indicated that if I don't get

a raise, I'm ready to leave—which I was. He said, "Look, you've got to demonstrate your power in the marketplace by getting an offer from another university." And I said, "Karl, that is dangerous if you want to keep me, because the offer I get I might just happen to like." And he smiled sweetly and said, "Well, these are the rules." Anyhow, I got an offer from Northwestern that I really liked because they had an interdisciplinary program with a strong economic presence.

Zilberman: What happened at Northwestern?

Adelman: I met Cynthia Taft Morris there, and she and I hit it off, not only in terms of our social commitment but also in terms of our personal attributes. We really liked each other. And we had husbands who were supportive of our careers—as you can see by our dedication in our book—which, by the way, we wanted to dedicate the book both to our mothers and to our husbands, but we didn't know how. Frank came up with the suggestion of, "To our mothers who bore us and our husbands who don't."

Zilberman: So how long were you at Northwestern?

Adelman: I was there for 6 years, and I would have liked to be there essentially forever. But Frank was really not finding a good setup in the Chicago area, so it was time for another move, to DC, where I taught at Maryland for 3 years. What I remember from this period is the commute because I was working with Sherman and with the World Bank.

Zilberman: And then you moved back to Berkeley.

Adelman: I moved back to Berkeley to a large extent because that was my first home in the US. I had been here when discrimination against women was rampant. So in negotiating for a position on the way back, I was very tough because I felt that the rank that they hired me at would be fixed forever based on my previous experience. Little did I know that by law they were now required to review periodically every individual and essentially justify either why the individual had gotten a raise or why they hadn't.

Zilberman: How do you describe your experience at Berkeley?

Adelman: I loved the students. The students were really the best of the best. But I didn't really like the rivalry between the Economics department and the Ag Econ department. I also learned a lot while I was on the budget committee, which evaluated faculty across campus constantly. I found that basically Economics and Ag Economics were treated the same, and the only difference is that they had different administrative units and Economics had to compete in a larger universe. You know, the Economics department had a history of [a] "business cycle." They would hire good assistant professors who, by the time they were ready to be promoted to full professors, were raided away by the Ivy League, and then [the department] obviously went into a slump, only to start again. This continues to this day.

Zilberman: Do you think that there should be an integrated Economics department?

Adelman: The problem with integrating agricultural and even development economics into one is that they are subdisciplines, which means that they will always be subordinate to general economics. Having competing economic units will allow more excellence because of competition of ideas and competition of angles.

Zilberman: What would be your advice to a young woman in academia?

Adelman: Manage your life very carefully. Look for balance. Try to find an environment that is flexible. Flexibility of hours is a major issue in women managing both their career and family, but luckily academia is quite flexible.

Zilberman: Thank you, Irma, for your contributions and this fascinating conversation.

DISCLOSURE STATEMENT

The authors are not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

ACKNOWLEDGMENT

Special thanks to Sofia Villas-Boas for her assistance.

LITERATURE CITED

- Adelman I. 1974. On the state of development economics. *J. Dev. Econ.* 1(1):3–5
- Adelman I. 1975. Development economics—a reassessment of goals. *Am. Econ. Rev.* 65(2):302–9
- Adelman I, Adelman FL. 1959. The dynamic properties of the Klein-Goldberger model. *Econometrica* 596–625
- Adelman I, Griliches Z. 1961. On an index of quality change. *J. Am. Stat. Assoc.* 56(295):535–48
- Adelman I, Morris CT. 1967. *Society, Politics and Economic Development: A Quantitative Approach*. Baltimore, MD: Johns Hopkins Univ. Press
- Adelman I, Morris CT. 1973. *Economic Growth and Social Equity in Developing Countries*. Stanford, CA: Stanford Univ. Press
- Adelman I, Robinson S. 1978. *Income Distribution Policy in the Developing Countries: A Case Study of Korea*. Stanford, CA: Stanford Univ. Press
- Adelman I, Robinson S. 1988. Macroeconomic adjustment and income distribution: alternative models applied to two economies. *J. Dev. Econ.* 29(1):23–44
- Johansen L. 1982. *Econometric Models and Economic Planning and Policy: Some Trends and Problems*. Berlin: Springer
- Szenberg M, Ramrattan LB, eds. 2004. *Reflections of Eminent Economists*. Cheltenham, UK: Edward Elgar