Real Time Computer Simulation of the National Economy

The future of the free world and its survival depends on our ability to prevent depressions and make better use of all the resources, human as well as natural. The possibility to monitor the national economy on a real time basis is given by the advantage of very large communications based computer systems. The economists have also made progress in their understanding of how a free and competitive economy works and how it can be computer simulated. The time seems to be ripe for computers to play a major role in the economic life of the nation. This is not only a major opportunity for IBM, but has become a must for the survival of the free world.

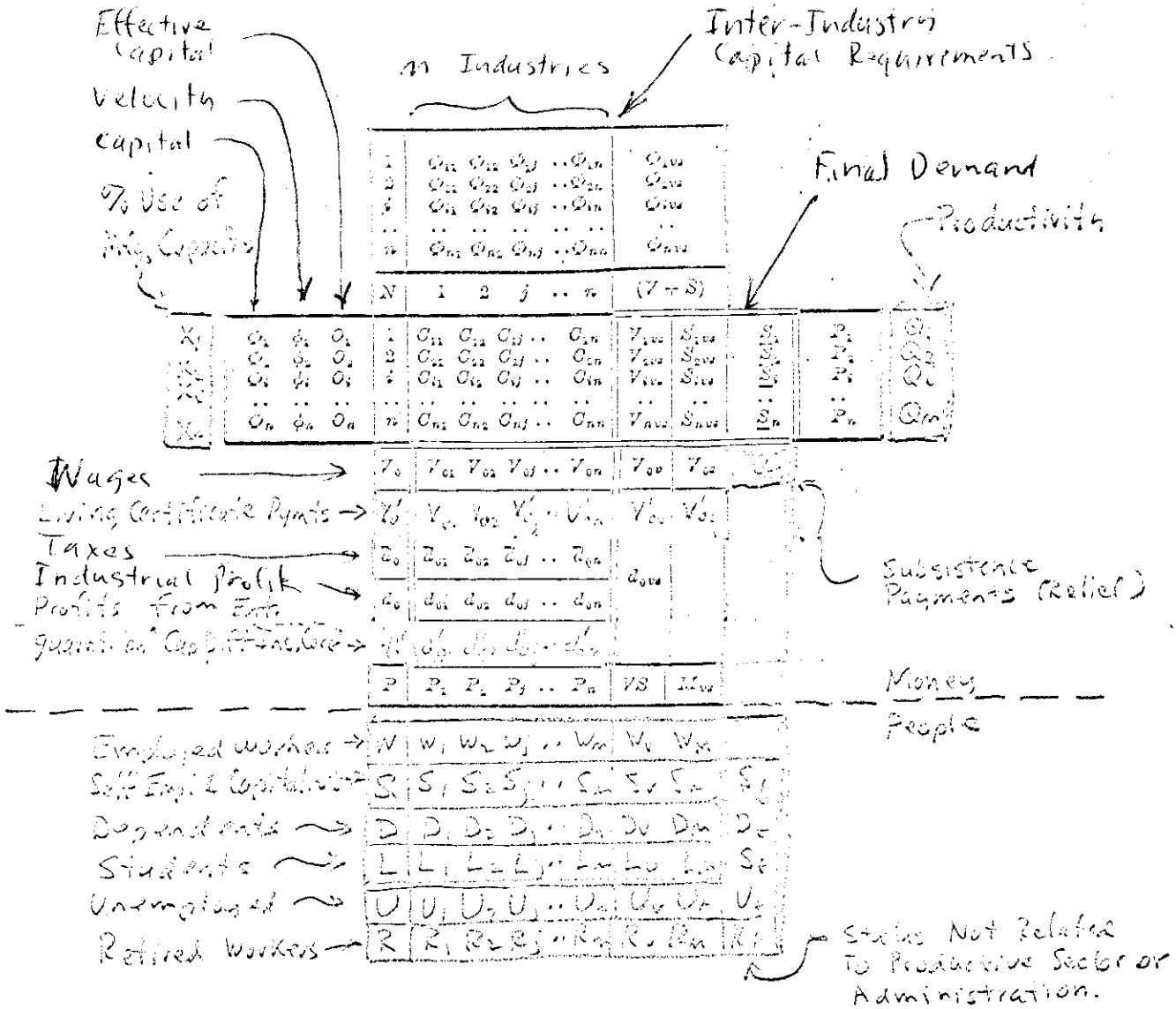
In the United States our Department of Commerce released the completed input-output matrices (86 x 88 matrix) of the U.S. economy for 1958 in November 1964, a lag of six years. The French government updates their economic matrices every six months and maintains estimates for the current and next years to aid their government and business leaders make decisions. Using the mathematical technique developed at Princeton, Harvard, University of California, Stanford and RAND Corporation, together with the hardware and software capabilities of IBM, we could plan a computer simulation of the U.S. national economy that would receive economic data from all over the country on a daily basis, and immediately update the input-output matrices of inter-industry relationships. The system could also update a more compact aggregated model so that the President and his advisors at the White House could have a display screen which could show in almost real time the overall state of the economy, or it could display more detail of critical sectors of the economy. Our high speed computer technology would permit inversion of 500 x 500 matrices as would be needed to show the fine structure of the economy.

This situation gives IBM a unique opportunity to both help our country and to reap the profits of a new large market. Since ASDD has the responsibility for new market explorations, it is a logical project for ASDD. We could make a good start in ASDD, where we have good simulation techniques, a knowledge of basic Keynesian economics, a knowledge of the static input-output matrix methods of interindustry accounts, and the potential contact with the major universities to tie these in with IBM/s advanced computer technology.

There is an added market advantage to the proposed system. If the appropriate rows of the technical coefficients in the input-output matrix are transmitted back to the individual industries and firms, we would have a market analysis service for sale, because the rows give a reliable market structure analysis, if the data is classified finely enough. There is another feature of advantage to IBM. The proposed simulation of the national economy with its display system may be a chance for IBM to move more deeply into the large scale "learning machine" business, where a combination of learning on the part of the economic advisers and the self-adaptive programs in the simulation result in a human and machine teamwork in learning. This is analogous to the M.I.T. Entellechon project, but here we deal with large scale social and business phenomena, while the Entellechon system deals with physical phenomena.

This is a large scale computer application of highest importance for IBM and the country and we surely do not want our competitors to be there first!

c_{ij} = Inter-Industry Production



An Augmented Leontief Input-Output Matrix Including the Folsom Features