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IN MEMORIAM[1]

ALEX CUKIERMAN 1938–2023

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Alex Cukierman passed away in October 2023, at the age of 85. He graduated from MIT in 1972, under the supervision of Franco Modigliani, was a professor of Economics at Tel Aviv University for about three decades, and served as a Research Fellow at CEPR. He also held several visiting positions and served on the Monetary Committee of the Bank of Israel. His contributions to macroeconomics, including two books, three edited volumes, and more than 80 journal articles, span almost four decades.

Alex was one of the pioneers who applied game theory to the study of macroeconomics. Together with Alesina, Meltzer, Persson, and Tabellini, he was among the pioneers of modeling policymakers' decisions as strategic choices, shaped by the possible reactions of the opponents and by the institutional context. Likewise, he was fascinated by models featuring time-inconsistency of the optimal policy, a fundamental notion developed by Kydland and Prescott, and applied the idea to a host of diverse macroeconomic situations. Alex was also serious about empirically testing the theories he considered important. He is perhaps best known for his empirical indices of central bank independence and the analysis of its effects on economic performance. These works spawned a large number of empirical applications where those indices were used. His work inspired new research where the independence of institutions, like regulatory bodies, proves essential for economic performance. In this short note I will review some of Alex's papers, the ones that highlight his main academic contributions, with no pretense of providing an encompassing summary of all of them, and I will conclude with a personal note.

Early works: relative price variability and the distribution of inflation

Graduating in the year in which Lucas's "Expectations and the Neutrality of Money" was published, Alex was fascinated by the power of the new framework, and set to work to extend Lucas's work. He wrote several papers that deepened our understanding of relative price variability and its relation with the distributions of inflation and of inflation expectations. Cukierman and Wachtel (1979) extended Lucas's island model to accommodate

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heterogeneity in inflation expectations. In Cukierman (1977), he tested various theories on how expectations are formed, using inflation expectations data estimated from financial data (not an obvious exercise at the time). The latter illustrates Alex's view of economics as a science, and the fundamental importance of confronting theories and data.[3] After about a decade working in the area he surveyed the imperfect-information approach to inflation and output in the book, **Inflation, Stagflation, Relative Prices, and Imperfect Information (Cukierman, 1984).**

Policy choices in the presence of strategic motivations

During the 1980s, Alex immediately understood the power of new developments in game theory, involving imperfect information and time inconsistency, and started applying them to study how institutions shaped policymakers' and voters' behavior, a feature that would become the hallmark of his research. The novelty was to think of policymakers as strategic agents who interact with one or more opponents (another policymaker, a labor union, a rival political party), while taking into account possible reactions by the other party. Such reactions act as a new set of constraints in the economic model and thus affect equilibrium outcomes, compared to analyses where policymakers are "benevolent planners". In this area, he developed several insightful models to study a broad range of issues, spanning from the credibility of anti-inflationary policies to the implementation of controversial reforms. One of Alex's most cited contributions, a joint work with Allan Meltzer (Cukierman and Meltzer, 1986b), studies the optimal degree of "transparency" (ambiguity in their language) about the central bank's own actions. They used a simple setup where the policymaker faces a rational public and only unanticipated policy actions are effective in stabilizing the business cycle. A rational public does its best to unveil the policymaker's true motives, using optimal filtering techniques. In response to this behavior, the policymaker deliberately introduces noise in its actions, in order to impair the private agents' learning. Doing so is costly, however, because the noise adds volatility to the economy. The equilibrium of this game shows that the policymaker has an incentive not to be fully transparent about its own motives, in order to be

[3] Other notable papers from this early period include: Ben-Shahar and Cukierman (1973) (develops a "finance paper" using theory to identify expectations about prices and exchange rates using the term structure of interest rates), Cukierman (1979) (studies the variability of the general price level vs. relative prices in the Lucas island model), Brunner, Cukierman, and Meltzer (1980) (explores the role of the perceived persistence of shocks in an augmented IS-LM model), Cukierman (1980) (investigates the effects of wage indexation on fluctuations in employment, output, investment and the price level), Cukierman and Wachtel (1982) (shows a positive relationship between the variance of relative price change and the variance of inflation expectations and offers an empirical test), Cukierman (1982) (a theory of the relationship between aggregate and relative price variability based on the inability of people to identify permanent changes in relative demands and relative productivities), Brunner, Cukierman, and Meltzer (1983) (introduces inventories into a Lucas-type economy), Cukierman and Leiderman (1984) (a Lucas-type economy with price controls).

able to produce a policy surprise in the times where it is most needed. This paper is a gem: a simple idea rigorously formalized by a dynamic rational expectations model, where the policymaker and the public keep chasing each other's intentions while tracking the aggregate shocks. This seminal paper, which like several theoretical contributions might have appeared somewhat abstract and technical, offered an explicit analysis of a central bank's communication transparency, a topic that would become relevant to policymakers a few decades later and the subject of a voluminous literature.

Political economy

Alex was very interested in political economy, mostly as a way to understand how institutions are shaped by voters' choices and how they are determined. His most important paper in this regard is probably the one with Mariano Tommasi (Cukierman and Tommasi, 1998). The paper examines why policy changes are often implemented by "unlikely" agents, e.g., Nixon visiting China despite his anticommunist stance. The idea is that an unlikely agent who typically opposes such policies can credibly signal to the public that the situation, which the politician privately observes, justifies the policy. The public would have not have believed a likely agent, as they would suspect that the agent just pushed for his preferred policy outcome even if the situation is not what the politician claims it to be. Alesina and Cukierman (1990) also study the problem of policy choice by a politician who has private information about his own personal preferences. Their main premise is that politicians are motivated by two objectives: being reelected and choosing the policies that are most preferred by their constituency. To increase the chance of reelection, politicians need to deviate from their most preferred policies to attract more distant voters. The main insight is that the optimal strategy for politicians is to choose procedures that make it difficult for voters to pinpoint their preferences with absolute precision. Thus, politicians may prefer to be "ambiguous", an idea related to the Cukierman-Meltzer paper on ambiguity.[4]

Alex's unstoppable curiosity to understand the real world by means of explicit mathematical models yielded many more insightful contributions. Cukierman, Edwards, and Tabellini (1992) pioneered the important idea that political instability and polarization discourage governments from investing in tax capacity. This hypothesis was developed theoretically and tested empirically, to explain persistent reliance on inefficient sources of

[4] Alex and Allan continued also worked together in the area of political economy, analyzing the costs and benefits of policymaking in a democracy. Cukierman and Meltzer (1986a) provides an explanation for why governments prefer to be discretionary in a setting with imperfect information and the motive to be reelected. Cukierman and Meltzer (1989) studies a Ricardian economy in which households are not indifferent with respect to government debt, due to a nonnegativity constraint on leaving bequests.

revenues (seignorage and trade taxes) in countries with unstable and polarized political environments, like many countries in Latin America. [5]

In Cukierman (1991), Alex turns to the behavior of voters and proposes an explanation for the tendency of voters to vote more heavily for candidates who enjoy a greater chance of winning. The idea is that voters care not only about policies but also about the ability of the candidates. Some voters are informed, and hence if they support candidates, the uninformed voters reason that the candidates are more likely to have high ability, and hence they are willing to support them as well. As is common in the literature, Alex's work on political economy utilized the classic Median Voter Paradigm (MVP) to derive predictions about the policies that would be chosen in a democratic system.[6] Cukierman and Spiegel (2003) study the conditions under which the MVP provides useful guidance for policy choices under a fully specified model of representative democracy and when it does not, and they apply the analysis to the influential Meltzer and Richard (1981) theory of the size of government.

Measurement and effects of central bank independence

I would describe Alex as a fine applied macro theorist, always thinking about new economic explanations to explain the forces behind different macroeconomic policies. Yet, the breadth of his interests and the strength of his determination to push the frontier are illustrated by the fact that his most cited paper, Cukierman, Webb, and Neyapti (1992), is a measurement exercise. It is a pioneering contribution where he and coauthors constructed several measures of central bank independence for both advanced and emerging economies and related them to inflation outcomes.

Measuring an abstract notion such as the "degree of independence" of central banks from the "executive power" is not an easy accomplishment. Alex was not afraid of attempting such a task, delving into the institutional details of many different countries, a mission on which he worked for nearly two decades. Alex and his coauthors were among the first to recognize (and deal with) the many difficulties of quantifying "formal independence" for 72 countries, as outlined in laws and regulations, and testing whether these indices agreed with alternative measures of actual (de facto) independence, as captured by central bank turnover and questionnaires. The results showed that higher central bank independence, in a legal sense, is associated with lower inflation in advanced economies, while in emerging economies, a lower turnover of central bank governors predicts lower inflation rates.[7] The analysis also

[5] The idea was further explored by Besley and Persson in a series of papers, summarized in Besley and Persson (2011).

[6] The MVP states that when preferences are single-peaked, the ideal policy of the median voter in the population would be chosen under simple majority rule.

[7] In subsequent work, Alex explored alternative measures of actual independence: in Cukierman and Webb (1995) he measured political influence on central banks for several countries using the probability of the governor being replaced shortly after a change of government. The measures correlate with inflation.

included an extensive exploration of the correlation of central bank independence and the performance of real variables such as growth and productivity—see Cukierman, Kalaitzidakis, Summers, and Webb (1993).

His classic book, **Central Bank Strategy, Credibility, and Independence: Theory and Evidence** (Cukierman 1992) summarizes several theoretical results on models of monetary policy credibility and central bank independence, as well as several empirical findings. The book served generations of students who wanted to understand central bank behavior and how it affects inflation and the business cycle. Alex's interest in central banking was not limited to the intellectual side. He served on the Bank of Israel's Monetary Committee between 2011 and 2015, and maintained a scholarly interest in the institutional features of monetary institutions for many years, writing several papers on the topic.[8]

Labor markets and monetary institutions

In the late 1990s, as several countries were designing the institutions to guide the future European Monetary Union, I was very fortunate to cross Alex's path and discuss several aspects of this unfolding historic process with him. One question that attracted our attention concerned the interactions between labor unions and "conservative" central bankers.[9] In canonical models with atomistic agents, there is no long-run relation between real variables (e.g., unemployment) and inflation—i.e., the long-run Phillips curve is vertical. We used a simple game-theoretic setup to study how alternative off-equilibrium threats by the central bank might affect wage setting behavior and employment in the presence of nonatomistic wage setters, and give rise to a nonvertical long run Phillips curve. We believed that understanding the interactions between monetary policy and labor markets was important for Europe, where several countries had rather centralized wage negotiations. In Cukierman and Lippi (1999), we explored these possibilities, and presented some evidence on the model's main prediction that a more inflation-averse central bank might lead (nonatomistic) labor unions to be more aggressive in their wage demands.

In Cukierman and Lippi (2001), we applied our model to investigate how joining a monetary union would alter the wage setters' incentives.[10] We showed that the switch from national monetary policies to a common monetary policy affects both inflation and unemployment, even when all structural parameters of the economy and of unions' and policymakers' preferences remain the same. The benchmark case of a monetary union

[8] Cukierman, Miller, and Neyapti (2002) measures legal central bank independence for the former socialist countries and relates it to inflation outcomes. Cukierman (2008) is a review article on worldwide developments in monetary policymaking institutions during the second half of the twentieth century, with a focus on central bank independence.

[9] The rationale for a conservative central banker was famously established in Rogoff (1985).

[10] Since every wage setter has a smaller wage coverage once it joins a large monetary union, it tends to underestimate the central bank reaction to its nominal wage increases.

between identical countries suggests that the switch to a monetary union is likely to make labor unions more aggressive, increasing unemployment. Alex continued to work on the topic and produced some very nice papers that consider fiscal-monetary interactions as well as unionized labor markets, as in Coricelli, Cukierman, and Dalmazzo (2006) and Cukierman and Dalmazzo (2006).

Alex never stopped working, until the very end of his life, and never stopped paying attention to the challenges of the times he lived in. A hallmark of his work is that so many of his papers were not only academically sharp, but also timely and policy relevant. He studied inflation in the 70s, central bank reforms in the 90s, and financial crises during the 2000s, including some thoughts on the Covid-19 emergency. These events reflect his vivid interest for the world that surrounded him, and the belief that economics helps us understand it.[11]

A personal note

The alert reader will have noticed that Alex graduated from MIT when he was 34. This long journey had not been his choice. He was born in Paris in 1938, while his family was escaping from Poland toward the south of Europe, his dad killed in the journey. Soon after, his mom left him with a Russian nanny in a village on the Pyrenees, in the hope of saving him from the Nazi horrors. His first words were in Russian, and when he reunited with his mom at the end of the war he did not speak her language. They then set sail toward Palestine, but were interned by the British forces in a Cyprus camp, where they spent almost two years. Shortly after arriving in Palestine he witnessed Israel's Independence Day, in 1948. He had memories about seeing joyous people celebrating in the streets, without understanding their language, and without a clear idea of what was happening. I was in awe when he talked about these difficult times, and fascinated by his spirit that never lost the hope of a better future. In retrospect, I do not recall ever seeing him angry. Alex was a great scholar. He asked many questions, from economics to names for coffee varieties in Italy, because he was curious and eager to learn. It all came from pure curiosity that continued until the very end. He was also very generous and had a great sense of humor, never taking himself seriously and never taking offense. People loved him everywhere he went because he was a good person and a wonderful scholar. In my youth, he would host me in his house in Ramat Hasharon, so that we could keep talking about our projects for as long as we could. I learned from him to look at problems from different angles, not to stop when the first results look encouraging, not to be afraid to ask questions, and to always apply high standards (especially to your own work). He loved talking to people he disagreed with, and the discussions could be very long! I once tried to cut short a discussion by saying that he had convinced me of his point. He then turned the

[11] From this period, I would mention Cukierman (2009) (lessons from the Financial Crisis), Cukierman (2013) (monetary policy changed in response to the Global Financial Crisis), Cukierman and Izhakian (2015) (a model of the financial system to investigate the impact of uncertainty about the likelihood of governmental bailouts on leverage, interest rates, the volume of defaults, and the real economy).

table and told me "OK, then let me develop the counter-argument you were trying to make".... The anecdote shows a trait of Alex's personality that I learned to appreciate through the years. Looking at an argument from all possible angles was not just a game for him, or something he did to show how clever he was. This was to make sure he fully understood the issues deeply. He had a very gentle way of debating, that I wish I had learned. He has had a huge influence on my research attitudes and on the professional life of his students. The memory of his passion for economics, and of his generosity, will be forever an inspiration for me and, I believe, for all those who had the privilege to know him.

REFERENCES

Alesina, A. and A. Cukierman (1990). "The politics of ambiguity", The Quarterly Journal of Economics 105 (4), 829–850.

Ben-Shahar, H. and A. Cukierman (1973). "The term-structure of interest rates and expectations of price increase and devaluation", The Journal of Finance 28 (3), 567–575.

Besley, T. and T. Persson (2011). Pillars of Prosperity: The Political Economics of Development Clusters. Princeton University Press.

Brunner, K., A. Cukierman, and A. H. Meltzer (1980). "Stagflation, persistent unemployment and the permanence of economic shocks", Journal of Monetary Economics 6 (4), 467–492.

Brunner, K., A. Cukierman, and A. H. Meltzer (1983). "Money and economic activity, inventories and business cycles", Journal of Monetary Economics 11 (3), 281–319.

Coricelli, F., A. Cukierman, and A. Dalmazzo (2006). "Monetary institutions, monopolistic competition, unionized labor markets and economic performance", Scandinavian Journal of Economics 108 (1), 39–63.

Cukierman, A. (1977). "A test of expectational processes using information from the capital markets—the Israeli case", International Economic Review, 737–753.

Cukierman, A. (1979). "The relationship between relative prices and the general price level: a suggested interpretation", The American Economic Review 69 (3), 444–447.

Cukierman, A. (1980). "The effects of wage indexation on macroeconomic fluctuations", Journal of Monetary Economics (6).

Cukierman, A. (1982). "Relative price variability, inflation and the allocative efficiency of the price system", Journal of Monetary Economics 9 (2), 131–162.

Cukierman, A. (1984). Inflation, Stagflation, Relative Prices, and Imperfect Information. Cambridge University Press.

Cukierman, A. (1991). "Asymmetric information and the electoral momentum of public opinion polls", Public Choice 70 (2), 181–213.

Cukierman, A. (1992). Central Bank Strategy, Credibility, and Independence: Theory and Evidence. MIT Press Books. The MIT Press.

Cukierman, A. (2008). "Central bank independence and monetary policymaking institutions—past, present and future", European Journal of Political Economy 24, 722–736.

Cukierman, A. (2009). "The great depression, the current crisis and old versus new Keynesian thinking—what have we learned and what remains to be learned?"

Cukierman, A. (2013). "Monetary policy and institutions before, during, and after the global financial crisis", Journal of Financial Stability 9 (3), 373–384.

Cukierman, A. and A. Dalmazzo (2006). "Fiscal-monetary policy interactions in the presence of unionized labor markets", International Tax and Public Finance 13, 411–435.

Cukierman, A., S. Edwards, and G. Tabellini (1992). “Seigniorage and political instability”, American Economic Review 82 (3), 537–55.
Cukierman, A. and Y. Izhakian (2015). “Bailout uncertainty in a microfounded general equilibrium model of the financial system”, Journal of Banking & Finance 52, 160–179.
Cukierman, A., P. Kalaitzidakis, L. H. Summers, and S. B. Webb (1993). “Central bank independence, growth, investment, and real rates”, in Carnegie-Rochester Conference Series on Public Policy, Volume 39, pp. 95–140. Elsevier.
Cukierman, A. and L. Leiderman (1984). “Price controls and the variability of relative prices”, Journal of Money, Credit and Banking 16 (3), 271–284.
Cukierman, A. and F. Lippi (1999). “Central bank independence, centralization of wage bargaining, inflation and unemployment: Theory and some evidence”, European Economic Review 43 (7), 1395–1434.
Cukierman, A. and F. Lippi (2001). “Labour markets and monetary union: a strategic analysis”, The Economic Journal 111 (473), 541–565.
Cukierman, A. and A. H. Meltzer (1986a). “A positive theory of discretionary policy, the cost of democratic government and the benefits of a constitution”, Economic Inquiry 24 (3), 367–388.
Cukierman, A. and A. H. Meltzer (1986b). “A theory of ambiguity, credibility, and inflation under discretion and asymmetric information”, Econometrica: Journal of the Econometric Society, 1099–1128.
Cukierman, A. and A. H. Meltzer (1989). “A political theory of government debt and deficits in a neo-Ricardian framework”, The American Economic Review, 713–732.
Cukierman, A., G. P. Miller, and B. Neyapti (2002). “Central bank reform, liberalization and inflation in transition economies—an international perspective”, Journal of Monetary Economics 49 (2), 237–264.
Cukierman, A. and Y. Spiegel (2003). “When is the median voter paradigm a reasonable guide for policy choices in a representative democracy?”, Economics and Politics 15 (3), 247–284.
Cukierman, A. and M. Tommasi (1998). “When does it take a Nixon to go to China?”, American Economic Review, 180–197.
Cukierman, A. and P. Wachtel (1979). “Differential inflationary expectations and the variability of the rate of inflation: theory and evidence”, The American Economic Review 69 (4), 595–609.
Cukierman, A. and P. Wachtel (1982). “Relative price variability and nonuniform inflationary expectations”, Journal of Political Economy 90 (1), 146–157.
Cukierman, A. and S. B. Webb (1995). “Political influence on the central bank: international evidence”, The World Bank Economic Review 9 (3), 397–423.
Cukierman, A., S. B. Webb, and B. Neyapti (1992). “Measuring the independence of central banks and its effect on policy outcomes”. The World Bank Economic Review 6 (3), 353–398.

Meltzer, A., A. Cukierman, and S. Richard (1991). Political Economy. Encyclopædia Metropolitana. Oxford University Press.

Meltzer, A. H. and S. F. Richard (1981). "A rational theory of the size of government", Journal of Political Economy 89 (5), 914–927.

Rogoff, K. (1985). "The optimal degree of commitment to an intermediate monetary target", The Quarterly Journal of Economics 100 (4), 1169–1189.