GREEK DEBT AND AMERICAN DEBT: GRADUATION SPEECH AT THE UNIVERSITY OF ATHENS ECONOMICS AND BUSINESS SCHOOL

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Graduation Speech at the University of Athens Economics and Business School

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Abstract: This is the graduation speech I gave on receiving an honorary doctorate at the University of Athens Economics and Business School. I talk about my Greek family, about how I got interested in economics, and then how in the 1990s I came to think about default, collateral, and leverage as the central features of the financial/macro economy, despite their complete absence (even now) from any textbooks. Finally I suggest that the Greek debt problem, and on a bigger scale, the American debt problem, can only be cured when lenders are prodded to forgive. That would be better for the borrowers but also for the lenders.

Key Words: Greek, parents, mathematical economics, Yale, mortgage, collateral, securitization, leverage, foreclosure, forgive, principal.

JEL: D52, D53, E444, G01, G10, G12

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I am very honored to receive this honorary PHD here in Greece. Were they still alive, my parents would have been very proud, just like your parents are today. Though my parents were born in the United States, they both grew up speaking Greek before they spoke English. [In Greek: And I too learned Greek, but since I have not spoken regularly for forty years, I will continue in English]. My parents thought of themselves as Greek as much as American. They told me my grandparents abandoned the country they loved in order to give their children and grandchildren an opportunity to do something important and noble that would be impossible to achieve from a little village. I should grow up to enjoy life, my mother said, but a little anxiety is a good thing.

My grandfather John Geanakoplos came to America in 1892 by himself when he was 12 years old from a tiny village near Sparta called Theologo. He met his older brother in Chicago and the two of them moved to Minneapolis to set up a candy store. With one other guy they were the first Greeks in Minneapolis. They expanded their store into a factory called Geanakoplos Brothers and over the years they helped bring over 700 Greeks from Sparta to work in their factory.

Together with his brother, my grandfather built the first Greek church in Minneapolis and was the first president of the Greek community of Minneapolis and for many years the treasurer of the church. Though he had gotten quite wealthy, he told his sons that they should look for a purer calling than business. One son became a high school history teacher in Minneapolis, another son (my godfather) became a professor of chemical engineering, and my father became a professor of Byzantine history.

My father Deno John Geanakoplos began his academic life studying the violin at the Julliard School of Music in New York. He returned to Minneapolis to play first violin for the Minneapolis symphony, which was conducted by Dimitri Mitropoulos, soon to be conductor of the New York Philharmonic. In 1942 my father volunteered for officer training in the American army and was sent to fight in North Africa, where he learned French. He was in the first wave of American soldiers sent to fight in Italy, landing in Palermo. Eventually he ended up as a captain in Pisa in charge of a shoe factory. Not needing to do much fighting I guess, he learned Italian and ancient Greek at the University of Pisa, and in 1946 he got his Phd from Pisa by writing a dissertation in Italian about Greek scholars in Venice. He ended his career as professor of Byzantine history and Greek church history and Renaissance history at Yale Univesity. His 15th and last book, which he entrusted to me to get published after he died, was a history of the Greek church and its role in preserving Greek culture through the ages, especially during the Ottoman occupation.

My mother's parents were born in Constantinople, though they moved back and forth to a little village in Epirus, which is now part of Albania. Forced to leave Constantinople in 1921 they emigrated to Worcester Massachusetts in America. My grandfather Basel Vranos hated America at first and wanted to return to Greece, especially during the Depression of the 1930s, but my grandmother Sophia insisted America was a big country with limitless opportunities, if not for them, at least for their children. She was President of the Worcester Massachusetts Greek War Relief during world War II. My mother was very poor growing up and had a hard life. Determined to make something of herself, she became the first woman to graduate from Clark University, and got her MA in social work at Boston University. She was in the first group of Fulbright appointees to Greece where she helped to set up the XEN school of social work, the first such school in Greece.

My sister and I wanted to be even purer than our parents. She studied music at Julliard and philosophy at Yale and became a concert pianist, playing all over the world, including twice here in Athens many years ago. I studied pure mathematics at Yale and then got a masters in mathematics at Harvard. But along the way to my math degrees I also took courses from extraordinary teachers in economics, like James Tobin and Herbert Scarf at Yale, and then Kenneth Arrow at Harvard. I realized that mathematics played an essential and beautiful role in economics, but that economics also touched on so many other

things, like political philosophy and even business, that despite my grandfather, I was also interested in. So I decided to get my PhD in economics, under Kenneth Arrow.

I took my first job as assistant professor of mathematical economics at Yale in 1980. I was entranced by the beauty of general equilibrium and game theory that was taught in those days, and I didn't care that it had little to do with the real world. But in 1989 I had a sabbatical and I decided to spend it on Wall Street, since there seemed to be a lot of interesting mathematical economics happening there. I was planning to go to Goldman Sachs, but at the last minute my little cousin from my mother's side, Michael Vranos, who had taken a job straight out of college a few years before at Kidder Peabody, introduced me to Ed Cerullo, the head of Fixed Income at Kidder. Cerullo told me that I would learn much more as the only professor talking to people like him who ran the businesses at Kidder Peabody than I would working on some mathematical problem at Goldman Sachs with 50 other visiting professors. So I went to Kidder and talked to Cerullo and other traders. At the end of the year Cerullo told me that he realized through his conversations with me that his research department was not sufficiently mathematical, and he asked me to hire him a new department. After I returned to Yale he called and said that now that I had created the department, why didn't I run it from Yale? I agreed.

My little cousin meanwhile had risen to head the mortgage trading desk. This was the beginning of the first Securitization boom on Wall Street that I am sure you have all heard of now. Homeowners had for years borrowed money in exchange for mortgage payment promises, pledging their houses as collateral. Starting in the 1970s Fannie Mae and Freddie Mac would collect these promises into pools of promises, and then sell the pooled cash flows as pass-through Securities to individual investors. Starting in the late 1980s investment banks like Kidder Peabody would sometimes buy the pass-through Security and then carve up those cash flows into more complicated securities called derivative securities or tranches, that promised money when the buyer really needed it. For example, my cousin might buy a pool of mortgages that promised $1000 a month and from that create two tranches, a floater that promised $500 plus $100 x the change in the interest rate and an inverse floater promising $500 minus $100 x the change in the interest rate. People who needed money when interest rates go up bought the floater tranche, and people who needed money when interest rates go down bought the inverse floater tranche. My cousin could sell off the two pieces for more than he bought the underlying pool and make a profit.

In reality there weren't just two pieces, there weren't just three pieces, there were 90 pieces. Well, my young little cousin got the idea that what Kidder could do, was to find a buyer for the riskiest of the 90 pieces. Once he found the buyer, a place to put the riskiest piece, he would borrow the money to buy the pass through, and hold an inventory of all the other pieces. He knew that eventually we would be able to sell off all the other pieces. And so we had a tremendous

advantage. While everyone else was looking for buyers for 90 pieces, we had to find a buyer for one piece. My 27 year old cousin and Kidder came to dominate the **multi-trillion dollar** mortgage derivative business, producing fully 20% of all them in America.

To run this operation, Kidder had to hold 89 slightly less dangerous pieces in its inventory. So we needed a model to predict what the homeowners would do, whether they would default or refinance, depending on the interest rates, and how to hedge their behavior. My research department was responsible for making these conditional predictions and figuring out hedge ratios, and so trading and research worked hand in hand.

Competition between traders like my cousin raised the amount people were willing to pay for the mortgages because they can then buy them and split them up and sell them for more. So that raises the price the homeowners can get selling their mortgage promises, which in turn lowers the interest rate that the homeowners have to pay. The first wave of securitization improved the welfare of almost everybody.

The mortgage market was a multi-trillion dollar a year operation and I realized, while I was there at Kidder Peabody, that this whole operation behind the scenes

was invisible to everybody and was worth writing about. It was bringing great welfare gain to the country and nobody quite knew about it. So for me, it crystalized what the essence of finance is. The essence of finance is creating promises backed by **collateral**. The houses back the homeowner mortgage promises, the mortgages back the pools, the pools back the tranches. And the investors who buy the tranches are also borrowing money, using the tranches as collateral. Collateral is a very important to running a financial system. Yet collateral had never been mentioned in a single one of the many economics courses I took at Yale or at Harvard.

So I published my first paper on collateral equilibrium in 1997. And one of the questions I asked and answered was, how does supply and demand determine not only what interest rate people generally have to pay on loans, but also how much collateral they generally have to put up? That was a question that nobody seemed to have asked before. Even today you won' find it in any textbook. It was a question that I could have asked out of pure logic, and the answer I gave was purely mathematical. Yet I never would have thought of the question if I had not worked in the business world of Kidder Peabody.

The textbooks only write about the interest rate, and how the Fed or the ECB needs to monitor and regulate the interest rate in case the economy gets the rate wrong. But a much more important variable is the collateral rate or leverage, which is just another word for the same thing. What if the economy gets that

wrong? Somehow nobody at the Fed or the ECB ever talked about that question. Yet every businessman knows leverage is important. Even Shakespeare understood that collateral is more important than the interest rate. Who here can remember the interest rate Shylock charges Antonio in the Merchant of Venice? But all of you remember the pound of flesh collateral.

The economy often does get the overall leverage wrong, sometimes with terrifying consequences. In 1994 Kidder Peabody went out of business after 135 years because of losses in the government bond department. At the time I didn't understand what had caused the losses. I had to invite the 75 people who worked for me in research into my office and tell them one by one you are fired. Then I went next door and my boss said you are fired.

In 1995 my cousin and I and four others founded a hedge fund called Ellington Capital Management, whose business it was to buy the very derivative securities we had just been creating at Kidder Peabody. On the heels of the 1994 crisis we made astounding returns on our investments and the new hedge fund grew rapidly to become the biggest mortgage hedge fund in the country. All went well until October 1998 when the mortgage market seemed to crash. The famous hedge fund Long Term Capital Management went out of business. We barely survived. But then in 1999 and 2000 we made tremendous profits again, quickly making back all the money we had lost in 1998.

I decided that two such catastrophes could not be an accident. *I decided to write about the crashes that could be caused by leverage and securitization, that is about what could go wrong*. I developed a theory I called the **leverage cycle**. During periods of calm lenders ask for less and less collateral and leverage rises. Most importantly, because leverage raises asset prices rise. Hedge funds and other investors do well. Production increases. But when there is scary bad news that frightens lenders, they raise collateral requirements much more than interest rates. Because of the bad news, and because of the deleveraging, and because the optimists were leveraged so much before, asset prices not only fall, they crash. Leveraged buyers go out of business. And with low asset prices, production grinds to a halt. Those who survive the crash do amazingly well when the cycle begins again and leverage and prices rise. The episodes of 1994 and 1998 were both leverage cycle crashes, the first in the government bond market and the second in the mortgage market (and actually more dramatically in emerging markets). The crash stages in both passed over in just a few months. But what if the next one was bigger and longer?

Nobody paid much attention to my leverage cycle in 2003 when I published it. But it seems to describe *recent* events eerily well. In America the average down-payment on a house with non-government loans in 2000 was 14%. In 2006 it had gone to 2.7%. As leverage soared, housing prices went up 90% over the same period of time. Then when lenders began to get nervous in late 2006, leverage collapsed and the down-payments lenders required went to 25%; sometimes no loan at all would be given. Housing prices lost 30%-40% of their value in one

year. Housing construction stopped and the American economy slumped. Unemployment soared to 10%. Our hedge fund again nearly went out of business in 2007-8. But again we had our best years ever right after the crash in 2009-2010.

The leverage cycle is most damaging when the aftermath is long, which happens when too many borrowers owe much more than they can pay, but have not yet defaulted. Nobody will lend money to a homeowner who already owes more money than his house is worth. And no homeowner will pay his own money to repair his house if he thinks he will eventually lose it anyway. The same holds for businesses. In America 2.5 million homeowners have been thrown out of their homes for not paying, but another 5 million are seriously delinquent and probably will be thrown out of their homes as well. There are another 8.5 million homeowners who are underwater and owe more money than their house is worth. Many of them will default. As more people are thrown out of their houses, more houses come on the market and prices fall further, and still more people default. Recall that each household contains around 3 people. More people will be thrown out of their homes in America than there are people in Greece.

The only way out of the aftermath of the leverage cycle is for the lenders to forgive part of the debts to give people a fresh start. Most borrowers will not repay if the loan is too much higher than the value of the house. If the lenders all

forgave part of their loans, they would all end up with more. Imagine a $160,000 loan on a house that is now worth $100,000. Lenders on average get less than 25% of the loan back when a subprime borrower is thrown out of his home, meaning in this case the lender can expect $40,000. Why? Because it takes years to throw the family out of the house, during which time the owner does not pay his taxes or his mortgage, and the house is ruined. If the loan had been written down to $80,000 the borrower might well have paid all $80,000 back, perhaps by selling the house, because then there would be $20,000 in it for him. By demanding everything and then throwing the borrower out when he refuses, the lender loses even more. As Portia says in very similar circumstances in the Merchant of Venice "The Quality of mercy is not strained …It helpeth him who gives and him who takes." The most catastrophic blunder the American administration has made is in not coordinating a forgiveness on mortgage loans by lenders.

The situation is of course reminiscent of what has happened to Greece and other sovereign borrowers. Lenders should never have lent so much money. Now that the situation has become bad, the borrowers cannot possibly pay it all back. Of course the borrowers must be forced to put their houses in order, and to pay as much as they reasonably can. But to ask the impossible will work against even the lenders. Eventually part of the Greek debt will have to be forgiven.

If Greece makes the needed reforms, mostly by collecting taxes from the rich who evade them, and reforming the business sector, and if the Eurozone is rational, part of the debt will be forgiven. Greece will get a fresh start. And in this global economy there will be no reason for you to abandon a country you love to find opportunity elsewhere as my grandparents had to.