

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Douglas W. Elmendorf (CN=Douglas W. Elmendorf/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:14-DEC-1998 12:57:51.00

SUBJECT: budget accounting

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

CC: Douglas_W._Elmendorf@oa.eop.gov (Douglas_W._Elmendorf@oa.eop.gov [UNKNOWN])

READ:UNKNOWN

TEXT:

An exchange between me and David Wilcox this morning:

ME: (also to Jeff Liebman)

I assume you've both seen Alicia Munnell's column in the Post this morning. Is taking Social Security out of the budget a completely dead issue, or could it be revived somehow? It does seem to be an approach with some bipartisan support ...

DAVID:

I don't think it's completely dead. The difficulty, however (and not one to be minimized) is how we would deal with the fact that it effectively would "move the goalposts" on one of the Administration's signal achievements -- namely having "balanced the budget." How could we do this proposal without jeopardizing that legacy?

ME:

The other problem with taking so much money off the table is that we want to spend some ourselves. I don't underestimate the difficulty of doing this, but I wish the idea would be discussed, at least, at higher levels.

ME: (also to Jeff Liebman)

How about taking SS out of the budget gradually?

Since we project on-budget surpluses beginning in 2002 or 2004, we could take SS out of the budget over a five-year period and preserve the surpluses. We also might have some room for new spending or tax cuts.

The gradual approach might seem flaky, but actually I think that's too harsh. I don't think there's a great economic argument for it, but the

sensible policy argument is that we've used one method of budget accounting for many years, and we need to adjust slowly to the new location of the goalposts.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Joseph E. Aldy (CN=Joseph E. Aldy/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:14-DEC-1998 13:42:59.00

SUBJECT: final (?) version of Sensenbrenner

TO: Alan S. Polasky (CN=Alan S. Polasky/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Michele Jolin (CN=Michele Jolin/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Quindi C. Franco (CN=Quindi C. Franco/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Jeffrey A. Frankel (CN=Jeffrey A. Frankel/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TEXT:

I just ironed out a couple of details with Mark Mazur in the Sensenbrenner letter. Here is the final version, barring any edits you may have.

Joe

===== ATTACHMENT 1 =====
ATT CREATION TIME/DATE: 0 00:00:00.00

TEXT:

Unable to convert ARMS_EXT:[ATTACH.D20]MAIL40630005L.326 to ASCII,
The following is a HEX DUMP:

Dear Chairman Sensenbrenner:

This letter responds to your October 20, 1998 letter regarding economic analysis of the Kyoto Protocol. Your letter requested comments on two issues. First, I will address your interest in the Council of Economic Advisers' (CEA) views on the Energy Information Administration (EIA) report "Impact of the Kyoto Protocol on U.S. Energy Markets and Economic Activity." Second, I will respond to your question regarding implementing legislation.

CEA Views on EIA Report

In evaluating the results from any economic modeling effort, it is important to first identify and understand what questions are being addressed by using that particular model. The most significant cause for divergence in modeling results is that different modelers ask and answer different questions.

In the Administration's assessment of the economic implications of the Kyoto Protocol, a set of questions that reflect the Administration's position on the Protocol are addressed. For instance, the Administration unambiguously supports the efficient implementation of the "flexibility mechanisms" secured in the Kyoto Protocol -- international emissions trading, joint implementation, and the Clean Development Mechanism -- and we will continue to work over the coming years in bilateral and multilateral fora to develop rules that ensure such implementation. In the Administration's illustrative modeling analysis, these flexibility mechanisms are critical to reducing the costs of meeting emissions targets, not just for the United States, but also for the European Union, Japan, and all other Annex I countries.

Economic modeling efforts outside of the U.S. government have also found that these flexibility mechanisms can significantly reduce the cost to the United States of reaching its Kyoto target. For example, the Energy Modeling Forum (EMF) based at Stanford University, which has a long-running model comparison exercise involving many of the leading climate and energy models, has coordinated full scale analyses of the Kyoto Protocol. This comparison exercise of the Kyoto Protocol included ten modeling teams from the United States, Europe, and Asia. The Kyoto Protocol enables all countries with emissions targets to trade emissions allowances among other countries with targets. In evaluating the Kyoto Protocol, all of the participating teams used economic models that incorporate the potential for international trading in greenhouse gas permits. These models are well-suited to assess the economic implications of the international trading component of the agreement. On average, the EMF models found that Annex I trading would cut the U.S. permit price by 53% relative to a no trading scenario. Of these models, one estimated a 72% reduction in the permit price under Annex I trading. In full global trading, the permit price would be, on average, 80% lower than the no trading price. Several models estimated permit price reductions of about 90%.

In addition, the Organization for Economic Cooperation and Development (OECD) recently convened modelers from around the world for a climate change modeling workshop. While many of the modeling teams at OECD also participate in the EMF exercise, the

workshop included four non-EMF teams. The results from non-EMF models reinforce the importance of international emissions trading in lowering permit prices. These models also found that Annex I trading can significantly reduce costs, and global trading can result in even more substantial cost-savings.

The modeling results from these two large efforts coordinated by EMF and by the OECD clearly indicate the potential for cost-savings through an efficiently-designed international trading system. It is important to recognize that these two efforts relied exclusively on models with the capacity to model explicitly international trade in emissions allowances. We believe that it is appropriate to evaluate the Kyoto Protocol with models that can assess the opportunities for international emissions trading, since trading is embedded in Article 17 of the Protocol. Models that cannot evaluate international trading are constrained in the kinds of questions they can effectively address.

The Energy Information Administration's model is not capable of addressing the question of international emissions trading: it is focused only on the U.S. energy sector and has no international emissions trading component. Thus, EIA did not conduct any analysis of cost-effective international trading opportunities. A traditional economic analysis of international trading would assess the demand and supply of emissions allowances and, by modeling a market where costs are minimized, identify a single international permit price. This is the approach taken by the Administration as well as by the EMF and OECD modeling teams. However, the EIA analysis assesses only the demand side of the issue for the United States, and then incorporates what appear to be arbitrary assumptions about alternative possibilities for the international permit price and subsequent international transfers. The scenarios that attempt to include international trading overstate the cost of permits because they fail to take into account the way that an international market, equilibrating to a single international permit price, lowers cost.

Even if one were to ignore international trading completely, the EIA analysis generates higher U.S. permit prices than nine of the ten models participating in the EMF exercise. This implies that EIA may be making more pessimistic assumptions about the responsiveness of the economy to reducing emissions than the broad climate change modeling community.

In addition to the question of international trading, there are other important questions that models should consider in evaluating the Kyoto Protocol. For example, the Protocol covers all six major kinds of greenhouse gases. While most of the models involved in the EMF and the OECD exercises did not consider these other gases in their analyses, the Administration's illustrative modeling effort did address this issue. The EIA analysis does not address this question. The model used by EIA cannot assess the opportunities for abating non-carbon dioxide greenhouse gas emissions. EIA makes an assumption that moving from 1990 -7% to 1990 -3% reflects the opportunities for emissions abatement in non-carbon dioxide gases and carbon sinks based on a misinterpretation of a State Department paper describing how the 1990 -7% target agreed to in Kyoto is roughly equivalent to 1990 -3% under the accounting system used in the President's October 1997 proposed target of returning to 1990. Under EIA's interpretation, sinks and other greenhouse gases would provide only 57 MMTCE annually,

irrespective of the price of greenhouse gas permits. This implies that the United States would achieve its target almost exclusively through carbon dioxide reductions and international trading. However, it is reasonable to expect that as permit prices increase, as they do across the various scenarios in the EIA report, higher levels of abatement of these other greenhouse gases would become cost-effective and would occur.

The flexibility across gases allows countries and companies to make reductions in the most cost-effective manner possible, reducing the cost of compliance. Based on Annex I national communications, emissions growth in non-carbon dioxide greenhouse gases is expected to be much slower (and in some cases negative) than carbon dioxide emissions growth between 1990 and 2010. This indicates that the U.S. six-gas target is less stringent than implied by just an assessment of carbon dioxide alone, and that there could be greater cost-savings through international trading of all greenhouse gases than implied by assessments of carbon dioxide trading alone.

Another crucial aspect concerns the time frame of emissions abatement. As the Administration Economic Analysis on climate change noted, the Administration advocated and secured in the Kyoto Protocol a later and more realistic time frame for the initial emissions target than what had been proposed by other countries. By adopting a gradual and credible path of reductions in the early years, adjustment costs can be reduced. How one addresses the question of timing of reductions affects the modeling results. In EIA's study, most businesses do not take action to address climate change until 2005, and therefore only have a short time until the 2008-2012 budget window to reduce emissions. This essentially assumes that even though the Administration secured this more realistic commitment period to reduce the burden on firms by allowing them to more gradually undertake emissions reductions, very few firms would actually take advantage of such an opportunity. Studies have demonstrated that the amount of lead time a company takes has dramatic economic implications. For example with EIA's model in the Interagency Analytic Team draft report, a 5-year "ramp-up" (starting in 2005) would result in economic costs 65% greater than that associated with a 10-year "ramp-up" (starting in 2000). Thus, the assumption that many businesses would fail to plan for the future results in higher projected costs.

While some may claim that very little action is likely to occur prior to 2005, there is reason to believe that some firms will act voluntarily well before 2005. Already businesses are taking action to address climate change. For example, on September 18, British Petroleum announced its plan to reduce emissions of greenhouse gases worldwide by 10% below 1990 levels by the year 2010. In July, United Technologies announced their plan to reduce its worldwide energy consumption by 25% by the year 2007. Moreover, once the Protocol is ratified with the advice and consent of the Senate, we would expect more firms to respond and undertake more actions to abate emissions.

Finally, how an analysis addresses other policy issues that can affect the costs of abating emissions can also impact the conclusion regarding costs. In the Administration's analysis, additional elements of policy were recognized as having the potential to significantly decrease the costs of compliance and increase the amount of reductions that might be accomplished at

home. These policies were not factored into the illustrative model the Administration cited, but were qualitatively taken into account in reaching the conclusion that the United States could meet its Kyoto target for a relatively modest cost. The EIA analysis, however, ignores elements such as afforestation and reforestation (covered under the Kyoto Protocol) and the Administration's electricity restructuring proposal, all of which could significantly lower compliance costs.

Implementing Legislation

The Administration will seek any necessary new implementing legislation at the appropriate time. While the Administration advocates the use of a domestic trading program during the 2008-2012 commitment period, no policy decisions have yet been made about the nature of this program. Thus, all aspects of the trading program, including the options to allocate permits based on historical emissions or to auction some or all permits and recycle the revenue back to the economy through cutting other taxes, are still under consideration.

The Administration continues to believe that the costs of achieving our Kyoto target will be modest if we are successful in securing rules for efficient international trading, joint implementation, and the Clean Development Mechanism, and if key developing countries meaningfully participate in the international effort to address climate change. Again, I appreciate this opportunity to share with you some of the latest insights from the economic modeling community and our perspective on the recent EIA analysis. If you have any questions, please feel free to contact me or have your staff follow-up with Joe Aldy on my staff at 202-395-1455.

Sincerely,

Janet Yellen
Chair

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:15-DEC-1998 11:09:30.00

SUBJECT: Re: Chapt I

TO: Michele Jolin (CN=Michele Jolin/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TEXT:

That sounds just great.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Douglas W. Elmendorf (CN=Douglas W. Elmendorf/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:15-DEC-1998 09:51:06.00

SUBJECT: sell now!

TO: Steven N. Braun (CN=Steven N. Braun/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TO: mlked99 (mlked99 @ frb.gov [UNKNOWN])

READ:UNKNOWN

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

CC: Douglas_W._Elmendorf@oa.eop.gov (Douglas_W._Elmendorf@oa.eop.gov [UNKNOWN])

READ:UNKNOWN

TEXT:

From Slate's Moneybox column:

"Analysts now expect the companies in the S&P 500 to grow earnings by 18 percent in 1999. Given global economic conditions, the only way this could be accurate is if we're going to be colonizing a new planet in January and American companies are going to be exclusive suppliers to this previously untapped market."

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Michele Jolin (CN=Michele Jolin/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:15-DEC-1998 11:08:46.00

SUBJECT: Chapt I

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TEXT:

Chad said that he hopes to have a draft of Chapt I to you "very early next week" and then hoped you could get comments back to him before the end of the week. Then he would revise the Chapt and get it back to you when you get back from NY. Then we'd circulate either sometime at the end of the week of Jan 4 or at the beginning of the week of Jan 11.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:18-DEC-1998 15:55:52.00

SUBJECT: Chapter 1

TO: Jeffrey A. Frankel (CN=Jeffrey A. Frankel/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TEXT:

The note to Chad summarizes our discussion and contains my talking points from MIT. They were a condensation of a slightly longer talk I gave at the NABE.

----- Forwarded by Janet L. Yellen/CEA/EOP on 12/18/98
03:55 PM -----

Janet L. Yellen
12/18/98 03:53:51 PM
Record Type: Record

To: Charles F. Stone/CEA/EOP
cc:
Subject: Chapter 1

I talked with Jeff and Nouriel this morning about Chapter 6 (Intl.) and recognized in the course of the conversation that Chapter 1 needs to have a discussion of the International Financial Crisis and U.S. leadership in resolving it with a discussion of the various steps the U.S. has taken to promote recovery, insure global growth and prevent further countries from slipping into crisis. There is a portion of Nouriel's draft that covers this that I will xerox for you; also Jeff has agreed to make a rough outline of the necessary points. And finally, I am enclosing a speech I gave at MIT that covers most of the material although there are new developments, like the Brazil package and a further G-7 commitment to precautionary lending facilities. I attach my MIT talk and will get you a copy of the relevant pages from Nouriel.

===== ATTACHMENT 1 =====
ATT CREATION TIME/DATE: 0 00:00:00.00

TEXT:

Unable to convert ARMS_EXT:[ATTACH.D93]MAIL434526655.326 to ASCII,
The following is a HEX DUMP:

Remarks of
Janet L. Yellen
Chair of the President's Council of Economic Advisers
at the Catherine Stratton Lecture
Massachusetts Institute of Technology
October 19, 1998

In my opening remarks this morning I would like to address three questions relating to the international financial crisis: First, how serious an impact is the crisis having on the world economy? Second, what can we do to contain the further contagious spread of the crisis and help the crisis stricken countries recover? And third, what steps can be taken to prevent future crises?

The Severity of the Current Crisis.

Let me begin with the economic impact of the crisis. How serious has it been? More than a year has elapsed since the Asian crisis began with the collapse of the Thai baht in July 1997. Unfortunately, what started as a regional economic and financial crisis in East Asia has now developed into a larger global crisis, spreading to financial markets around the world, impacting global commodity markets, impairing economic development and imposing extraordinary hardship in the crisis afflicted countries, and posing risks to growth in industrial countries including the United States. There are few countries around the globe that have been unaffected.

The economic slump in the original crisis countries (Korea, Indonesia, Thailand and Malaysia) remains severe. The spillovers to other countries in the region, such as Hong Kong and Singapore, have been substantial. Japan, already in a serious and deepening recession prior to the crisis, has seen a significant decline in its exports to its key Asian trading partners, and its banks have been hit with financial losses related to lending in the region. Currencies and stock

markets in Latin America have come under pressure, especially following the crisis in Russia. Spreads on the interest rates facing emerging market borrowers over U.S. Treasury yields reached about 1500 basis points in September 1998, and are now close to their highs during the 1995 Mexican peso crisis. The appetite for risk of international investors has fallen and there is broad retrenchment taking place not only from emerging markets but from risky assets in general towards safe haven assets and towards liquidity.

Over the past year, commodity prices have also declined, impacting industrial countries like Canada, Australia and New Zealand. In Latin America, the fall in oil prices has hit Mexico and Venezuela; the fall in copper prices is hurting Chile and Peru; and the decline in agricultural prices is affecting Argentina. Globally, all commodity exporters are hurting.

The impact of the crisis on the prospects for worldwide growth is evident in the most recent IMF *World Economic Outlook*, released in October 1998. The IMF now forecasts 2.0% world real growth in 1998, a precipitous drop from the 4.3% growth expected in October 1997.

Forecasted world growth for 1998 is now comparable to levels not seen since the pronounced world slumps of 1974-75, 1980-83, and 1990-91. Japan's economy is expected to decline by 2.5%. The newly industrialized Asian economies (Hong Kong, Taiwan, Singapore, and Korea) are predicted to contract by 2.9%. The economies of the ASEAN-4 nations (Indonesia, Malaysia, Philippines, and Thailand) are now expected to shrink by a staggering 10.4%. Moreover, expected growth in the developing countries in the Western Hemisphere is now 2.8%, down from 5.1% a year ago; and Russia is expected to contract by 6% this year.

Containing the Crisis and Promoting Recovery.

Let me next comment on the question of what we can do to contain the crisis and to help crisis stricken countries recover. The first clear imperative is for the industrial countries to take appropriate steps to sustain or promote growth in their own economies. Strong growth in the industrialized countries--who are the key customers of the crisis afflicted countries--is a prerequisite for those nations' recovery. And, for most industrial countries, as I noted, the crisis has diminished the prospects for growth, so that policies may be called for to offset those impacts. Here in the United States, the Federal Reserve has indicated its determination to maintain our expansion and concrete steps have already been taken to mitigate the growing financial repercussions of the crisis that are becoming evident in U.S. capital markets. The growth prospects of all industrial nations will suffer unless the industrial countries do their part to help the world economy to grow.

Japan also has a key role to play in maintaining world economic growth and its performance will determine the prospects for Asia's recovery. Japan is not only the world's second largest economy, but also the most important customer of, investor in, and lender to the crisis afflicted countries in Asia. Japan has now entered a full fledged recession. Real growth over the four quarters of 1997 amounted to -0.4%. In the first half of 1998, Japanese real GDP was down 4.3% at an annual rate--far worse than expected. Japan risks descent into a deflationary spiral in which falling prices raise real interest rates, further discouraging spending. The United States continues to believe that Japan must take strong fiscal measures to stimulate domestic demand, to restore confidence, to deal with the problems of its banking system, to open its markets and to deregulate its economy.

I think it's important to emphasize that in serving as an engine of global growth, the

United States will inevitably see an increase in its already sizeable trade deficit and some sectors, particularly those that are heavily exposed to trade, will experience disproportionate impacts. Even so, the United States must accept a rising trade deficit if the crisis countries are to recover.

Over the next year or so, calls for protection will be on the rise and we will need to work to counter protectionist pressures at home. We have urged the crisis impacted countries to keep their own markets open and we too must remain committed to outward looking, internationalist policies.

Beyond working to promote growth in the industrial world, the United States has been focused since the outset of this crisis on the need to contain financial contagion and to restore the confidence of market participants--a prerequisite for capital flows to continue. We have supported the IMF in its goal of providing financial assistance to countries that are in crisis, contingent on their willingness to implement the often tough reforms needed to restore economic confidence and strengthen the underpinnings of their economies. The current crisis has many unique features that make it different from crises past. Historically, crisis prone countries had large budget deficits, high public debt, high inflation rates, slow growth and low savings and investment rates. In contrast, the crisis stricken Asian countries had low budget deficits, low public debt, single digit inflation rates and high savings and investment rates. In light of these differences, some IMF critics have claimed that the crisis was purely due to irrational panic and speculative capital flight. And they have faulted the IMF for mindlessly applying traditional medicines. The IMF has had to learn as it has proceeded throughout this crisis. But I believe it is now widely agreed that structural weaknesses, particularly in the process of financial intermediation, and not simply irrational capital flight, was central in initiating the crisis. And

that is why IMF programs, in addition to stressing the necessity for countries to eschew inflationary finance in responding to the crisis, have particularly stressed the need to take steps to strengthen weak banking systems by closing or recapitalizing inefficient or insolvent banks, to end cronyism in lending, to reduce corruption, and to strengthen the financial system.

Although structural problems, in my view, played a key role in igniting the financial crisis, contagion is also at work, and it now threatens countries that have made great progress in implementing sound macroeconomic policies and have worked to strengthen the fundamentals of their economies. To deal with such threats, the President has proposed, and the G-7 has agreed to explore, creating a precautionary financial facility based in the IMF whose goal would be to provide assured access to assistance in the event of need (a credit line, in effect) to countries with sound policies which have acted responsibly, thereby helping them fight off the contagious impact of the ongoing crisis.

Finally, I would note that it has long been apparent that the IMF's resources simply had to be expanded for it to play its critical role in countering contagion. And the key roadblock was the failure of the U.S. to meet its own financial obligation to the International Monetary Fund. The Clinton administration has argued tirelessly to Congress to fund the IMF and we are very pleased that the budget agreement reached last week, which is expected to be signed into law tomorrow, at long last contains authorization for the U.S. to pay its IMF dues and provide our contribution to the New Agreement to Borrow. Meeting our own international commitments also strengthens the ability of the United States to lead in this crisis.

I said that the United States supports the basic IMF approach, which entails asking countries to take responsibility for improving economic fundamentals as a condition for lending.

But we also recognize the need to do more to help crisis-stricken countries get back on their feet, restore growth, and mitigate the suffering which has been afflicted on so many citizens in the affected countries. We cannot tolerate a decade of lost growth. And serving as good customers for the products of crisis stricken countries is not enough.

Many of the crisis afflicted countries lack adequate social safety nets. For that reason, the President has asked the World Bank and Asian Development Bank to double their aid in support of strengthening the social safety net in crisis affected countries. The focus of the new lending is on basic needs, children, the elderly, the unemployed, and groups in the affected countries who are most vulnerable to economic change.

A problem which is delaying recovery in several of the crisis countries is that many Asian companies and banks, including many that were in good health before the crisis, have become engulfed in massive debt problems due to systemic national economic problems. For example, in Indonesia, Korea and Thailand, the combination of sustained high interest rates and illiquidity has led to harsh economic contraction and a vast overhang of bad debt. Debt to equity ratios that were already very high before the crisis (about 300% in Korea for the top 30 chaebols) have become unsustainable now (over 500% in Korea, 400% in Thailand and even higher in Indonesia) due to the real devaluation of their currencies and the burden of high real interest rates. The World Bank estimates that 20-65 percent of firms in these three countries have balance sheet losses greater than equity. When insolvent, highly leveraged companies cannot service their debt, a self reenforcing spiral is created in which banks' cash flows are squeezed, forcing them to contract new lending not only to troubled corporations but even to those in better health. To address this problem, we are working with the World Bank, the IMF and individual

countries to see if comprehensive restructuring plans can be devised to restore the flow of credit so that firms in these countries can get back to the business of producing output and creating jobs.

Strengthening the International Financial Architecture

Finally, let me turn to the \$64,000 question. What can we do to make sure the world never again faces a crisis like the one we are experiencing? Unfortunately, I have no silver bullet--no simple solution that would guarantee countries the benefits of global capital flows while eliminating the risk that a crisis of confidence could once again result in the painful withdrawal of that access. Even so, international agreement is finally emerging on the steps that can and should be taken to strengthen the architecture of the financial system so that it is less crisis prone going forward. A plethora of useful recommendations to strengthen the international financial system is contained in a report, released just over a week ago, by a working group of central bank governors and finance ministers from a group of industrial and key emerging market countries dubbed the G-22. The report focuses on measures to increase transparency and strengthen financial systems, and it proposes strategies for orderly workouts in the event of a future crisis. Let me describe some of its recommendations.

First, there is broad consensus on the need for greater transparency and openness both on the part of debtor countries and official institutions such as the IMF. The report stresses the need to enhance the relevance and reliability of information disclosed by the private sector through compliance with high-quality accounting standards. It calls for broadening the public disclosure of data on foreign exchange reserves, external debt and

financial sector soundness. And it recommends greater disclosure of data on the international exposure of investment banks, hedge funds and other international investors.

Transparency is necessary to provide investors with the information necessary to evaluate risk in lending, but such measures are not likely to be sufficient on their own to prevent another major crisis from occurring. In the current crisis, for example, some information was unavailable, but available indicators, many signaling caution, were apparently ignored by investors.

Accordingly, the report proposes a series of reforms to strengthen domestic financial institutions and to create stronger incentives for borrowers and lenders to weigh risk and act with appropriate discipline, thereby reducing the odds of a crisis. As I mentioned, most analyses of the crisis point to financial sector weaknesses as a central cause. National banks and other financial institutions borrowed excessively from abroad and lent excessively at home, thus playing a key role in channeling funds toward projects that were marginal if not outright unprofitable. Lax supervision and weak regulation of the financial system, low capital adequacy ratios, lack of well designed deposit insurance schemes, insufficient expertise in the regulatory institutions, distorted incentives for project selection and monitoring, and outright corrupt lending practices, all contributed to the build-up of severe structural weaknesses in undercapitalized financial systems. The most visible manifestation was a growing share of non-performing loans prior to the crisis. The distortions generated by such behavior were enhanced by the rapid process of capital account liberalization and financial market

deregulation in the region during the 1990s, that dramatically increased access to funds from abroad.

The task of strengthening financial systems is long-term and daunting. It is clear that strong prudential regulation and supervision of banks is needed in emerging markets, and the report recommends national implementation of core principles of banking supervision devised by the so-called Basle supervisory group. In addition, changes will be considered to the supervisory treatment of loans by industrial country banks to emerging market borrowers.

(At present, for example, the capital required against short-term foreign currency denominated loans to foreign banks is well below the capital required on longer term loans.) However, the challenges involved in supervising and regulating banks, even in industrialized countries, should not be underestimated; and it should be remembered that most industrialized countries including many with strong supervisory regimes have also suffered the debilitating economic impacts of banking crises. Beyond banking, steps must be taken to improve national bankruptcy and foreclosure laws, to improve corporate governance in both the financial and non-financial sectors; and to develop liquid and deep securities (bond and equity) markets, so that there can be less reliance on banks in the process of financial intermediation.

Prices in stock and bond markets adjust to changes in perceived risk automatically and in ways that can pose substantially less systemic risk than foreign-currency-denominated short-term loans. The problem with this solution is that in order to function well, stock and bond markets require a transparent, well-regulated, and well-functioning set of public capital markets.

The experience of Asia suggests that an excessive accumulation by a country's financial system of short-term, foreign currency denominated, and unhedged foreign liabilities was an important cause of the financial fragility that triggered and exacerbated the crisis. Mismatches between the maturity and currency composition of financial institutions' assets and liabilities and an incorrect assessment of liquidity and currency risks aggravated the problem. The risk and associated economic vulnerability stemming from these exposures was enormous. As I noted, there is now broad agreement that such borrowing by banks should be addressed in a strengthened regime of prudential supervision. However, foreign currency borrowing by firms also played a destabilizing role in some countries. There is consequently some agreement now among G-7 countries, as reflected in a statement at the most recent summit in Birmingham, on the need for countries to proceed carefully in liberalizing capital account transactions. With strong financial systems, the arguments in favor of unfettered capital flows are strong. But during such a transition, the liberalization of the capital account should be gradual and carefully managed. Agreement has not yet emerged, and debate is certain to continue, on whether even stronger measures are needed to prevent potentially destabilizing capital inflows in advance of a crisis--in the form, for example, of controls on capital inflows.

Beyond policies to strengthen financial systems, the G-22 report proposes measures to strengthen the incentives for prudent behavior by debtors and creditors. In recent crisis episodes, governmental guarantees at many levels probably reduced the perception of risk by lenders and borrowers. In many countries, there was an expectation that corporations and banks would be bailed out by governments in the event of trouble. In many instances, too,

the incentive of private parties to hedge exchange risk was diminished by the prevalence of fixed or semi-fixed exchange regimes. Such implicit and explicit guarantees likely distorted incentives, encouraging both debtors and creditors to take on excessive risk, to fail to hedge that risk, and to ignore available information pointing to potential problems. Therefore, limiting such guarantees, and making those which are offered as explicit as possible, and pricing them appropriately could also contribute to crisis prevention.

While strengthening domestic financial systems may prevent some crises and make those that do occur less virulent, it is still likely that crises will not be eliminated altogether. And while a well designed bankruptcy regime can facilitate orderly workouts of private debt, the G-22 report emphasizes the need for new workout procedures to handle the, hopefully rare situations in which sovereign debtors suspend debt payments.

In instances of sovereign liquidity crises, private sector burden sharing is desirable first, because official money is unlikely to be sufficient in all circumstances, and second because it is essential in inducing market discipline and reducing potential moral hazard problems deriving from official assistance. In spite of its importance, private sector burden sharing is more difficult to achieve now than in the days when banks accounted for the bulk of international capital flows. Today, the proliferation of creditor institutions and instruments and the growth of international bond markets makes the problem of coordinating the actions of creditors during a crisis extremely difficult. **Thus, a key recommendation of the Working Group** is to include “collective action clauses” in bond contracts to provide for: collective

representation of creditors; majority action to alter the payment terms of a contract; and sharing of payments among creditors. All of these provisions work to facilitate speedy and orderly workouts.

Conclusion.

Let me conclude by reiterating that, in my opinion, no magical formula can be devised to prevent future currency and financial crises. But there are things that can be done to limit their frequency, the magnitude of their effects, and their pernicious, contagious spread. So, at the same time that we work to contain the current crisis and help restore growth in crisis afflicted parts of the world, we must also implement the reforms of the international financial architecture that would help to achieve this longer term goal.

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CREATOR: Alan S. Polasky (CN=Alan S. Polasky/OU=CEA/O=EOP [CEA])

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SUBJECT: ERP Chap 5 draft

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TEXT:

Janet: attached is a copy of the environmental portion. We had time to rework the section on innovation incentives under alternative forms of regulation and the climate change section (now put after the diffusion section). I did not have time to work in the point about increasing returns - spillovers but will do so. Steve

===== ATTACHMENT 1 =====

ATT CREATION TIME/DATE: 0 00:00:00.00

TEXT:

Unable to convert ARMS_EXT:[ATTACH.D33]MAIL42150665S.326 to ASCII,
The following is a HEX DUMP:

ENVIRONMENTAL REGULATION AND INNOVATION

Environmental regulation addresses the problem of environmental damage that is an unintended consequence of economic activity. Because generators of pollution do not fully account for the environmental damage imposed on others, they do not have the proper incentive to reduce emissions. Unregulated markets therefore typically generate too much pollution. Well designed environmental regulations can reduce pollution and increase the net benefits of economic activity, i.e., the value of economic goods net of environmental damage.

Environmental policy may have a significant impact on the pace and direction of innovation, which over the longer-term may be of greater importance than its impact on immediate environmental outcomes. In what follows, the interaction of environmental regulation and innovation is examined. Innovation incentives under alternative forms of environmental regulation is discussed. This is followed by a discussion of the diffusion of existing technology among potential adopters and the role for policy to modify diffusion rates. Some of the major points of this discussion are illustrated with an application to policy regarding global climate change. Finally, evidence is reviewed on the long-run impact of environmental regulation on productivity.

Innovation Incentives under Alternative Forms of Regulation

There are two primary ways to implement environmental regulation: providing economic incentives to reduce emissions, or command and control regulation. Administration policy reflects a shift toward incentive-based approaches in environmental regulation. The preference for an incentive-based approach is often justified on static cost-effectiveness grounds-- given fixed technology, an environmental goal can be obtained at lowest cost under an incentive-based

approach. A case for incentive-based approaches can also be made on dynamic grounds -- sources may have greater incentives to find new low cost methods of reducing pollution with incentive-based approaches than with command and control regulation.

Examples of incentive-based approaches include tradeable permit systems, liability rules, and emissions taxes. With tradeable permits, total emissions are capped by the number of permits issued, but individual sources can choose their own emission levels by buying or selling permits. Title IV of the 1990 Clean Air Amendments established a tradeable permit program for sulfur dioxide (SO₂) emissions. In Phase I of the program, which began in 1995, permits were allocated to 110 coal-fired electric generating plants. Under the program, plants needing additional permits to cover their emissions could buy permits from plants that had reduced emissions below their initial allocation. In Phase II, which begins in 2000, the program will be extended to cover virtually all fossil-fuel electric generating plants and will reduce SO₂ emissions to 50 percent of the 1980 emission level. Recently, EPA introduced regulations to reduce nitrogen oxide (NO_x) emissions across 22 states plus the District of Columbia that allows emissions trading among major industrial and electric utility sources.

Liability rules make sources financially responsible for the environmental damage they cause. Since technologies or practices are not specified, liability rules can give firms the incentive to reduce the societal risk from their activities, but allow firms to determine how best to do so. For example, the Oil Pollution Act of 1990 makes firms liable for cleanup costs, natural resource damages, and third party damages caused by oil spills onto surface waters. Similarly, the Clean Water Act makes responsible parties liable for the costs of cleaning up hazardous substance spills.

With emission taxes, a source pays a fee for each unit of pollution it emits. Emissions taxes establish a price for pollution, which a source can either pay if it continues to pollute or not pay if it decides to abate. Despite the theoretical appeal of emissions taxes they have rarely been used in practice to regulate pollution in the United States. While there is some debate on whether tax rates have been set at high enough levels to significantly alter behaviour, taxes have been used in several European countries to control SO₂, NO_x, and carbon dioxide (CO₂) emissions. For example, the Scandinavian countries (Denmark, Finland, Norway, and Sweden), have adopted a combination of carbon and energy taxes to reduce their carbon dioxide emissions.

Examples of command and control regulation include technology and performance standards. With a technology standard, a pollution control abatement technology is specified, which all sources must then use. Technology standards have been used in controlling air pollution. For example, Clean Air Act regulations require new firms in certain regions to install the Best Available Control Technology (BACT) as determined by each State. New Source Performance Standards (NSPS) are set by EPA as a floor control level which State BACT technologies must achieve.

Performance standards specify a maximum allowable rate of emissions, usually in terms of emissions per unit of output, but give sources the choice of how to meet the standard. Performance standards have been used to control water pollution. The Clean Water Act, for example, required all point sources to meet effluent standards (pollutant allowed per unit of water discharged).

Actual environmental policies may combine elements of several approaches. For example, many performance standards are set with a particular technology in mind. The 1972

amendments to the Clean Water Act required industrial dischargers to meet effluent performance standards which were set to the level a source would achieve if they were to use the “best practicable control technology currently available” (BPT). Conversely, technology standards sometimes allow polluters to use different technologies if they can demonstrate they will achieve the same amount of pollution reduction.

An important criterion for evaluating the success of environmental regulation relates to static cost-effectiveness. Given existing technology, incentive-based approaches achieve a specified environmental objective at lower cost than command and control regulation. For example, with tradeable permits, those sources that can reduce emissions most cheaply will do so. When the cost of reducing a unit of emissions is less than the market permit price, a source will reduce pollution and sell extra permits. When the cost of reducing a unit of emissions is above the market permit price, a source will pollute and buy additional permits. The end result of allowing trading is that emissions are reduced in the most cost-effective manner. On the other hand, command and control regulation generally will not be cost-effective because under this type of regulation emissions reductions do not necessarily occur where it is cheapest to do so.

Evaluating the cost-effectiveness of incentive-based and command and control regulation over the longer-term is more complex, however, because pollution control costs are affected by innovations and the two systems may differ in their incentive to innovate. Innovation may be a particularly important factor when environmental regulation is relatively new, where there are unexplored avenues of research and significant learning-by-doing effects.

Box: Recent Trends in Air Quality

Environmental regulations have generated significant benefits in the form of reduced emissions of various pollutants in the U.S. over the past several decades. Emissions of five of six major air pollutants have fallen substantially since the Clean Air Act was passed in 1970, the exception is nitrogen oxides (see chart 5-1). The EPA regulation banning lead additives in gasoline has been largely responsible for the spectacular fall in lead emissions since the 1970s. Lead emissions in 1996 were less than two percent of 1970 emissions.

The improved record on emissions occurred during a period of considerable economic growth. From 1970 to 1997, real GDP expanded by 111 percent, hence emissions per unit of GDP have fallen dramatically since 1970. In certain sectors of the economy, the reduction in pollution per unit of output has been striking. For motor vehicles, emissions per mile of volatile organic compounds has fallen by 81% and for carbon monoxide by 73% since 1970. These impressive reductions in emissions per unit of output could not have taken place without substantial innovation in new processes and products as well as the widespread adoption of these new technologies.

Innovation incentives under incentive-based and command and control regulation

An important criticism of **command and control regulation** is that there may not be enough incentive for sources to search for more cost-effective ways to reduce emissions. A technology standard, for example, mandates the use of a particular pollution control method, providing an incentive to develop cheaper new technologies only if they can meet mandated targets and win regulatory approval. Technology standards may also lock-in a pollution control technology that is unnecessarily costly in the face of changing conditions.

With performance standards, there is an incentive to find lower cost ways of reducing emissions, at least to the level of the standard. Beyond the standard, however, there is no incentive for a firm to search for new methods to further reduce

emissions. Setting the appropriate standard consistent with current technology may not give sufficient incentive to innovate.

One way to increase the incentive to innovate with performance standards is to commit to the implementation of a strict standard in the future -- a technology-forcing standard. The value of an innovation that lowers pollution control costs increases with the stringency of the standard. However, requiring sources to meet a stringent standard immediately with existing technology may impose large costs. Announcing stringent emissions targets well in advance gives sources the incentive to innovate as well as the time to adopt and implement new technology, which may make compliance costs significantly less expensive. [Example - auto emissions regulations and the catalytic converter]

There is a downside to a technology-forcing approach. Because R&D activity is risky, compliance costs may not fall as much as anticipated. If an ambitious environmental quality goal is set and significant innovations fail to occur, the costs of meeting the goal may be quite high. Relaxing the goal at a later date in the face of high costs, which in some sense rewards failure, has its own drawbacks.

Unlike command and control regulation, incentive-based approaches reward sources financially for developing methods that reduce emissions, regardless of the level of current emissions. For example, under tradeable permits, reducing emissions allows the source to increase net sales of permits to other sources. Because incentive-based approaches receive a benefit for reducing emissions at all levels and not just to a given standard, there are greater incentives to innovate under incentive-based approaches than under command and control.

It is important to note that environmental policy may also influence innovation indirectly through changes in relative prices. In the theory of induced technological change, the direction and pace of technological change responds to changes in relative prices, which may be a result of changes in government policies. R&D efforts are channeled toward finding production processes that economize on the use of scarce or expensive factors of production. Induced technological change

was originally used to explain the introduction of labor-saving technological change in the presence of high wages. Recently, attention has focused on the implications of induced technological change for climate change policy, which is discussed below.

Alternative policies to reduce SO₂ emissions

Regulation of SO₂ emissions from coal-fired electric generating units over the past twenty years illustrates the importance of environmental regulatory structure for cost savings and innovation. The 1977 Clean Air Act Amendments required all coal-fired electric generating units built after 1971 to remove 90 percent of SO₂ from stack emissions, effectively requiring scrubbers. The 1990 Clean Air Act Amendments changed regulation to a tradeable permit system. Sources that could reduce emissions cheaply, by switching to low sulfur coal for example, could sell permits to sources where it was more expensive to reduce emissions. Estimates of cost savings under the trading system range from 25 to 42 percent.

Changing regulation from command and control to tradeable permits may also have spurred new innovations that resulted in additional cost savings. Estimates of the costs of reducing SO₂ emissions in 2010 have fallen substantially over time. In 1990, EPA forecasted that total annual compliance costs for SO₂ emissions reductions in 2010 would be \$4.6 billion.

A 1998 study estimated total annual compliance costs at \$870 million in 2010. Original compliance cost estimates will be overstated when they do not adequately incorporate technological advances.

In the SO₂ case, there are other factors besides technological change that help explain the dramatic decline in expected compliance costs. Policy changes that effectively loosened the limit on total emissions after the initial estimates were made may explain the difference in cost estimates. Perhaps the single most important factor, however, was the decline in railroad freight rates as a result of railroad deregulation. Coal from the Powder River Basin in Wyoming has the lowest production cost and lowest sulfur content of any coal in the United States. Lower railroad rates reduced the cost of transporting low-sulfur coal from the Powder River Basin in Wyoming to Midwestern utilities. Coal-fired electric generating

units already dependent on coal transported from far away gained direct cost savings. Other coal-fired electric generating units found they could reduce emissions at lower cost by switching to low sulfur coal rather than investing in scrubbers. An advantage of economic incentive approaches is that sources have the flexibility to adapt to changing circumstances rather than being locked into a prescribed method.

BOX: Estimates of Ex Ante and Ex Post Environmental Compliance Costs

In part because of the recent experience with regulation of SO₂ emissions, there is concern that initial estimates of compliance costs made prior to implementation systematically overstate actual costs. Recent analysis has looked at the limited number of studies where both pre-implementation and post-implementation cost estimates exist, covering the period from 1972 through the early 1990s. There are cases of both overestimating and underestimating compliance costs. Prior to 1981, compliance costs for nearly all regulations were overestimated. Since 1981, estimates have gotten more accurate and the balance has been more equal. Only one more case has been overestimated than underestimated and there have been more cases with fairly accurate estimates (within 10 percent of ex-ante estimated costs).

There are many challenges to estimating the costs of compliance accurately. Analysts ex ante inevitably base their forecasts on policies as they are being debated, not on policies as they are actually implemented. Since policies are often changed or relaxed in implementation, comparing initial cost estimates to actual costs amounts to comparing two different policies. Ex-ante cost estimates are typically based on the assumption of 100 percent compliance with regulations. Since firms with the highest compliance costs tend to be those who do not comply,

cost data that include only complying firms will tend to be lower than estimates based on perfect compliance. On the other hand, to the extent that cost estimates do not adequately incorporate future technological advances, the costs of compliance will be overstated.

Providing for the efficient amount of R&D

It is widely recognized that the volume of R&D activity undertaken in a market economy may be below the level that is in society's best interest. This result may occur because of either generic difficulties with market provision of R&D or specific difficulties of alternative forms of environmental regulation to supply the correct incentives to innovate.

A standard problem with the private provision of R&D is the appropriability problem -- an innovator cannot appropriate the full benefits of the innovation. Innovators may have difficulty appropriating the benefits of innovation where patent protection is incomplete so that other firms can quickly imitate the innovation, or where basic research leads to advances in knowledge that are difficult to patent. When the appropriability problem is severe, there is a strong case for public support for R&D because the private sector will lack incentive to innovate even though the benefits of innovation to society may be large.

A concern about private provision of R&D that is specific to environmental policy is the effect of alternative types of regulation on the proportion of the benefits of innovation that accrue to the innovator. As noted above, under command and control regulation, sources do not receive credit for the value of environmental improvement. As a result, even without the standard appropriability problem there may be too little incentive for firms to innovate. The exception to this general rule is the case of technology-forcing standards discussed above. Incentive-based approaches may generate efficient innovation incentives. A source will have the proper incentive to innovate when the benefits to a source from reducing its emissions include the value of the reduction in damages from reduced pollution as well as the change in its own compliance costs.

Sources will have the proper incentive to innovate when incentive-based approaches “get the prices right” in the sense that the market permit price or emissions tax is equal to the marginal damages from pollution. In this case, environmental regulation raises no special concerns over and above the standard problems inherent with market provision of R&D.

Federal research funding is concentrated in two areas -- identifying environmental threats, and basic research into solutions to those threats. Basic research into alternative energy sources, pollution abatement technologies, and clean-up technologies can provide the basis for the development of cheaper means to control the environmental impact of economic activity. In 1996, direct Federal investment accounted for nearly 50 percent of the total U.S. R&D expenditure in energy, remediation, and site assessment -- \$4 billion. Such investment is focused on areas of inquiry that are high-risk and offer long-term returns that the private sector has little incentive to fund. The majority of the government’s environmental R&D investment is carried out through its system of research laboratories and competitive grants to universities and researchers.

While it is generally the case that private sector incentives to innovate are insufficient, it is important to note that more R&D activity is not always better. Like other investments, R&D activity is justified when the expected benefits of innovation exceed the costs. Of course, it is difficult at the outset to predict the success of an R&D program because the returns are inherently uncertain. As Albert Einstein said, if we knew what we were doing, it wouldn’t be research. For example, the Federal government’s funding of research into fuel sources for space travel lead to breakthroughs in fuel cell technologies. Fuels cells are highly efficient and produce very little pollution. While the technology is not yet ready to compete with conventional fuels, fuel cells could be the energy source of the future. This is an example where an initial federal R&D investment has the potential to provide large benefits in the future.

BOX: Public-Private Research Partnerships – PNGV

The Federal government can play an important role promoting R&D when the private sector has limited interest in

pursuing an important social objective. For example, the automobile industry is not immediately interested in developing significantly more fuel-efficient vehicles because low gasoline prices have made consumers less concerned about fuel-efficiency. However, since vehicle fuel use is a major source of energy demand and vehicle emissions are a major source of greenhouse gas emissions, there is societal interest in developing more fuel-efficient vehicles.

In response, the Partnership for a New Generation of Vehicles (PNGV) was established in 1993 with the goal of dramatically increasing the fuel-efficiency of cars and light-duty trucks while maintaining current performance standards and price. The focus to date has been on developing a car that would achieve 80 miles per gallon. The research needed to reach that goal ranges from basic study of lightweight materials and alternative power sources to applied engineering of new manufacturing processes. To entice firms to join the research endeavor, the government funds basic research, co-funds more applied research and provides access to the extensive federal laboratory system and its experts.

Environmental Policy and Diffusion of Technology

While innovation is a necessary precondition for improved technology, actual performance gains will not be realized unless new technology is adopted. Regulatory, informational, or other hurdles may block or delay the adoption of new technologies that are more environmentally friendly. Unless proper incentives are provided, firms may not produce environmentally friendly products even where it is technically and economically feasible to do so, and consumers may not buy such products even when they may be available at reasonable cost. There may be a role for policy to encourage diffusion of new technology because there is no guarantee that consumers or firms will adopt new technologies as fully or as rapidly as is socially optimal.

There is a widely observed pattern in the diffusion of new technology among the population of potential adopters of

the technology. Cumulative adoption of new technology often follows a s-shaped curve. Initially there are few adoptions.

The pace of adoptions increases, slowly at first and then more rapidly. Adoptions reach a peak and then fall as the market approaches saturation. The most direct explanation of this pattern has to do with the spread of information among potential adopters. Initially, the new technology is unknown by virtually all potential adopters. A few pioneers become aware of the new technology and make the decision to adopt. Word of the new technology spreads to those in contact with the pioneers so that adoptions begin to pick up momentum. Finally, as the bulk of the population of potential adopters has learned about new technology, the rate of new adoption slows. Another explanation of the observed diffusion pattern depends on heterogeneity between adopters and the falling cost of adoption through time. If costs fall through time, either because of learning-by-doing or further technical advances over time, adopters with more to gain will tend to adopt prior to those with lower benefits who will delay adoption until the price falls.

This pattern of diffusion, while providing important clues about adoption decisions, does not answer the policy question of whether the rate of adoption is efficient or not. Failure to adopt technology may be appropriate, reflecting the fact that the costs of adoption exceed the benefits. However, there may be market failures that prevent adoption even when the benefits of adoption exceed the costs. For policy purposes, it is important to distinguish between these two distinct reasons not to adopt. Only when there are market failures is there a constructive role for policy in promoting the adoption of new technology.

Market failures in adoption may occur because prices fail to reflect the full costs of alternatives. For example, because energy prices may not reflect the full environmental impact from energy use, consumers may not purchase energy-efficient products. The solution to this problem is to “get the prices right” so that consumers face the true costs of their decisions. Potential adopters may lack complete information about new technology. Incomplete information by itself, however, does not necessarily constitute a market failure. In making a private decision about what products to buy,

consumers may need to acquire information. Both the costs of acquiring information and the benefits of making a more informed decision accrue to the consumer. In this case, incomplete information does not constitute a market failure. On the other hand, in adopting a new technology, one person may hasten the spread of information about the technology to others. The benefit of spreading information is typically ignored in the adoption decision. If this problem is pervasive, the solution may entail government provision of information, or requirements on the private sector to provide information.

Residential Energy Conservation: The Energy Paradox

Studies have found that many consumers are unwilling to invest in energy-efficient products such as compact fluorescent light bulbs, improved insulation materials, and energy-efficient appliances even though the studies suggest that such purchases would save them money. The failure of consumers to make investments that save energy and yield apparent cost savings for the consumer is referred to as "the energy paradox."

Consumer investment in energy-efficiency, whether that involves installing better insulation or buying more energy-efficient appliances, typically involves an initial cost followed by future benefits from lower energy bills. Studies have calculated the rate of return for a variety of potential energy efficiency investments. In many cases, these rates of return are higher than typical financing costs. Thus, consumers could expect net economic savings.

There are several possible explanations of the energy paradox. One possible explanation is that consumers face the wrong incentives to invest in energy-efficiency. For example, renters may not make energy-efficient investments if their utility costs are included in the rent and they do not directly reap the benefits from conservation. In such cases, there may be a constructive role for policy to correct the distortion in incentives. Another explanation is that consumers lack information about energy-efficient alternatives. For instance, there is some evidence that providing free information increases adoption rates for energy-efficient lighting. A third explanation of the paradox is that consumers are myopic. There is evidence that

people are more attentive to the initial cash expense than to future savings from lower energy bills. Policies that lower the initial cost of purchase may be more effective in encouraging adoption than policies that reduce future energy costs even though the policies are of equal value.

Some analysts think that findings pointing to an energy paradox are artifacts of flawed data or logic. It is argued that engineering data used to calculate estimated energy-efficiency gains are too optimistic; that actual gains for a typical consumer are far less. Consumers may not install insulation or other energy-saving investments correctly, or there may be special features that prevent the investment from performing to rated capacity. It is also argued that the costs of investing in energy-efficiency are underestimated. The time and resources spent learning about energy-efficient investments are not usually factored into the analysis. For some consumers, these costs may be larger than the energy-efficiency savings. Finally, with significant uncertainty about the price of a new technology, consumers may be rational to delay investing even though current adoption appears to save money. By waiting, a consumer may get a better price and save even more money in the future. Because adoption decisions may take place at any time, analyses that ignore the effect of uncertainty may overstate the value of current adoption.

There is not clear evidence at present to settle the debate over the energy paradox. However, recent low energy prices combined with lower implementation of energy efficiency standards seems to have reduced the opportunities for investments that save both energy and money.

Innovation and Diffusion: An Application to Climate Change Policy

Climate change, because of its long-run nature, is an area where it is important to account for potential changes in technology. The Administration's efforts to address climate change incorporate many of the principles discussed above regarding incentives to promote innovation and diffusion of new technology. These efforts are reflected both in

achievements in international negotiations and in domestic actions.

BOX: Burning down the house

Emissions of greenhouse gases from the burning of fossil fuels and deforestation have led to an increase in the atmospheric concentration of these gases that is 30 percent higher than it was prior to the industrial revolution. Following a “business as usual” path on emissions would lead to a doubling of the pre-industrial revolution atmospheric concentration of these gases midway through the next century. According to climate models, this could lead to global warming of between 1.8 and 6.3 degrees Fahrenheit by 2100. Potential impacts include a rise in sea level, greater frequency of severe weather events, shifts in agricultural growing conditions from changing weather patterns, changes in the availability of freshwater supplies, threats to human health from increased range and incidence of disease, and damage to ecosystems and biodiversity.

To address the risks of climate change, there has been a series of international negotiations in Rio de Janeiro in 1992, Kyoto in 1997, and most recently Buenos Aires in 1998. Building on the 1992 Framework Convention on Climate Change, the Kyoto Agreement would place binding limits on emissions of greenhouse gases over the 2008 to 2012 period in industrial countries. The Agreement contains several provisions that promote cost-effective reductions of these gases, including the flexibility to trade emissions reductions across gases, international emissions trading, and opportunities to invest in clean-energy projects in developing countries that generate emissions credits for use in industrialized countries.

The Kyoto Agreement embodies a preference for incentive-based environmental regulation by allowing for emissions trading. Incentive-based approaches provide firms with strong incentives to seek out low-cost methods of reducing greenhouse gas emissions. Searching for low-cost abatement opportunities increases diffusion of existing technologies as

well as provides private sector incentives for R&D for the next generation of technologies. In addition, announcing emissions targets well in advance has similar properties to a technology-forcing standard. This approach both gives firms incentives to innovate and allows firms time to adjust, to replace plant and equipment and incorporate new technology, thereby further lowering the cost of emissions reduction.

In conjunction with the international trading system proposed under the Kyoto Agreement, the Administration supports developing a domestic greenhouse emissions trading program for the 2008 to 2012 commitment period. A domestic trading program will allow sources of greenhouse gas emissions to participate in a market that results in least cost abatement. Domestically, 85 percent of greenhouse gas emissions comes from the burning of fossil-fuels. This market will largely involve the energy sector and reductions in emissions will require changes in patterns of energy-use.

Energy efficiency in the United States is now much greater than it was at the time of the first oil shock 25 years ago. Nevertheless, the United States consumes more energy than it did in 1973. The ratio of energy use to GDP (BTU/\$), which is a measure of energy intensity of output, fell rapidly in the 1970s and early 1980s, though it has remained relatively flat in the 1990s (see chart 5-2). Despite the efficiency gains, total energy use rose by 27 percent between 1973 and 1997 (see chart 5-3), stimulated by population growth and rising per capita GDP. Virtually the entire increase came after 1986, a period of relatively low energy prices. Before 1986, relatively high energy prices had kept energy use flat.

The most dramatic increase in energy use has been in the motor vehicle transportation sector, where annual energy consumption rose 54 percent between 1970 and 1995. The average fuel-efficiency of new passenger cars more than doubled between 1974 and 1996, from 14.2 to

28.7 miles per gallon. Despite this impressive gain in fuel-efficiency for passenger cars, overall fleet fuel-efficiency has not increased as much because of the shift toward light-duty trucks and sport-utility vehicles. In addition, efficiency gains were partially offset by an increase in miles traveled per vehicle and a large increase in total vehicles. The net effect of all of these changes has been a small decline in fuel use per vehicle but a large increase in energy consumption due to the increase in the number of vehicles (see chart 5-4).

In the residential sector, by contrast, energy use has declined as efficiency gains have more than outpaced increases in the number of households, in average house size, and in the average number of appliances per household. For example, the efficiency of the average new refrigerator improved 192 percent from 1972 to 1996 [check]. Per household energy use declined rapidly in the late 1970s and early 1980s but has been stable since.

Changes in energy use are a race between efficiency gains on the one hand and increases in population and income on the other, with shifts in consumer behavior often the determining factor. Low energy prices shift demand toward energy-intensive goods and services and result in higher energy use. High energy prices in the 1970s and early 1980s spurred efficiency gains and shifted demand away from energy-intensive goods.

There is evidence that innovations in energy technology, which will be necessary to reach climate change policy goals, are responsive to changes in energy prices. There is a positive relationship between the number of patents in energy fields and current and prior year energy prices. Of course, other factors such as the level of federal funding for energy-related R&D may partially explain this relationship. Other evidence lies in the statistical relationship between energy prices and the ratio of energy use to GDP (see chart 5-2). Evidence indicates that when energy prices are high, the energy to GDP ratio falls. Part of this relationship is accounted for by substitution of other inputs such as labor or capital for energy during periods of high

prices and partly this reflects consumers choosing to do without. The fact that the energy to GDP ratio remains lower in the 1990s after energy prices had once again fallen indicates long-lasting changes were made in response to earlier high prices. This is a good signal that innovations have occurred. [ADD: tie to Administration's Economic Analysis]

In addition to directly affecting energy prices, it may be desirable to stimulate innovation and diffusion directly through R&D incentives. The President's Fiscal Year 2000 budget includes continued funding for the Climate Change Technology Initiative (CCTI), a program designed to spur the discovery and adoption of new energy-saving and carbon-saving technologies through tax incentives and R&D investments. Many of the components of the CCTI reflect recommendations made in a 1997 report by the President's Committee of Advisors on Science and Technology. The Committee found that "the inadequacy of current energy R&D is especially acute in relation to the challenge of responding prudently and cost-effectively to the risk of global climatic change from society's greenhouse gas emissions." By providing public support for energy R&D through the CCTI, the level of innovation will likely increase and offset the appropriability problem associated with this kind of R&D.

The proposed FY2000 CCTI package contains \$X billion over the 1999-2003 period in tax cuts for energy-efficient purchases and renewable energy, including tax credits of \$3,000 to \$4,000 for consumers who purchase highly fuel efficient vehicles, a 15 percent credit (up to \$2,000) for purchases of rooftop solar equipment, a 20 percent credit (subject to a cap) for purchasing energy-efficient building equipment, a credit up to \$2,000 for purchasing energy-efficient new homes, an extension of the wind and biomass tax credit, and a 10 percent investment credit for the purchase of combined heat and power systems. The package also contains \$X billion over this five year period in additional research and development investments

-- covering the four major carbon-emitting sectors of the economy (buildings, industry, transportation, and electricity), plus carbon removal and sequestration, Federal facilities, and cross-cutting analyses and research. The FY2000 proposal builds on the FY1999 budget which included more than \$1 billion in CCTI R&D funding. The FY1999 budget represents a 25% increase over the FY1998 climate change R&D appropriations. (CONFIRM TAX INCENTIVE PROPOSAL FOR FY2000)

Complementing fiscal policy, the federal government can undertake other actions that promote the diffusion of climate-friendly technology. In October, 1997, the President called for a series of steps to reduce energy use in Federal buildings, transportation fleets, and other equipment purchases, and to promote the use of renewable energy sources. As the nation's largest single energy user, the federal government spends nearly \$8 billion each year for power to operate facilities, vehicles and industrial equipment, and over 90% of this energy derives from fossil fuels. The federal government plans to expand its procurement of renewable and less carbon-intensive fuels. These efforts will accelerate the diffusion of new energy efficient and carbon-lean technologies. Further, the federal government's experience with these technologies will demonstrate their applicability and feasibility for other users thereby facilitating diffusion.

BOX: The Rate of Energy Efficiency Improvement

The extent of technology deployment significantly affects the rate of an economy's energy efficiency improvement. There are two schools of thought regarding the deployment of technology: the engineering perspective, reflected in "bottom up" models based on physical relationships and known technologies, and the economic perspective, reflected in "top down"

models based on theoretical and statistical relationships that link policy variables to private-sector behavior. The bottom up modelers sometimes claim that the top down modelers are excessively pessimistic regarding the scope for technological solutions, and the latter sometimes claim that the bottom up modelers are excessively optimistic about technology ("there is no free lunch").

These two perspectives differ in their approach to assessing technology development and diffusion, and the subsequent effect on the rate of energy efficiency improvement (EEI) across the economy. The EEI can be thought of as the sum of three factors: market-induced energy efficiency improvement, policy-induced energy efficiency improvement, and autonomous energy efficiency improvement. Market-induced improvement reflects the effect of changes in energy prices on consumption decisions. For example, the increase in gasoline prices following the OPEC oil shocks stimulated the development and deployment of more fuel-efficient automobiles.

Policy-induced improvement reflects the effects of policies on energy consumption. Policies that affect the price of energy, such as removing energy subsidies, or implementing a tradable permit system that imputes a price on carbon dioxide, would have an effect comparable to the market-induced component. In addition, non-price policies, such as the provision of information, may increase energy efficiency improvement by promoting the adoption of more energy-efficient technologies. Changes in policy have been important in the past and will continue to be important in the future, including policies that affect the price of energy, deregulation, R&D incentives, public information campaigns and moral suasion from public leaders.

The autonomous component of energy efficiency improvement is that part that would take place even in the absence of policy and market price changes. The gradual structural shift in the United States economy away from basic manufacturing (and agriculture) toward services, which are less energy-intensive, appears to dominate this component.

In practice, it can be difficult to discern each of these three components in an empirical model. Statistical analysis shows that the substantial improvement in energy efficiency in the late 1970s can be largely attributed to the increase in energy

prices resulting from the 1973 and 1979 oil price shocks. Once one controls for the effect of price, the remaining energy efficiency improvement is about one percent per year. This residual reflects both the effect of non-price policies and the autonomous rate of improvement. This estimate is subject to a large margin of error --the true parameter could be either higher or lower. But a best guess is that policy initiatives are needed if total energy efficiency is to increase at a rate faster than this.

Some analysts claim that bottom up modelers are technology optimists because of the improvement in energy efficiency they believe occurs *in the absence of price changes*. They are optimistic about the non-price policy subset of energy efficiency improvement, not the total efficiency improvement that would result with a change in prices. The best statistical estimates illustrate that this particular kind of optimism is misplaced.

The top down economic models are potentially *more* optimistic about the effects of a given price change on energy efficiency improvement. These models can predict from historical data changes in behavior in response to prices without needing to know, in an engineering sense, all specific technologies necessary to achieve an emissions goal. Major structural changes will typically entail the invention of new technologies that in advance are unknown, not just to the typical businessman or household, but also to the engineers building the bottom up model. Only historical statistical experience is capable of providing rough guidance on the extent to which price changes are likely to bring forth new technologies.

The key point is that technology is not in itself a policy. The bottom up models are useful for sketching out some likely technologies that would have to be more intensively used if consumption of carbon-intensive energy is to be reduced. But any assertions about the costs of reducing emissions of greenhouse gases must be based on estimated relationships between policy levers, innovation, and the behavior of the economy.

The Long-Run Costs of Environmental Regulation

While the development of new technology and widespread adoption and diffusion of available technology can make environmental protection less expensive, some analysts have argued that further environmental protection can be obtained at little or no economic cost. The energy paradox described above is perhaps one such example. If stricter environmental regulation is costless, then implementing such regulations is unambiguously good because environmental benefits are generated without economic cost. Though it is a difficult proposition to test, the weight of the evidence suggests there are long-run economic costs from imposing stricter environmental regulations.

Are there long-run costs from environmental regulations?

There are several possible ways in which environmental regulations might be a blessing rather than a curse for regulated firms. First, environmental regulations may force firms to reconsider their methods of production, which could lead them to discover new methods that simultaneously lower emissions and cost. To some, the existence of pollution is itself an example of economic inefficiency in which resources are wasted. By focusing on eliminating emissions, it is argued, firms can save these resources and consequently lower the costs of production. Second, firms subject to strict environmental regulation may gain a comparative advantage vis-a-vis competitors. Firms subject to strict early controls may gain a first-mover advantage over rivals who may also eventually be subject to strict environmental regulations.

There are many skeptics of the proposition that environmental benefits can be obtained at no cost. Claims of the availability of a free lunch arouse suspicion at least among economists. Skeptics question why firms would not undertake profitable investment without being forced to do so by regulators. Profit-maximizing firms gain by cutting costs and seizing strategic advantages. The profit motive itself should ensure there are no large unrealized cost savings or untapped first-mover advantages. Difficulties in internal organization may prevent a firm from operating in a manner fully consistent

with profit maximization. However, it is not clear that policies can be designed to overcome these internal organizational problems. Further, there are questions about the evidence used to support the claim that environmental benefits can be obtained at no cost. Some observations of lower production costs post-regulation may ignore R&D expenditures and other investment costs, which if properly counted would show increased rather than decreased total cost.

Evidence of the long-run effect of environmental regulation on growth

Neither proponents nor skeptics of the idea that environmental regulations impose no long-run costs are likely to be persuaded by the other side's appeals to abstract theories. Though it is difficult to test this proposition directly with existing data, there is evidence on the long-run productivity consequences of environmental regulation. This evidence indicates that increasing the stringency of environmental regulations comes at some economic cost.

A number of studies have analyzed the proportion of the productivity slowdown in the 1970s within various industrial sectors attributable to increased environmental regulation. These studies generally found a small negative effect of environmental regulation on productivity. Most of these studies found that the percentage of the overall productivity slowdown due to environmental regulation was between eight and 16 percent.

Other studies focused on the economy-wide effect of environmental regulations on productivity. Using data from the Census Bureau's Pollution Abatement Cost and Expenditures (PACE) Survey, studies found a negative relationship between environmental compliance expenditures and measured productivity. The negative relationship suggests there might be negative productivity consequences from increased environmental compliance expenditures. One study found that a \$1 increase in environmental compliance expenditure was correlated with a decrease in measured productivity of approximately \$1.50 to \$2.00.

Another study analyzed the economy-wide effects of environmental regulation, based on a multi-sector model of the

U.S. economy, estimated that environmental regulations lowered GNP growth by 0.2% per year over the period from 1974 to 1985. The cumulative effect of environmental regulations was a decline of 1.7% in GNP from what it would have been without these environmental regulations.

The results on the relationship between environmental regulation and productivity may overstate productivity losses because the benefits of environmental improvement are not included. There may be direct and indirect effects of improved environmental quality on productivity. For example, improved environmental quality may contribute to a healthier labor force that is more productive.

BOX: Is there an environmental Kuznets curve?

Not only may environmental regulations affect productivity, but there may be an effect in the opposite direction from increasing productivity to demands for greater environmental protection. Analyzing data across countries, Simon Kuznets found that income inequality rose with per capita income for low levels of income but fell with increases in per capita income for high levels of income, describing an inverted-U relationship. Several analyses of patterns of emissions of air and water pollutants across countries have shown similar patterns. Although the early stages of industrialization bring increases in pollution, at some stage people may become willing to spend some of their higher real incomes on a cleaner environment.

There are important long-run implications that follow if the inverted-U relationship is correct. Countries that reach a certain level of development should experience declining pollution levels with economic growth. In other words, growth is not necessarily the enemy of the environment. In fact, high levels of income may be necessary to support demands for environmental protection that lead to reduced pollution.

Just where the turning point in the relationship between development and environmental quality occurs is important

for predicting whether total global emissions are expected to increase or decrease in the near future. If peak pollution levels occur at relatively low per capita income levels, emissions should begin to fall because many populous middle-income countries (e.g., Mexico) should begin to experience improving environmental quality. However, substantially higher peaks mean that pollution will likely get worse before it gets better. One study found that sulfur dioxide and particulate matter levels peak at per capita income levels below \$8000 [1985\$ - update to more recent figure]. A second study using slightly different data and methods found that per capita emissions of sulfur dioxide, particulate matter, nitrogen oxides and carbon monoxide peaked at substantially higher per capita income levels.

Unlike air and water pollutants that have primarily local effects, greenhouse gas emissions seem to increase with income at all income levels. Because greenhouse gas emissions contribute to changes in the global atmosphere but do not contribute to local pollution, there is little pressure to reduce emissions at the national level. Without international agreements to limit greenhouse gas emissions, the path to a more prosperous world may have ever-increasing emissions.

REGULATION & INNOVATION --

THE EXAMPLE OF ELECTRICITY RESTRUCTURING

This chapter has discussed the interplay between regulation and innovation, illustrating how innovations often necessitate regulatory changes, and, in turn, how regulatory changes can affect the pace and direction of innovation. These themes are illustrated in this section with a discussion of electricity restructuring, an example where technological and organizational innovations have changed the desired form of regulation.

Although other industries have been opened to competition over the past decades (e.g.

banking, intrastate trucking, telecommunications), the electricity market, with sales of \$212 billion in 1996, is the largest to be targeted for deregulation. While competition has been introduced at the wholesale (generation of electricity) level, retail electricity markets are still, for the most part, regulated monopolies. The Administration's Comprehensive Electricity Competition Plan proposes to remove many of the remaining barriers to competition and encourage states to implement retail competition. The goal is to provide consumers access to the wholesale power market while maintaining regulated transmission and distribution systems, which probably remain natural monopolies. This is analogous to consumers' being able to choose their long distance telephone service provider. The plan has five main objectives: (1) encourage States to implement retail competition; (2) protect consumers by facilitating competitive markets; (3) assure access to and the reliability of the transmission system; (4) promote and preserve public benefits; and (5) amend existing Federal statutes to clarify Federal and State authority.

This is an excellent example of how an enlightened regulatory approach by government can remove barriers to private innovation, resulting in both economic and environmental benefits. Economic efficiency can correlate with engineering efficiency -- reducing fuel consumption cuts costs to firms while also cutting pollution into the atmosphere. It illustrates how innovation affects the desired form of regulation and how regulatory changes may affect the pace and direction of innovation.

Innovation Caused a Re-examination of Regulation

The electricity industry has been regulated since the early 1900s, when states began to grant electricity companies exclusive service areas. Utilities were overseen by Public Utility Commissions (PUCs) and guaranteed a “reasonable” rate of return on their investments provided they set reasonable rates and met various social objectives such as universal access.

The justification for regulation was that it was less costly to have one electric utility provide service than to have competing utilities. Firms faced enormous start-up costs in installing generating units, transmission and distribution lines, and individual connections. On the generation side, coal-fired and nuclear plants needed to be very large, over 300 megawatts (MW) capacity, to exploit economies of scale. The capital demands for such a large plant needed to be spread over a large consumer base for the utility to recoup its investment. Duplication of transmission and distribution networks by competing firms caused unnecessary expense. To encourage utilities to incur these large investments and avoid wasteful duplication, states restricted competition by granting utilities monopoly status.

Technological and organizational innovations in electricity generation have removed its natural monopoly characteristics and reduced the need to restrain competition in the generation of electricity. Deregulation in the natural gas industry increased the availability of gas and caused prices to fall. This spurred innovations on the electricity generation side and made combined-cycle gas turbine plants, which can be 100 MW or smaller, competitive with much larger coal plants. In 1994, these technologies contributed to a 35 percent fall in the average size of new fossil-fuel fired generating plants relative to the average size of the existing generators. These changes mean that large users can threaten to generate their own electricity if they are not offered lower rates by utilities. Technologies on the horizon promise further reductions in the

efficient size of electricity generation, to the point where even residential users may some day be able to generate their own power.

Understanding how to operate generating plants and the transmission grid independently of each other has improved. To maintain the integrity of the electricity grid, the electricity demanded must always equal the amount being supplied. With fluctuating quantities of energy demanded, generators must be closely coordinated. Until recently, this was taken to mean that generation, transmission, and distribution services needed to be jointly owned. Recently, however, technological and institutional innovations such as computerized controls, Independent System Operators (ISOs), and electricity pools, offer ways to coordinate unaffiliated generators while providing fair, open access to transmission lines while maintaining their integrity.

BOX: Balancing Loads vs. Distribution losses & Heat Production

The trend towards smaller, cleaner, and quieter generating plants along with the physics of electricity transmission and generation have led many to claim that the days of centralized power are numbered. Generating electricity from a fuel source is never perfectly efficient -- some of the energy in the fuel source is lost in the transformation process. This energy typically takes the form of heat which can be captured and used in industrial processes or as space heating if the generator is physically close enough to consumers in need of heat. By doing so, the plant produces two valuable products -- electricity and heat -- for the price of one, a process called cogeneration.

Secondly, even after it is generated, most electricity goes through many steps before reaching the end user. Electricity can be transmitted over high voltage transmission wires for

long distances, after which it must be transformed into lower voltage to be distributed, and finally transformed again before it is delivered to consumers. On average, some **10 percent** of generated electricity is lost through this chain. On-site electricity generation avoids the majority of these losses, thus increasing efficiency and lowering costs.

In the past, economies of scale in electricity generation, and the nuisance of locating loud and polluting plants nearby, outweighed the incentive for small scale local generation. Those trends are changing as very small scale plants (natural gas fired systems may some day be offered as small as 5 kw, enough to power a single family home) are becoming competitive with large scale generation, and plants are becoming more quiet and less polluting. Extremely clean and nearly silent fuel cells, in which hydrogen is passed through a series of catalysts, producing electricity and water, could be the next generation of electricity production.

These changes do not necessarily imply that we will soon have no need for centralized power. One reason for having an electricity grid is that it pools plants with different production characteristics with consumers with different load profiles. For example, the commercial sector demands electricity during the day while residential demand is concentrated during the mornings and evenings. If each of these groups generated their own electricity, they would each need to have the facilities to meet their electricity requirements. By pooling the groups, the same consumers can be supplied by less generating capacity. Depending on the size of distribution losses and the value of excess heat, it would be wasteful to have two separate plants, one at the office and another one at home when one plant could service both loads.

(End Box)

While electricity is governed by a mix of state and federal regulation, a series of Federal actions since 1978 began to introduce competition at the wholesale (generation of electricity) level. The Public Utilities Regulatory Policy Act of 1978 (PURPA) first opened the door by requiring public utilities to purchase power from expensive renewable and cogeneration sources -- "qualified power." While this saddled some utilities with high-cost, long-term contracts, it also demonstrated that non-utility owned generators could be integrated into the electricity system and helped spur the development of smaller scale generation technologies. The Energy Policy Act of 1992 went further by creating a new class of independent electricity generating companies who could sell power directly to utilities. In April 1996, the Federal Energy Regulatory Commission (FERC) issued Order 888 requiring public utilities to provide access to their transmission lines at reasonable, non-discriminatory rates.

At the state level, to further these policies and reap the benefits of competition, many utilities are collaborating to create regional or state-wide ISO's for transmission grids which can independently set fair transmission pricing and can contract for network services (back-up power, etc.). There are currently four ISOs in operation and seven others in the planning stages. States throughout the country are going further to provide consumer choice -- retail competition in electricity markets. Thirteen **[as of Dec.1, update]** States have passed legislation to establish retail competition and a further **six** States have passed regulatory orders to introduce competition.

Many states and utilities across the country have implemented pilot programs and statewide retail competition is currently offered in California, Massachusetts, Montana, and Rhode Island.

Even though states are moving forward, several federal regulations still hamper full competition. For example, the Public Utilities Holding Company Act (PUHCA) of 1935 makes

it hard for utilities to cross state lines to compete in each other's markets. The Public Utility Regulatory Policy Act (PURPA) requires public utilities to purchase expensive "qualified power," but does not impose such costs on new competitors. The Administration's electricity competition plan would remove these and other barriers to competition.

Benefits of Deregulation

The traditional form of regulating monopolies through rate setting provided hardly any incentive for utilities to improve their efficiency or offer new services. By allowing companies to compete to provide energy to consumers, competition forces companies to search for more efficient means of producing and delivering electricity, and to search for new means of providing the energy services desired by customers. In a \$212 billion industry, even small efficiency gains from competition can have large benefits.

Above and beyond direct efficiency gains from producing and delivering electricity, retail competition can encourage firms to offer new products and find innovative ways to reduce overall energy costs. The development of time-of-day metering may allow consumers to shift their purchases away from peak periods and thereby reduce capacity requirements. As discussed previously in this chapter, there appear to be barriers in the markets for energy efficiency. Utility commissions have stepped in to force public utilities to invest in energy efficiency, requiring so-called Demand Side Management programs. In the move towards a competitive industry, utilities are now rethinking such investments. There is no way for a utility to force consumers to keep buying their power once the utility has made an efficiency investment (e.g.

bought insulation for the consumer's house). New structures will develop to allow firms to pay for and install energy efficient equipment in return for a share of the subsequent savings.

Restructuring, by making it easier to bundle efficiency services with the provision of electricity could provide incentives for increased growth of Energy Service Companies (ESCO's). The potential role for energy service companies is illustrated by the experience in California under deregulation, where most supply contracts for commercial and industrial customers include an energy management component.

Competition may also permit customers to express, through their purchases, their preferences for environmentally sound electricity. "Green" power marketers have sprung up in many of the states now offering retail competition and in those with pilot programs. For a premium, these marketers sell electricity that is generated with a greater portion of renewable sources than the current mix. If a sufficient number of consumers are willing to pay enough extra for such green power, this will provide a profit motive to encourage the future development of such resources.

Environmental Policy & Electricity

Regulatory changes bring with them a host of challenges as old ways of meeting various objectives must be re-thought. In the past, Public Utility Commissions (PUCs) had direct oversight over utilities. In some states, PUC's sought to include environmental considerations in their approval criteria for new generating assets. This encouraged the construction of less polluting generating plants than would have been the case if utilities were allowed to ignore this issue. With competition, however, PUCs lose their ability to influence the composition of

electricity supply. If a utility is required to buy more expensive clean energy, its rates would have to reflect the higher costs. With competition, consumers would be able to buy power from other providers who had lower costs because they were not subject to the same provisions.

In a competitive market, unless environmental externalities are internalized through other means (such as existing environmental regulations), the government must step in to pursue them in new ways. For example, PURPA required utilities to buy power from “qualified” clean generators such as renewable and cogeneration sources. To support the same goals, the Administration proposal includes establishing a market for alternative power. In this case, tradable renewable portfolio standards could be used to promote more environmentally friendly power production. This approach would require each generator to cover a fraction of their total generation from renewable sources. If a seller did not generate enough renewable power by itself, it could purchase credits from companies that exceeded their generation requirement. The Administration’s Competition Plan also includes provisions to establish a “public benefits fund” for supporting affordable electricity service to low-income customers, investing in energy efficiency measures, and other social goals. The fund would be supported by a surcharge on all electricity transmitted over the national grid.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Alan S. Polasky (CN=Alan S. Polasky/OU=CEA/O=EOP [CEA])

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SUBJECT: env portion of chap 5

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TEXT:

Janet: I've attached the first six pages of the environment section. If you have time for a quick skim to see if I am on right track (finally) it would be greatly appreciated. And thanks for talking to me this morning. I feel much much better. Steve

===== ATTACHMENT 1 =====

ATT CREATION TIME/DATE: 0 00:00:00.00

TEXT:

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The following is a HEX DUMP:

ENVIRONMENTAL REGULATION AND INNOVATION

Environmental regulation addresses the problem of environmental damage that is an unintended consequence of economic activity. Because generators of pollution do not fully account for the environmental damage imposed on others, they do not have the proper incentive to reduce emissions. Unregulated markets therefore typically generate too much pollution. Well designed environmental regulations can reduce pollution and increase the net benefits of economic activity, i.e., the value of economic goods net of environmental damage.

Environmental policy may have a significant impact on the pace and direction of innovation, which over the longer-term may be of greater importance than its impact on immediate environmental outcomes. In what follows, the interaction of environmental regulation and innovation is examined. Innovation incentives under alternative forms of environmental regulation is discussed. Some of the major points of this discussion are illustrated with an application to climate change policy. This is followed by a discussion of the diffusion of existing technology among potential adopters and the role for policy to modify diffusion rates. Finally, evidence is reviewed on the long-run impact of environmental regulation on productivity.

Innovation Incentives under Alternative Forms of Regulation

There are two primary ways to implement environmental regulation: providing economic incentives to reduce emissions, or command and control regulation. Administration policy has shifted the emphasis in environmental regulation towards incentive-based approaches. The preference for an incentive-based approach is often justified on static cost-effectiveness grounds-- given fixed technology, an environmental goal can be obtained at lowest cost under an

incentive-based approach. A case for incentive-based approaches can also be made on dynamic grounds -- sources may have greater incentives to find new low cost methods of reducing pollution with incentive-based approaches than with command and control regulation.

Examples of incentive-based approaches include tradeable permit systems, liability rules, and emissions taxes. With tradeable permits, total emissions are capped by the number of permits issued, but individual sources can choose their own emission levels by buying or selling permits. Title IV of the 1990 Clean Air Amendments established a tradeable permit program for sulfur dioxide (SO₂) emissions. In Phase I of the program, which began in 1995, permits were allocated to 110 coal-fired electric generating plants. Under the program, plants needing additional permits to cover their emissions could buy permits from plants that had reduced emissions below their initial allocation. In Phase II, which begins in 2000, the program will be extended to cover virtually all fossil-fuel electric generating plants and will reduce SO₂ emissions to 50 percent of the 1980 emission level. Recently, EPA introduced regulations to reduce nitrogen oxide emissions across 22 states plus the District of Columbia that allows emissions trading among major industrial and electric utility sources.

Under a liability rule, a source is financially responsible for damages caused by its emissions. Sources have incentives to reduce emissions because this reduces their liability. [Examples: Superfund and the 1990 Oil Pollution Prevention Act]

With emission taxes, a source pays a fee for each unit of pollution it emits. Emissions taxes establish a price for pollution, which a source can either pay if it continues to pollute or not pay if it decides to abate. Despite the theoretical appeal of emissions taxes they have rarely been used in practice to regulate pollution in the United States. Emissions taxes have been used in certain cases in Europe. [Example]

[Automated Records Management System Hex-Dump Conversion]

Examples of command and control regulation include technology and performance standards. With a technology standard, a pollution control abatement technology is specified, which all sources must then use. [Example: Best Available Control Technology Rules under 1970 Clean Air Act].

Performance standards specify a maximum allowable rate of emissions, usually in terms of emissions per unit of output, but give sources the choice of how to meet the standard. Performance standards specify an allowable rate of emissions but allow sources the flexibility of choosing what method to use to meet the standard. [Examples]

Actual environmental policies may combine elements of several approaches. For example, regulation of air toxics combine elements of both technology and performance standards. [Explain]

An important criterion for evaluating the success of environmental regulation relates to static cost-effectiveness. Given existing technology, incentive-based approaches achieve a specified environmental objective at lower cost than command and control regulation. For example, with tradeable permits, those sources that can reduce emissions most cheaply will do so. When the cost of reducing a unit of emissions is less than the market permit price, a source will reduce pollution and sell extra permits. When the cost of reducing a unit of emissions is above the market permit price, a source will pollute and buy additional permits. The end result of allowing trading is that emissions are reduced in the most cost-effective manner. On the other hand, command and control regulation generally will not be cost-effective because under this type of regulation emissions reductions do not necessarily occur where it is cheapest to do so.

Evaluating the cost-effectiveness of incentives-based and command and control regulation over the longer-term is more complex, however, because pollution control costs are

affected by innovations and the two systems may differ in their incentive to innovate.

Innovation may be a particularly important factor when environmental regulation is relatively new, where there are unexplored avenues of research and significant learning-by-doing effects.

Box: Recent Trends in Air Quality

Environmental regulations have generated significant benefits in the form of reduced emissions of various pollutants in the U.S. over the past several decades. Emissions of five of six major air pollutants have fallen substantially since the Clean Air Act was passed in 1970, the exception is nitrogen oxides (see chart 5-1). The EPA regulation banning lead additives in gasoline has been largely responsible for the spectacular fall in lead emissions since the 1970s. Lead emissions in 1996 were less than two percent of 1970 emissions.

The improved record on emissions occurred during a period of considerable economic growth. From 1970 to 1997, real GDP expanded by 111 percent, hence emissions per unit of GDP have fallen dramatically since 1970. In certain sectors of the economy, the reduction in pollution per unit of output has been striking. For motor vehicles, emissions per mile of volatile organic compounds has fallen by 81% and for carbon monoxide by 73% since 1970. These impressive reductions in emissions per unit of output could not have taken place without substantial innovation in new processes and products as well as the widespread adoption of these new technologies.

Innovation incentives under incentive-based and command and control regulation

An important criticism of **command and control regulation** is that there may not be enough incentive for sources to search for more cost-effective ways to reduce emissions. A technology standard, for example, mandates the use of a particular pollution control method, providing an incentive to develop cheaper new technologies only if they can meet mandated targets and win regulatory approval. Technology standards may also lock-in a pollution control technology that is

unnecessarily costly in the face of changing conditions.

With performance standards, there is an incentive to find lower cost ways of reducing emissions, at least to the level of the standard. Beyond the standard, however, there is no incentive for a firm to search for new methods to further reduce emissions. Setting the appropriate standard consistent with current technology may not give sufficient incentive to innovate.

One way to increase the incentive to innovate with performance standards is to commit to the implementation of a strict standard in the future -- a technology-forcing standard. The value of an innovation that lowers pollution control costs increases with the stringency of the standard. However, requiring sources to meet a stringent standard immediately with existing technology may impose large costs. Announcing stringent emissions targets well in advance gives sources the time necessary to innovate and adjust, providing incentives to find new methods to reduce compliance costs and implement which may make compliance costs significantly less expensive. [Example - auto emissions regulations and the catalytic converter]

There is a downside to a technology-forcing approach. Because R&D activity is risky, compliance costs may not fall as much as anticipated. If an ambitious environmental quality goal is set and significant innovations fail to occur, the costs of meeting the goal may be quite high. Relaxing the goal at a later date in the face of high costs, which in some sense rewards failure, has its own drawbacks.

Unlike command and control regulation, incentive-based approaches reward sources financially for developing methods that reduce emissions, regardless of the level of current emissions. For example, under tradeable permits, reducing emissions allows the source to increase net sales of permits to other sources. Because incentive-based approaches receive a benefit for reducing emissions at all levels and not just to a given standard, there are greater incentives to innovate under incentive-based approaches than under command and control.

It is important to note that environmental policy may also influence innovation indirectly through changes in relative

prices. In the theory of induced technological change, the direction and pace of technological change responds to changes in relative prices, which may be a result of changes in government policies. R&D efforts are channeled toward finding production processes that economize on the use of scarce or expensive factors of production. Induced technological change was originally used to explain the introduction of labor-saving technological change in the presence of high wages. Recently, attention has focused on the implications of induced technological change for climate change policy, which is discussed below.

Alternative policies to reduce SO₂ emissions

Regulation of SO₂ emissions from coal-fired electric generating units over the past twenty years illustrates the importance of environmental regulatory structure for cost savings and innovation. The 1977 Clean Air Act Amendments required all coal-fired electric generating units built after 1971 to remove 90 percent of SO₂ from stack emissions, effectively requiring

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:18-DEC-1998 15:54:32.00

SUBJECT: Chapter I

TO: Charles F. Stone (CN=Charles F. Stone/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TEXT:

I talked with Jeff and Nouriel this morning about Chapter 6 (Intl.) and recognized in the course of the conversation that Chapter I needs to have a discussion of the International Financial Crisis and U.S. leadership in resolving it with a discussion of the various steps the U.S. has taken to promote recovery, insure global growth and prevent further countries from slipping into crisis. There is a portion of Nouriel's draft that covers this that I will xerox for you; also Jeff has agreed to make a rough outline of the necessary points. And finally, I am enclosing a speech I gave at MIT that covers most of the material although there are new developments, like the Brazil package and a further G-7 commitment to precautionary lending facilities. I attach my MIT talk and will get you a copy of the relevant pages from Nouriel. ===== ATTACHMENT 1 =====

ATT CREATION TIME/DATE: 0 00:00:00.00

TEXT:

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The following is a HEX DUMP:

Remarks of
Janet L. Yellen
Chair of the President's Council of Economic Advisers
at the Catherine Stratton Lecture
Massachusetts Institute of Technology
October 19, 1998

In my opening remarks this morning I would like to address three questions relating to the international financial crisis: First, how serious an impact is the crisis having on the world economy? Second, what can we do to contain the further contagious spread of the crisis and help the crisis stricken countries recover? And third, what steps can be taken to prevent future crises?

The Severity of the Current Crisis.

Let me begin with the economic impact of the crisis. How serious has it been? More than a year has elapsed since the Asian crisis began with the collapse of the Thai baht in July 1997. Unfortunately, what started as a regional economic and financial crisis in East Asia has now developed into a larger global crisis, spreading to financial markets around the world, impacting global commodity markets, impairing economic development and imposing extraordinary hardship in the crisis afflicted countries, and posing risks to growth in industrial countries including the United States. There are few countries around the globe that have been unaffected.

The economic slump in the original crisis countries (Korea, Indonesia, Thailand and Malaysia) remains severe. The spillovers to other countries in the region, such as Hong Kong and Singapore, have been substantial. Japan, already in a serious and deepening recession prior to the crisis, has seen a significant decline in its exports to its key Asian trading partners, and its banks have been hit with financial losses related to lending in the region. Currencies and stock

markets in Latin America have come under pressure, especially following the crisis in Russia. Spreads on the interest rates facing emerging market borrowers over U.S. Treasury yields reached about 1500 basis points in September 1998, and are now close to their highs during the 1995 Mexican peso crisis. The appetite for risk of international investors has fallen and there is broad retrenchment taking place not only from emerging markets but from risky assets in general towards safe haven assets and towards liquidity.

Over the past year, commodity prices have also declined, impacting industrial countries like Canada, Australia and New Zealand. In Latin America, the fall in oil prices has hit Mexico and Venezuela; the fall in copper prices is hurting Chile and Peru; and the decline in agricultural prices is affecting Argentina. Globally, all commodity exporters are hurting.

The impact of the crisis on the prospects for worldwide growth is evident in the most recent IMF *World Economic Outlook*, released in October 1998. The IMF now forecasts 2.0% world real growth in 1998, a precipitous drop from the 4.3% growth expected in October 1997.

Forecasted world growth for 1998 is now comparable to levels not seen since the pronounced world slumps of 1974–75, 1980–83, and 1990–91. Japan's economy is expected to decline by 2.5%. The newly industrialized Asian economies (Hong Kong, Taiwan, Singapore, and Korea) are predicted to contract by 2.9%. The economies of the ASEAN–4 nations (Indonesia, Malaysia, Philippines, and Thailand) are now expected to shrink by a staggering 10.4%. Moreover, expected growth in the developing countries in the Western Hemisphere is now 2.8%, down from 5.1% a year ago; and Russia is expected to contract by 6% this year.

Containing the Crisis and Promoting Recovery.

Let me next comment on the question of what we can do to contain the crisis and to help crisis stricken countries recover. The first clear imperative is for the industrial countries to take appropriate steps to sustain or promote growth in their own economies. Strong growth in the industrialized countries--who are the key customers of the crisis afflicted countries--is a prerequisite for those nations' recovery. And, for most industrial countries, as I noted, the crisis has diminished the prospects for growth, so that policies may be called for to offset those impacts. Here in the United States, the Federal Reserve has indicated its determination to maintain our expansion and concrete steps have already been taken to mitigate the growing financial repercussions of the crisis that are becoming evident in U.S. capital markets. The growth prospects of all industrial nations will suffer unless the industrial countries do their part to help the world economy to grow.

Japan also has a key role to play in maintaining world economic growth and its performance will determine the prospects for Asia's recovery. Japan is not only the world's second largest economy, but also the most important customer of, investor in, and lender to the crisis afflicted countries in Asia. Japan has now entered a full fledged recession. Real growth over the four quarters of 1997 amounted to -0.4%. In the first half of 1998, Japanese real GDP was down 4.3% at an annual rate--far worse than expected. Japan risks descent into a deflationary spiral in which falling prices raise real interest rates, further discouraging spending. The United States continues to believe that Japan must take strong fiscal measures to stimulate domestic demand, to restore confidence, to deal with the problems of its banking system, to open its markets and to deregulate its economy.

I think it's important to emphasize that in serving as an engine of global growth, the

United States will inevitably see an increase in its already sizeable trade deficit and some sectors, particularly those that are heavily exposed to trade, will experience disproportionate impacts. Even so, the United States must accept a rising trade deficit if the crisis countries are to recover.

Over the next year or so, calls for protection will be on the rise and we will need to work to counter protectionist pressures at home. We have urged the crisis impacted countries to keep their own markets open and we too must remain committed to outward looking, internationalist policies.

Beyond working to promote growth in the industrial world, the United States has been focused since the outset of this crisis on the need to contain financial contagion and to restore the confidence of market participants--a prerequisite for capital flows to continue. We have supported the IMF in its goal of providing financial assistance to countries that are in crisis, contingent on their willingness to implement the often tough reforms needed to restore economic confidence and strengthen the underpinnings of their economies. The current crisis has many unique features that make it different from crises past. Historically, crisis prone countries had large budget deficits, high public debt, high inflation rates, slow growth and low savings and investment rates. In contrast, the crisis stricken Asian countries had low budget deficits, low public debt, single digit inflation rates and high savings and investment rates. In light of these differences, some IMF critics have claimed that the crisis was purely due to irrational panic and speculative capital flight. And they have faulted the IMF for mindlessly applying traditional medicines. The IMF has had to learn as it has proceeded throughout this crisis. But I believe it is now widely agreed that structural weaknesses, particularly in the process of financial intermediation, and not simply irrational capital flight, was central in initiating the crisis. And

that is why IMF programs, in addition to stressing the necessity for countries to eschew inflationary finance in responding to the crisis, have particularly stressed the need to take steps to strengthen weak banking systems by closing or recapitalizing inefficient or insolvent banks, to end cronyism in lending, to reduce corruption, and to strengthen the financial system.

Although structural problems, in my view, played a key role in igniting the financial crisis, contagion is also at work, and it now threatens countries that have made great progress in implementing sound macroeconomic policies and have worked to strengthen the fundamentals of their economies. To deal with such threats, the President has proposed, and the G-7 has agreed to explore, creating a precautionary financial facility based in the IMF whose goal would be to provide assured access to assistance in the event of need (a credit line, in effect) to countries with sound policies which have acted responsibly, thereby helping them fight off the contagious impact of the ongoing crisis.

Finally, I would note that it has long been apparent that the IMF's resources simply had to be expanded for it to play its critical role in countering contagion. And the key roadblock was the failure of the U.S. to meet its own financial obligation to the International Monetary Fund. The Clinton administration has argued tirelessly to Congress to fund the IMF and we are very pleased that the budget agreement reached last week, which is expected to be signed into law tomorrow, at long last contains authorization for the U.S. to pay its IMF dues and provide our contribution to the New Agreement to Borrow. Meeting our own international commitments also strengthens the ability of the United States to lead in this crisis.

I said that the United States supports the basic IMF approach, which entails asking countries to take responsibility for improving economic fundamentals as a condition for lending.

But we also recognize the need to do more to help crisis-stricken countries get back on their feet, restore growth, and mitigate the suffering which has been afflicted on so many citizens in the affected countries. We cannot tolerate a decade of lost growth. And serving as good customers for the products of crisis stricken countries is not enough.

Many of the crisis afflicted countries lack adequate social safety nets. For that reason, the President has asked the World Bank and Asian Development Bank to double their aid in support of strengthening the social safety net in crisis affected countries. The focus of the new lending is on basic needs, children, the elderly, the unemployed, and groups in the affected countries who are most vulnerable to economic change.

A problem which is delaying recovery in several of the crisis countries is that many Asian companies and banks, including many that were in good health before the crisis, have become engulfed in massive debt problems due to systemic national economic problems. For example, in Indonesia, Korea and Thailand, the combination of sustained high interest rates and illiquidity has led to harsh economic contraction and a vast overhang of bad debt. Debt to equity ratios that were already very high before the crisis (about 300% in Korea for the top 30 chaebols) have become unsustainable now (over 500% in Korea, 400% in Thailand and even higher in Indonesia) due to the real devaluation of their currencies and the burden of high real interest rates. The World Bank estimates that 20-65 percent of firms in these three countries have balance sheet losses greater than equity. When insolvent, highly leveraged companies cannot service their debt, a self reenforcing spiral is created in which banks' cash flows are squeezed, forcing them to contract new lending not only to troubled corporations but even to those in better health. To address this problem, we are working with the World Bank, the IMF and individual

countries to see if comprehensive restructuring plans can be devised to restore the flow of credit so that firms in these countries can get back to the business of producing output and creating jobs.

Strengthening the International Financial Architecture

Finally, let me turn to the \$64,000 question. What can we do to make sure the world never again faces a crisis like the one we are experiencing? Unfortunately, I have no silver bullet--no simple solution that would guarantee countries the benefits of global capital flows while eliminating the risk that a crisis of confidence could once again result in the painful withdrawal of that access. Even so, international agreement is finally emerging on the steps that can and should be taken to strengthen the architecture of the financial system so that it is less crisis prone going forward. A plethora of useful recommendations to strengthen the international financial system is contained in a report, released just over a week ago, by a working group of central bank governors and finance ministers from a group of industrial and key emerging market countries dubbed the G-22. The report focuses on measures to increase transparency and strengthen financial systems, and it proposes strategies for orderly workouts in the event of a future crisis. Let me describe some of its recommendations.

First, there is broad consensus on the need for greater transparency and openness both on the part of debtor countries and official institutions such as the IMF. The report stresses the need to enhance the relevance and reliability of information disclosed by the private sector through compliance with high-quality accounting standards. It calls for broadening the public disclosure of data on foreign exchange reserves, external debt and

financial sector soundness. And it recommends greater disclosure of data on the international exposure of investment banks, hedge funds and other international investors.

Transparency is necessary to provide investors with the information necessary to evaluate risk in lending, but such measures are not likely to be sufficient on their own to prevent another major crisis from occurring. In the current crisis, for example, some information was unavailable, but available indicators, many signaling caution, were apparently ignored by investors.

Accordingly, the report proposes a series of reforms to strengthen domestic financial institutions and to create stronger incentives for borrowers and lenders to weigh risk and act with appropriate discipline, thereby reducing the odds of a crisis. As I mentioned, most analyses of the crisis point to financial sector weaknesses as a central cause. National banks and other financial institutions borrowed excessively from abroad and lent excessively at home, thus playing a key role in channeling funds toward projects that were marginal if not outright unprofitable. Lax supervision and weak regulation of the financial system, low capital adequacy ratios, lack of well designed deposit insurance schemes, insufficient expertise in the regulatory institutions, distorted incentives for project selection and monitoring, and outright corrupt lending practices, all contributed to the build-up of severe structural weaknesses in undercapitalized financial systems. The most visible manifestation was a growing share of non-performing loans prior to the crisis. The distortions generated by such behavior were enhanced by the rapid process of capital account liberalization and financial market

deregulation in the region during the 1990s, that dramatically increased access to funds from abroad.

The task of strengthening financial systems is long-term and daunting. It is clear that strong prudential regulation and supervision of banks is needed in emerging markets, and the report recommends national implementation of core principles of banking supervision devised by the so-called Basle supervisory group. In addition, changes will be considered to the supervisory treatment of loans by industrial country banks to emerging market borrowers. (At present, for example, the capital required against short-term foreign currency denominated loans to foreign banks is well below the capital required on longer term loans.) However, the challenges involved in supervising and regulating banks, even in industrialized countries, should not be underestimated; and it should be remembered that most industrialized countries including many with strong supervisory regimes have also suffered the debilitating economic impacts of banking crises. Beyond banking, steps must be taken to improve national bankruptcy and foreclosure laws, to improve corporate governance in both the financial and non-financial sectors; and to develop liquid and deep securities (bond and equity) markets, so that there can be less reliance on banks in the process of financial intermediation.

Prices in stock and bond markets adjust to changes in perceived risk automatically and in ways that can pose substantially less systemic risk than foreign-currency-denominated short-term loans. The problem with this solution is that in order to function well, stock and bond markets require a transparent, well-regulated, and well-functioning set of public capital markets.

The experience of Asia suggests that an excessive accumulation by a country's financial system of short-term, foreign currency denominated, and unhedged foreign liabilities was an important cause of the financial fragility that triggered and exacerbated the crisis. Mismatches between the maturity and currency composition of financial institutions' assets and liabilities and an incorrect assessment of liquidity and currency risks aggravated the problem. The risk and associated economic vulnerability stemming from these exposures was enormous. As I noted, there is now broad agreement that such borrowing by banks should be addressed in a strengthened regime of prudential supervision. However, foreign currency borrowing by firms also played a destabilizing role in some countries. There is consequently some agreement now among G-7 countries, as reflected in a statement at the most recent summit in Birmingham, on the need for countries to proceed carefully in liberalizing capital account transactions. With strong financial systems, the arguments in favor of unfettered capital flows are strong. But during such a transition, the liberalization of the capital account should be gradual and carefully managed. Agreement has not yet emerged, and debate is certain to continue, on whether even stronger measures are needed to prevent potentially destabilizing capital inflows in advance of a crisis--in the form, for example, of controls on capital inflows.

Beyond policies to strengthen financial systems, the G-22 report proposes measures to strengthen the incentives for prudent behavior by debtors and creditors. In recent crisis episodes, governmental guarantees at many levels probably reduced the perception of risk by lenders and borrowers. In many countries, there was an expectation that corporations and banks would be bailed out by governments in the event of trouble. In many instances, too,

the incentive of private parties to hedge exchange risk was diminished by the prevalence of fixed or semi-fixed exchange regimes. Such implicit and explicit guarantees likely distorted incentives, encouraging both debtors and creditors to take on excessive risk, to fail to hedge that risk, and to ignore available information pointing to potential problems. Therefore, limiting such guarantees, and making those which are offered as explicit as possible, and pricing them appropriately could also contribute to crisis prevention.

While strengthening domestic financial systems may prevent some crises and make those that do occur less virulent, it is still likely that crises will not be eliminated altogether. And while a well designed bankruptcy regime can facilitate orderly workouts of private debt, the G-22 report emphasizes the need for new workout procedures to handle the, hopefully rare situations in which sovereign debtors suspend debt payments.

In instances of sovereign liquidity crises, private sector burden sharing is desirable first, because official money is unlikely to be sufficient in all circumstances, and second because it is essential in inducing market discipline and reducing potential moral hazard problems deriving from official assistance. In spite of its importance, private sector burden sharing is more difficult to achieve now than in the days when banks accounted for the bulk of international capital flows. Today, the proliferation of creditor institutions and instruments and the growth of international bond markets makes the problem of coordinating the actions of creditors during a crisis extremely difficult. Thus, a **key recommendation of the Working Group** is to include “collective action clauses” in bond contracts to provide for: collective

representation of creditors; majority action to alter the payment terms of a contract; and sharing of payments among creditors. All of these provisions work to facilitate speedy and orderly workouts.

Conclusion.

Let me conclude by reiterating that, in my opinion, no magical formula can be devised to prevent future currency and financial crises. But there are things that can be done to limit their frequency, the magnitude of their effects, and their pernicious, contagious spread. So, at the same time that we work to contain the current crisis and help restore growth in crisis afflicted parts of the world, we must also implement the reforms of the international financial architecture that would help to achieve this longer term goal.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:20-DEC-1998 22:25:42.00

SUBJECT: meeting on December 22

TO: Michele Jolin (CN=Michele Jolin/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TEXT:

What do you think?

----- Forwarded by Janet L. Yellen/CEA/EOP on 12/17/98

11:02 AM -----

EIJIONO @ aol.com

12/17/98 09:56:00 AM

Record Type: Record

To: Janet L. Yellen

cc:

Subject: meeting on December 22

MIME-Version: 1.0

Content-type: text/plain; charset=ISO-2022-JP

Content-transfer-encoding: 7BIT

Eiji Ono;(B

61 Broadway;(B

New York, NY 10006;(B

Tel: 212-797-7804;(B

Fax: 212-797-6434;(B

E-mail: EIJIONO@aol.com;(B

December 17, 1998;(B

Dr. Janet L. Yellen;(B

Chair, Council of Economic Advisers;(B

Executive Office of the President;(B

Council of Economic Advisers;(B

Washington, D.C. 20500;(B

Dear Dr. Yellen:;(B

Thank you very much for agreeing to have a meeting with me at ;(B
your office at 4:45P.M. on December 22. I wrote up what I would ;(B
like to discuss with you then as follows.:(B

Subjects for a December 22 Meeting;(B

;\$B!&;(J The possibility of continuous use of the channel which we ;(B have built up during your previous trip to Tokyo: ;(B

;(B

Recently I have received lot of gratitude for setting up ;(B meetings with you from the Japanese side. Among it, there was ;(B an opinion saying that since the recent Japanese government ;(B cannot sustain consistency as a U.S. counterpart, we cannot help ;(B relying on activities undertaken at the private level which ;(B includes academics. Japanese people, indeed, appreciated being ;(B benefited a lot from the meetings.;;(B

;\$B!&;(J US contribution to Japanese illiquidated financial system;;(B

I suggested and recommended this idea to the Fed and the ;(B Treasury; however, I could not get their sympathy. ;(B Surprisingly, when I visited Bank of Japan, their explanation to ;(B me was that the purpose of their policy lies in to cancel ;(B Japan's over-banking situation in the international financial ;(B markets, and my idea is inconsistent with this policy.;;(B

In my view, the Japanese financial institutions depend too ;(B heavily on government and Bank of Japan, and for this reason ;(B issues have grown bigger. They need to make efforts to explain ;(B themselves or their country's economy, including problems, to ;(B the outside Japan. ;(B

Even major Japanese banks are under the conditions, where dollar ;(B nominated facilities from governmental institutions such as ;(B Federal Home Loan, Fannie Mae, and local public organizations in ;(B NJ and California, have been dramatically shrinking. With your ;(B help, is there any way they can have opportunities to explain ;(B Japanese economic situation and the reality of Japanese ;(B financial systems to US financial people of those institutions?;(B

;\$B!&;(J As Center for International Political Economy (CIPE), we ;(B are thinking of supporting a study subject, "financial cultural ;(B difference." In order to make possible for developing ;(B countries, including Asian countries, to have a smooth ;(B transition period, I think that it is necessary to take into ;(B account cultural differences, in which a country's financial ;(B system is rooted. I would like to ask your input, which ;(B includes specific themes and ways to undertake research.;;(B

;\$B!&;(J Finally, although I have once met Alice Livlin, Vice ;(B Chair of the Board of Governors of the Federal Reserve System, ;(B at a Princeton seminar, I don't know her well. Could I mention ;(B your name as my reference to her?;(B

Thank you very much for your consideration.;;(B

I look forward to seeing you.;;(B

Sincerely,;(B

Eiji Ono;(B
Member of CIPE Board of Directors;(B
;(B

===== ATTACHMENT 1 =====
ATT CREATION TIME/DATE: 0 00:00:00.00

TEXT:

RFC-822-headers:

Received: from conversion.pmdf.eop.gov by PMDF.EOP.GOV (PMDf V5.1-9 #29131)
id <01J5FV0EQV3K009EMX@PMDf.EOP.GOV> for Yellen_j@a1.eop.gov; Thu,
17 Dec 1998 09:57:22 EST

Received: from storm.eop.gov by PMDF.EOP.GOV (PMDf V5.1-9 #29131)
with ESMTP id <01J5FV09Y21C00AWKW@PMDf.EOP.GOV> for Yellen_j@a1.eop.gov; Thu,

17 Dec 1998 09:57:18 -0500 (EST)

Received: from imo13.mx.aol.com ([198.81.17.3])
by EOP.GOV (PMDf V5.2-29 #34437) with ESMTP id <01J5FUZLNE60000GUG@EOP.GOV>
for Yellen_j@A1.eop.gov; Thu, 17 Dec 1998 09:56:41 -0500 (EST)

Received: from EIJIONO@aol.com by imo13.mx.aol.com (IMOV18.1)
id SBMAA18769 for <Yellen_j@A1.eop.gov>; Thu, 17 Dec 1998 09:56:25 -0500 (EST)

X-Mailer: AOL 3.0.j for Windows sub 59

===== END ATTACHMENT 1 =====

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Nouriel Roubini (CN=Nouriel Roubini/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:21-DEC-1998 11:20:46.00

SUBJECT: Re: Export promotion

TO: Jeffrey A. Frankel (CN=Jeffrey A. Frankel/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TEXT:

The TPCC document on the Federal Trade Promotion Budget included only a vague reference to "new Ex-Im proposals to support more U.S. exports in our most challenging markets". Supposedly, Dorothy Robin at NEC is leading this new Ex-Im initiative. I do not know the details yet and will get in touch with her about it. Part could be increasing the Ex-Im budget for existing programs. Part, and more controversial, may be using the Ex-Im war chest for new tied-aid for some manufacturing exports. NEC has coordinated communication between Commerce and Ex-Im on this and Treasury has been involved (objecting to some of the ideas). No one ever told us about all this. All this was supposedly discussed at higher levels than senior staff. I will try to get more info about it. You should get involved as well as most of it has been discussed at higher-ups levels. For example, NEC may be trying to arrange a meeting between Harmon (Ex-Im) and Aaron (Commerce) on this.

Nouriel

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:21-DEC-1998 09:12:01.00

SUBJECT: Letter for Joe Aldy

TO: Alice H. Williams (CN=Alice H. Williams/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TEXT:

Attached is my letter recommending Joe to grad school. I want you to have
a copy in the event that Joe gives us more applications this week.===== ATTACHMENT 1
=====

ATT CREATION TIME/DATE: 0 00:00:00.00

TEXT:

Unable to convert ARMS_EXT:[ATTACH.D19]MAIL468902064.326 to ASCII,
The following is a HEX DUMP:

December 15, 1998

Letter of Recommendation for Joseph Aldy

The purpose of this letter is to recommend Joseph Aldy for admission to the Ph. D. Program in economics. Joe has extraordinary potential to become a superb researcher in the field of environmental economics and would be a great asset to any top-ranked doctoral program.

He has a natural instinct for economics, a real flair for the application of economics to public policy, unusual experience in both research and policy, and enormous motivation and enthusiasm to succeed. At the personal level, Joe is articulate, hard-working, organized, and very well-liked. He will be an outstanding Ph. D. student and a sure bet to succeed in economics.

I have worked very closely with Joe at the Council of Economic Advisers over the last year and a half. Joe joined the council in the summer of 1997 to help with CEA's work in the area of climate change during a particularly intense period leading to the negotiation of the Kyoto treaty on global warming. Joe's background was unusual for a CEA hire. Normally, the CEA hires economics graduate students for its "Staff Economist" positions. Joe, in contrast, was a Presidential Management Intern completing an assignment at the Department of Agriculture with a background in environmental management. CEA discovered, however, that Joe possessed both a solid grasp of economics, and background in environmental issues that could enable him to serve as a valuable member of our expanding climate change team. We were frankly surprised, however, that Joe immediately established himself as our most valuable player, taking on a range of responsibilities normally assigned only to "senior" economists because they require Ph. D. level training in the field.

Joe's initial assignment at the CEA was to work with Jeff Frankel and myself on economic analysis intended to inform the President's decision concerning the U.S. position on targets and timetables for reducing greenhouse gas emissions at Kyoto. Economic analysis of such issues normally relies on large scale energy and environment models. Accordingly, Joe rapidly became familiar with this complex literature and worked closely with several prominent research groups around the country to design and execute model-based simulations of alternative possible emissions reduction timetables. Drawing from the large number of model-based simulations that were conducted for this CEA project, Joe ultimately was able to construct region-specific marginal abatement cost schedules that could serve as a simple tool for the rapid analysis of numerous proposals which were tabled during the Kyoto negotiations. Negotiators in Kyoto relied on Joe for "instant economic analysis" of proposals relating to caps on emissions trades, the possible inclusion of an escape clause in the Protocol, restrictions on trading relating to particular country-bloc groupings, alternative options for the involvement of developing countries in the trading system, and implications of the inclusion of sinks and non CO₂ gases in

the specification of emissions targets. Joe's ability to provide "real-time" analysis of the economic consequences of such alternative arrangements won him enormous praise from the Kyoto negotiating team. An important byproduct of his involvement with the climate-change research community has been the development of several joint research projects with prominent environmental economists which will hopefully result in publications in this field.

Joe's critical analytic contributions to the climate change effort have won him unofficial "senior economist" status at CEA. (Because it is unprecedented to appoint an individual without a Ph.D. in economics as a "senior economist", CEA has named Joe a "Senior Adviser", in recognition of the fact that his responsibilities are on a par with those of our senior economists. We also recruited him to remain at CEA for an additional year.) Since the conclusion of the Kyoto negotiations, Joe has continued to work primarily in the area of climate change, although he has also contributed to work on electricity restructuring and other environmental issues and has prepared numerous analyses of environmental topics for the CEA's *Weekly Economic Briefing of the President*. Joe served as lead author of the Administration's official *Economic Analysis of the Kyoto Protocol*, issued in July 1998, and he coauthored the microeconomics chapter of the *1998 Economic Report of the President*. Joe has had lead responsibility for drafting testimony for me on climate change and has helped me prepare for roughly a dozen Congressional appearances. He has also performed analysis relating to key design issues in the operation of an international emissions trading systems and has worked on the Administration's domestic early action credit program for firms achieving emissions reductions prior to the binding target period. In addition, Joe has prepared creative analysis to guide the Administration's negotiations with developing countries considering the voluntary adoption of emissions targets. For these countries, the key analytic question is how to designate an emissions growth target that is neither so lax that it fails to provide environmental benefits to the global community nor so tight that it impinges unduly on economic growth. Last fall, Joe served on the U.S. team at the Buenos Aires Climate Change negotiations and worked with the only two countries that have thus far volunteered to assume emissions targets--Argentina and Kazakhstan--helping them design targets that can yield economic benefits through emissions trading. Joe has also participated in ongoing U.S. bilateral negotiations with several developing countries concerning emissions trading and the adoption of voluntary targets. He accompanied me, and subsequently a State Department team, to China and Korea for such discussions. The analysis that Joe developed for these consultations has been of the highest quality, combining both solid economic analysis and an appreciation of the difficult political and public policy issues involved in this critical environmental area.

Although Joe is currently functioning quite successfully at the level of Senior Economist at the CEA without a real "license to practice", further training to enable him to pursue a career in research and teaching is clearly appropriate. Joe will benefit from rigorous doctoral training to hone his skills in such basics as econometrics and microeconomic theory. Joe has all of the assets necessary to succeed as a doctoral student: an unusual knowledge of economics and appreciation of its relevance as a tool of analysis, an exceptional ability to analyze data and manipulate models, and strong mathematical skills. Joe is an extremely effective communicator,

possessing particularly impressive writing skills, and is a mature, hard-working, resourceful, and independent individual. In addition, he is an extrovert who is extremely well-liked by his CEA colleagues. I have no doubt that Joe will be successful in a top-ranked graduate program. He has the potential to become one of the nation's leading environmental economists. I recommend him for admission without reservation.

Sincerely,

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Rebecca M. Blank (CN=Rebecca M. Blank/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:22-DEC-1998 15:30:08.00

SUBJECT: UI reform

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

CC: Cordelia W. Reimers (CN=Cordelia W. Reimers/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TEXT:

Janet --

The latest news on UI reform is that Gene Sperling and Bruce Reed are discussing whether they really want to propose this in the budget or not. Essentially, expanding UI to cover part-time workers and improving the Extended Benefit program will both require something of a tax increase in order to be cost-neutral. Hence there are several proposed options, which either expand the taxable wage base or do other things to increase revenues to the UI system. The concern is evidently focused on the question "will a proposed UI tax increase get us in trouble politically?"

I'm on my way out of the office, but I wanted to suggest that you think about sending a note to Gene and Bruce urging them to support UI reform. I think this is critical for two reasons:

(1) It really extends the Clinton agenda on helping working lower-income families. The people who are currently excluded from UI are exactly the groups most helped by the proposed expansions. When UI covers only about 1/3 of the unemployed, there are clearly gaps in this safety net. (At the same time, the proposed expansions are really quite small -- they move the UI system in the right direction, but don't constitute a big change.)

(2) The current labor market is the best one to think about these reforms. For instance, as the Extended Benefit system was reconfigured under Reagan, very few states or workers will ever be able to benefit from it. The proposed changes would make it accessible at a more reasonable level of unemployment. The time to make a change like this is during an expansion, not in the midst of a recession.

(3) Welfare reform efforts will be much enhanced by UI reform. If we want to encourage ex-welfare recipients to become a permanent part of the work force, we need to provide some insurance against displacement and unemployment. If not, we only encourage them to return to the welfare rolls when the economy slows down. UI reform is a way to consolidate and assure the long-term success of welfare reform.

Corky has lots more details about this if you want them.

I'd very much like us to provide as much support to UI reform as possible. I think it's probably the most important current agenda item for lower-income workers. If you feel inclined to communicate this to Gene and Bruce, I would be grateful. But, as always, it's your call.

Becky

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Nouriel Roubini (CN=Nouriel Roubini/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:22-DEC-1998 14:36:49.00

SUBJECT: Re: Meeting with Japanese EPA Minister

TO: Jeffrey A. Frankel (CN=Jeffrey A. Frankel/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

CC: Lisa D. Branch (CN=Lisa D. Branch/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

CC: Alice H. Williams (CN=Alice H. Williams/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TEXT:

I had lunch today with Mr. Nishikawa from the Japanese Embassy. He gave me a government document outlining the economic outlook and policy stance for 1999. I will get you a copy.

We spoke about the forthcoming visit of Minister Sakaya. He suggested that the meeting with CEA could start with the Minister presenting the Japanese outlook and move next to the U.S. outlook. Apart from a broad exchange of views on macroeconomic issues, he said that the Minister would also be interested in hearing CEA's views on two specific issues:

1. For the first time Japan has had in 1998 a mid-year review of its official economic forecast to account for the changed economic outlook. Do we support the idea that such mid-year review, as in the US, should be done on a regular basis (twice a year) to increase openness and transparency? What is the role and usefulness of the mid-year review in the U.S.? I sense the Minister wants to push such a useful policy change in Japan and words of support from CEA may help on this.

2. Structural impediments to long-run economic growth in Japan.

I will be happy to prepare any briefing materials you may find useful in preparation of this meeting.
Nouriel

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Cordelia W. Reimers (CN=Cordelia W. Reimers/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:22-DEC-1998 19:04:54.00

SUBJECT: ERP labor chapter

TO: Rebecca M. Blank (CN=Rebecca M. Blank/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TEXT:

I've changed that paragraph about unions and global competition in Chapter 3. Would you mind looking at it again and letting me know whether it seems OK now?

Attached is the whole introduction to the section on Disadvantaged Groups . The only changes are in the third paragraph.

Thanks for your advice!

===== ATTACHMENT 1 =====

ATT CREATION TIME/DATE: 0 00:00:00.00

TEXT:

Unable to convert ARMS_EXT:[ATTACH.D18]MAIL45770675W.326 to ASCII,
The following is a HEX DUMP:

DISADVANTAGED GROUPS

A strong labor market is particularly important to disadvantaged groups, such as men and women with less education, youth, racial and ethnic minorities, and immigrants. The unemployment rates of these groups typically swing up and down more than the average during recessions and expansions. When employers find it hard to fill vacancies, they are more willing to hire and train workers whom they pass over when they have an abundance of applicants.

For the same reason, a tight labor market also has the potential to pull up wages disproportionately for disadvantaged workers. When labor is scarce, these workers get hired for jobs at better pay than at other times. This is especially important in light of their experience from the late 1970s to the early 1990s, when wage inequality grew and less-skilled groups faced persistently declining wages, on average. The underlying reasons for the increased inequality were discussed in the 1997 Economic Report of the President and are still being debated, but it seems clear that demand for highly skilled workers has been expanding faster than supply, while demand for less-skilled workers has declined even faster than supply. Even though the supply of workers without high school diplomas has shrunk as older, less-educated cohorts have retired and have been replaced by younger, more-educated ones, the number of jobs available to high school dropouts shrank even faster over this period. A major reason for this development has been technological change in manufacturing, so that the manufacturing sector requires fewer workers to produce more output than in the past. [Janet, Becky: Is the following sentence a problem?]

Competition from lower-wage low skilled labor in other countries may also have been a factor, although most studies find that technological change is more important than international trade in explaining the declining U.S. demand for workers with high school diplomas or less. Meanwhile, employment has been expanding in “high tech” industries and services that require a

college education or beyond.

[Janet, Becky: Is this paragraph OK now? I deleted the "global markets" sentence and changed the wording slightly.] Unions have historically protected many workers from the vicissitudes of the labor market and helped to obtain higher wages for less-educated workers than they could get elsewhere. As employment in the highly unionized manufacturing sector has declined since the 1950s, however, so has union membership. Like the American economy in general, the labor market has become more competitive in recent decades, with compensation and job security more often determined by market forces of supply and demand. This has benefited Americans as consumers, and also many American workers who were in a position to take advantage of the new job opportunities, but it has been hard on less-skilled workers at the lower end of the wage distribution.

The Administration's efforts to keep the economy expanding and to make work pay have been particularly important to these workers. Not only is the overall labor market performing at record levels, but several groups of workers who had been experiencing low employment rates, declining wages, and high rates of unemployment have begun to show marked improvements. This section describes the gains made by these groups, including low wage workers, those with less than a college education, blacks and Hispanics, immigrants, and single mothers.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Jeffrey A. Frankel (CN=Jeffrey A. Frankel/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:23-DEC-1998 16:41:32.00

SUBJECT: UrgentSteel Memo for Agency Positions

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TO: Nouriel Roubini (CN=Nouriel Roubini/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

TEXT:

Here are my proposed CEA votes on the five options:

1. We are opposed to this, but find it much less objectionable than 2 and 3

2. We are strongly opposed.

I) Would change the trade law for all sectors for all time, in response to a temporary problem in a single sector

ii) Would lead to many sectors seeking protection, with direct pressure on the President and little scope for explaining how the decision is made elsewhere

3. Strongly opposed. It is meaningless unless meant to lead to quotas, and very bad if it is meant in that way.

4. Our preferred alternative, if something must be done.

5. Fine with us.

----- Forwarded by Jeffrey A. Frankel/CEA/EOP on 12/23/98
04:41 PM -----

Malcolm R. Lee

12/23/98 04:08:41 PM

Record Type: Record

To: esserman_sue @ ustr.gov @ INET @ VAXGTWY, Jeffrey A. Frankel/CEA/EOP,
Joshua Gotbaum/OMB/EOP

cc: See the distribution list at the bottom of this message

Subject: UrgentSteel Memo for Agency Positions

Lael instructs we need positions of principals on each of issues for decision, and any critical edits (e.g., omission of key pro or con) by 6:00 PM today. Please e-mail responses to Lael Brainard and to me,

and/or fax. Brainard fax is 456-2878. Lee is at 456-9290. Memo goes to POTUS tomorrow. I am sorry for the rush. Circulation of this memorandum should be limited to DAS level and up, due to its sensitivity. It is not for wider distribution or discussion with others inside or outside the government. ML

----- Forwarded by Malcolm R. Lee/OPD/EOP on 12/23/98
02:58 PM -----

Lael Brainard
12/23/98 03:56:38 PM
Record Type: Record

To: Malcolm R. Lee/OPD/EOP
cc: Melissa G. Green/OPD/EOP
Subject: Steel Memo

Message Copied

To:

Melissa G. Green/OPD/EOP
earp_gordana @ ustr.gov@INET@VAXGTWY @ VAXGTWY
Nouriel Roubini/CEA/EOP
Mona K. Sutphen/NSC/EOP
Nina L. Hachigian/NSC/EOP
Cathy L. Millison/NSC/EOP

===== ATTACHMENT 1 =====
ATT CREATION TIME/DATE: 0 00:00:00.00

TEXT:

Unable to convert ARMS_EXT:[ATTACH.D99]MAIL45458006H.326 to ASCII,
The following is a HEX DUMP:

DRAFT

December 23, 1998

MEMORANDUM FOR THE PRESIDENT

FROM:

SUBJECT: Additional Options for Providing Relief to the Steel Industry

Purpose:

To consider additional steel options for possible inclusion in the January 5 report to Congress.

Context

As outlined in our December 10 memorandum, the Administration has taken several steps to address alleged unfair trade practices in the steel industry, including forceful actions to enforce our trade laws, expedite the dumping investigations, and exert bilateral pressure. Commerce has engaged Russia on its request for a suspension agreement to explore whether this mechanism could provide effective, timely relief.

Steel unions, industry and the Congressional Steel Caucus appreciate the forceful statements you made during your trip to Asia, and acknowledge the steps taken by Secretary Daley on the dumping cases, including the critical circumstances finding. Nevertheless, they are concerned the dumping cases will take too long and will fail to provide comprehensive, global relief. Further, industry has expressed opposition to a suspension agreement with Russia, on the grounds that it would not provide relief commensurate with a successful dumping determination; the union similarly opposes such an agreement unless it provides effective relief on all products from Russia. The steel industry, the steel workers, Senator Rockefeller and other members of the Steel Caucus support additional, immediate action to stem the rise in steel imports.

Issues for Decision

In response to the December 10 memo, you indicated that more action is needed. Below we outline several additional possible measures for your consideration. Although the focus of the industry, union and Steel Caucus has been almost exclusively on trade policy options, we include options on tax relief and adjustment assistance that could prove to be useful complements to trade remedies without sending troubling protectionist signals.

1. Conditional Commitment to Self-Initiate a Section 201 Case:

Steel union and company representatives and Senator Rockefeller are pushing for a conditional commitment from the Administration now that we would be prepared to self-initiate a Section 201 case in the future, if and when the data support such a case. A successful Section 201 case could provide you with considerable discretion and flexibility to implement a comprehensive, global remedy that could include quantitative restraints. It could deliver provisional relief in the form of tariffs as soon as 3 months after filing, and broader remedies, including quotas, within 8 months of filing for as long as 8 years.

Precedent: There have been 67 investigations under Section 201 of the Trade Act of 1974; 35 have resulted in affirmative injury findings and relief has been granted in 20 cases. Steel and steel-related products have been heavily represented, accounting for 8 investigations, resulting in 6 affirmative injury findings and relief in 4 cases. Overall, the Executive Branch has requested Section 201 investigations for only three industries: apple juice in 1985, steel in 1983, and canned mushrooms in the late 1970's. The House Ways and Means and the Senate Finance Committees can also request investigations under Section 201, and have done so twice. Senator Rockefeller has already indicated his support for initiation of a steel 201 case by Senate Finance.

- Pros: Proponents argue self-initiation would send a less protectionist signal than alternatives, since it would fall within existing statutory authorities and has some precedent. Section 201 was designed precisely for circumstances like those faced by the steel industry, to cushion the domestic industry from a surge in imports resulting from unanticipated forces in the global economy (rather than a long-term shift in America's competitiveness). Further, Section 201 provides more effective relief than alternatives such as dumping because it allows the President to impose global remedies involving all exporting countries and a host of related products. In contrast, the dumping laws provide relief on a piecemeal basis, specific to particular exporting countries and product categories, so that imports from other countries or related products often rush to fill the gap. Finally, Section 201 provides substantial flexibility: the relief can cover a broad range of remedies, is time-limited, must be liberalized over time (in contrast to antidumping remedies which can last many more years), and permits some differentiation among exporting countries.
- Cons: Some are deeply concerned this action could be the first shot in an accelerating protectionist spiral, likening it to Smoot-Hawley. At a moment when keeping our market open is essential to global recovery, shifting emphasis away from unfair trade laws to safeguards could encourage others to follow suit, closing markets and choking recovery. Second, USTR and the industry are not presently confident that the industry can meet the injury standard for relief, since most steel companies are expected to be profitable for 1998 overall and will show industry-wide losses only in the fourth quarter, and the ITC normally examines profitability over a 5-year period. Third, opponents are concerned this commitment would set a dangerous precedent, inviting other domestic industries to request similar protection. Finally, a positive 201 finding would put you in the difficult position of choosing appropriate relief, inevitably choosing between competing domestic interests

(steel producers and steel-consuming industries such as autos and construction equipment).

2. Easing Injury Standard for Safeguards Law (Section 201)

The steel workers, the steel industry and the Steel Caucus believe that the current legal standard for injury under 201 is too high to allow effective relief and seek Administration support for legislation easing the standard. Under current U.S. law, increased imports must be a “substantial cause of serious injury, or threat thereof,” where imports must be an important cause and not less important than any other cause. USTR proposes to loosen the standard to require that imports be important but not necessarily as or more important than other causes. The WTO injury standard requires simply that increased imports “cause or threaten to cause serious injury.”

- Pros: Proponents believe this is a less protectionist measure than self-initiation of a 201 because it focuses attention on a broad legislative change, enabling us to channel industry pressure toward availing themselves of remedies available under the trade laws. The proposed change would use the flexibility permitted under current WTO guidelines to make 201 more accessible and effective -- consistent with the Administration’s position that American workers should have effective, accessible tools to adjust to the forces of globalization. Further, some argue that this change remedies an existing asymmetry that favors antidumping relief over safeguards relief because the antidumping injury standard is lower. The safeguards law has some unique and positive features relative to dumping, including an explicit focus on adjustment, a broader range of remedies, a specific time limit for remedies, greater Presidential discretion, and the scope to impose a global remedy.
- Cons: Opponents are concerned this action could send a more dangerous protectionist signal than the self-initiation option proposed above because it goes beyond the framework of existing trade laws. Further, because this action in and of itself does nothing directly to afford relief to the steel industry, it may simply be pocketed, doing little to stem calls for immediate action. Third, encouraging greater use of 201 will increase the burden on you of choosing between domestic interests in deciding appropriate relief in safeguard cases, in contrast to the antidumping laws, where remedy decisions are made by the Commerce Department and the ITC. Finally, some of your advisers are willing to support this legislative change only as part of a bid for fast track or other market-opening legislation because this would send a more balanced signal to our trade partners and it could be useful in securing broad Congressional support.

3. Steel Import Licensing

The steel industry has asked the Administration to institute an import licensing system for steel in order to obtain data for their trade cases on a more timely basis than the current 45-day lag. Under an automatic licensing system, importers would be required to obtain a license from Customs to import steel, and the data collected would be made available to the public. Canada and Mexico currently have similar systems in place. Instituting a licensing system would require legislation.

- Pros: Proponents argue that instituting a steel import licensing system would be relatively

benign, since it would be fully consistent with the WTO rules and would assist the industry in availing itself of remedies under existing trade laws more rapidly and effectively.

- Cons: Opponents are concerned this action could be seen as a protectionist first step toward implementing quantitative restrictions and undermine progress we have made in phasing out quotas and discriminatory licensing systems abroad. Moreover, it would not afford any direct relief and could take several months to operationalize. Third, instituting such a system would require additional budgetary resources for Customs. Finally, it would be difficult to resist requests for similar licensing systems for other industries.

4. Tax Relief

As we have discussed with you, we have developed an option to provide tax relief to the steel industry. Currently, corporations are allowed to carry back losses for two years. Thus, a company experiencing net operating losses today can offset the amount of these losses against taxes paid on any profits earned in the two previous years. In effect, the company today receives a refund of the previously paid taxes. The proposed tax option would extend this carry-back period to five years, specifically for the steel industry. This would increase the pool of previous taxes paid that could be offset with current losses and, therefore, provide financial relief in the form of larger tax refunds. This option would lose revenues of between \$0.5 billion and \$0.9 billion over five years.

- Pros: In contrast to the trade policy options outlined above, the tax proposal safeguards your free trade record and avoids the substantial risk of sending a protectionist signal at a fragile time in the global economy. The proposed tax relief is a concrete response that would have the support of both labor and management. If enacted, it would provide cash to affected steel companies could help companies stave off layoffs. Finally, this is defensible tax policy: just as it is reasonable that losses in May should be allowed to offset profits in September, it is arguable that losses three years ago should be allowed to offset profits today.
- Cons: This option may not provide relief in a timely manner, since passage of a "signable" tax bill is expected to happen late in the process if at all. Second, the proposal begs the question, "why just steel?" and will result in pleas from other troubled industries. Moreover, we are on record in support of shortening, not lengthening, carryback periods. Finally, while shareholders of steel companies would benefit, it is not guaranteed that any benefit will flow to employees; since this proposal is backward- looking, it will not affect prospective steel sales for these companies nor the corresponding demand for labor.

5. Dedicate a Steel Coordinator to Help Steel Communities Access Federal Resources

We have begun looking at strengthening adjustment assistance available to the steel industry. The union is characteristically loathe to discuss trade adjustment assistance, which is derided as "burial insurance." Nonetheless, in a meeting with the Vice President, Senator Byrd pressed for "disaster assistance" for steel comparable to that provided for agriculture and proposed for

Hurricane Mitch victims in Central America. In addition, Senators Byrd and Rockefeller have specifically requested help for Weirton, West Virginia, where Weirton Steel has already laid off 800 workers -- one-third of the work force -- and we anticipate similar requests from other steel mills in the months ahead.

There are already several programs at Commerce and Labor that provide assistance for trade-impacted communities and workers. The Department of Commerce's Economic Development Administration (EDA) can provide grants to help a community develop an economic adjustment strategy, Revolving Loan Funds to help support small business start-ups or expansion, grants for infrastructure improvements (development of a business incubator or industrial park), and technical assistance to small firms affected by foreign competition (such as supplier firms to a large steel plant). EDA can respond to an application for a strategy/technical assistance grant in as little as 2-4 weeks. The Department of Labor can provide job retraining and search assistance to dislocated workers under Title III of the Job Training Partnership Act (JTPA) and to trade-impacted workers under the Trade Adjustment Assistance (TAA) program. So far, few dislocated steelworkers appear interested in TAA's generous retraining and income support benefits, because it requires workers to train for a *new* occupation, and many workers believe -- often correctly -- that they will be recalled by their former employer. (For example, the plant in Weirton has said it plans to recall workers in January.)

Nonetheless, it is difficult and confusing for communities such as Weirton to access the full range of federal resources available to assist with economic development and adjustment. This is precisely the reason the Defense Department established a special office targeted to communities affected by defense conversion. Building on the defense conversion model, we could dedicate a full-time staff person to assisting steel communities access the full host of federal resources, extending beyond Commerce and Labor to include HUD and Education among others. At this juncture, it would be difficult to justify going further and devoting additional budgetary resources to this effort, since Congress provided an additional \$50 million for EDA's Economic Adjustment Program last year, pursuant to an Administration request.

- Pros: Establishing a specific coordinator targeted at steel communities would demonstrate that we understand this industry faces a crisis and requires special help. Moreover, this person could provide needed assistance in helping communities access the full range of federal resources of which they might not otherwise be aware.
- Cons: This proposal would provide only a modest improvement over existing resources and would still fall far short of the assistance afforded to communities affected by natural disasters or base conversion or the agricultural community last year.

RECOMMENDATIONS

1. Conditional Commitment to Self-Initiate a Section 201 Case

[Principals positions]

2. Easing Injury Standard for Safeguards Law (Section 201)

[Principals positions]

3. Steel Import Licensing

[Principals positions]

4. Tax Relief

[Principals positions]

5. Dedicate a Steel Coordinator to Help Steel Communities Access Federal Resources

[Principals positions]

[Automated Records Management System Hex-Dump Conversion]

UPDATE ON STEEL INDUSTRY TRENDS

Steel imports from Russia and Japan continued their rise in October, the most recent month for which figures are available. Imports of all steel mill products for the first ten months of this year are at record levels, up roughly 28 percent over the same period last year. For the first ten months of 1998, imports of steel mill products from Russia increased 47 percent over the same period last year, while imports of all steel mill products from Japan increased 162 percent.

Import penetration for all steel products has risen to 29.5 percent for the year through October as compared to 24.2 percent for the same period last year. With respect to hot-rolled sheet, the product comprising the bulk of steel trade, total imports for the first ten months of this year are up 65 percent over the same period last year, **with import penetration rising to 36.2 percent for the year through October as compared to 24.4 percent for the same period last year.** Imports of hot-rolled sheet from Russia are up 71 percent and imports from Japan are up 399 percent, while imports from Korea fell roughly 1 percent. Capacity utilization for hot rolled sheet and strip has fallen from 93.2 percent in the first quarter of 1998 to 78 percent in the fourth quarter through December 5. Total steel employment has fallen to 226,300, a loss of 10,000 jobs over the last year.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Nouriel Roubini (CN=Nouriel Roubini/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:23-DEC-1998 15:07:07.00

SUBJECT: Export promotion

TO: Jeffrey A. Frankel (CN=Jeffrey A. Frankel/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TEXT:

Here is attached a memo from Dorothy Robyn (NEC) on this export promotion initiative. She told me that this is separate from any other initiative on tied-aid (to be discussed at the NEC Dep. meeting on tied-aid on January 5th). It is instead focused on things such as aircraft finance (for Boeing) and other traditional Ex-Im trade finance initiative such as those for Asian countries in crisis. The first page of the memo should be ignored (sic!). I will read it and see what to make of it. Happy to discuss it any time.
Nouriel

----- Forwarded by Nouriel Roubini/CEA/EOP on 12/23/98
02:59 PM -----

Dorothy Robyn
12/23/98 02:55:18 PM
Record Type: Record

To: Nouriel Roubini/CEA/EOP
cc:
Subject: exports

This is rough draft; pls. don't circulate outside of CEA. Ignore first page.

===== ATTACHMENT 1 =====
ATT CREATION TIME/DATE: 0 00:00:00.00

TEXT:

Unable to convert ARMS_EXT:[ATTACH.D25]MAIL49346106S.326 to ASCII,
The following is a HEX DUMP:

PROMOTING U.S. MANUFACTURING EXPORTS

Vision: This initiative would expand and enhance the Administration's efforts to promote manufacturing exports, by increasing the availability of scarce export credit, reaching out to new customers and markets, and delivering higher quality services with enhanced technology. The initiative responds both to the economic turmoil in developing countries that have been a major (40%) market for U.S. exports and to the stepped up efforts of the EU and other countries to expand their own exports of aircraft and other manufactured goods. Depending on which option we pursue, this initiative could produce [\$1 billion to \$2.2] billion worth of additional manufacturing exports, which translates into roughly [15,000 to 30,000] high-wage jobs.

Funding (above OMB's FY00 passback):

Option 1: \$206M (\$192M for Ex-Im, giving the Bank its FY00 request)

Option 2: \$100M (\$90M for Ex-Im, providing a 14% increase over FY99 enacted)

Option 3: \$ 70M (\$62M for Ex-Im, providing a 10% increase over FY99 enacted)

PROMOTING U.S. MANUFACTURING EXPORTS

Following a number of years of 11% annual growth, manufacturing exports grew by only 2-3% last year. The effects are already evident. Recently announced layoffs by Boeing and other U.S. manufacturers are due almost entirely to softening demand in key export markets.

This initiative would enhance and expand the Administration's export promotion efforts to reflect both new global realities and the stepped up efforts by the EU and other countries to promote their exports. By expanding the availability of export credit, reaching out to new customers and markets, and delivering higher quality services with enhanced technology, we can help U.S. exporters turn this crisis into an opportunity to expand share in key markets.

\$XX [XX;XX] Million Increase to the Export-Import Bank to Support More U.S. Manufacturing Exports in More Markets. Ex-Im ran out of funds in FY97 and 98, each time having to carry over to the following year transactions worth \$1-2 billion. Ex-Im generates roughly \$16 of exports for every \$1 it spends. With additional funds, Ex-Im could:

- ***Meet the increased demand for financing for aircraft and capital equipment:*** Demand for aircraft financing could rise by 75% next year, reflecting both the higher cost of insuring/guaranteeing transactions in troubled markets (one in four Boeing aircraft is sold in Asia) and an expected peak in aircraft production.
- ***Expand short-term and medium-term credit to keep U.S. products flowing to emerging markets where commercial banks have pulled out:*** The Bank insured \$1 billion in U.S. exports to Korea in 1998 (up from \$50 million in 1997), and that could rise to \$4 billion in 1999. Ex-Im could replicate that approach in Latin America and other markets.
- ***Finance exports to riskier markets*** (budget cost level 9) to encourage U.S. exporters to meet the demand that exists in these markets, including Russia, the Newly Independent States and Indonesia (Ex-Im currently finances only limited sales to level 9 markets).
- ***Establish new bank-to-bank lending programs*** in countries that have a developed banking system but limited liquidity: This allows a foreign bank to make Ex-Im-guaranteed funds available to eligible buyers solely for the purchase of U.S. exports.
- ***Expand environmental exports*** that create U.S. jobs while protecting the environment in developing countries. ***Increase support for private development and reconstruction of infrastructure*** in developing countries using U.S. equipment and technology.

\$X [X; X] Million Increase for TDA and OPIC to support feasibility studies, political risk insurance and long-term financing for export-generating projects:

- ***TDA-funded feasibility studies position U.S. companies in the planning stages of major infrastructure projects overseas*** -- projects that then use U.S. manufactured goods. Every \$1 TDA invests produces \$32 in U.S. exports.

- *OPIC's new political risk insurance will make possible \$1 billion in new, export-generating investment* in countries hit hard by the global economic crisis;
- *\$500 million OPIC infrastructure fund in sub-Saharan Africa*, for infrastructure development with American technology, equipment and know-how.

\$XX [X; X] Million for Expanded Export Promotion and Advocacy of U.S. High-Value Manufactured Goods:

- *Significantly boost US&FCS commercial officers in key overseas markets*, including China, Latin America and Africa;
- *Implement a new "export multiplier" program*, to help U.S. manufacturing exporters, most of whom export to only one or two markets, reach their potential;
- *Assign XX "advocacy coordinators" to key overseas offices* to coordinate a prompt USG response to company requests and proactively identify new export opportunities;
- *Target X trade missions to manufacturing*, including steel, aircraft parts and [what else].

\$X [X; X] Million to Deliver Higher-Quality Services with Enhanced Technology:

- *The Department of Commerce would oversee the development of "Trade 2000" technology* to allow American businesses, from their desktop, to 1) identify export markets for their products; 2) connect with buyers, 3) make export sales, 4) learn about export credit programs, 5) file credit applications and 6) complete export credit transactions. Commerce will also work to establish a secure network on the Internet that would allow the many federal agencies involved in trade promotion to collaborate and share information -- creating a "virtual agency" to promote U.S. manufacturing exports.
- *The Administration will sponsor an interactive Conference on Trade and Trade Finance*, to showcase the benefits of Ex-Im, OPIC and TDA "products" and encourage private lenders to return to the emerging markets; and to highlight export opportunities and the range of credit and other assistance programs available to U.S. exporters.

\$X [X; X] Million to Reach out to our 350,000 Small Manufacturers, which account for half of all U.S. manufacturing output but only 13% of manufacturing exports:

- *The more-than 100 locally run manufacturing extension centers in our Manufacturing Extension Partnership* provide an effective way to deliver export assistance services to smaller manufacturers. Funds would go to train MEP staff specialists and develop "tools" both to benchmark small manufacturers' export performance and needs and to allow for electronic information sharing among manufacturers and state and federal export assistance programs.

- ***Commerce would launch a Manufacturing Export Initiative*** to make small manufacturers aware of export opportunities and the full range of export assistance programs. Selected US Export Assistance Centers (USEACs) and the smaller Export Assistance Centers (EACs) would dedicate one staffmember to working with small manufacturers. Commerce would work with curriculum development professionals to create a one-year Export Manager Certificate Curriculum to be offered by community colleges and technical schools.

\$X [X; X] Million to Help Establish a Commercial “Infrastructure” in Developing Countries, making it cheaper and easier for U.S. firms to sell their products and discouraging use by these countries of product standards that act as a non-tariff barrier to U.S. exports:

- Commerce would expand its efforts to help developing countries establish the legal and regulatory “infrastructure” to facilitate commercial transactions, including: ***commercial law, intellectual property rights protection, internationally recognized product standards, and environmental regulation.***
- ***Commerce’s National Institute of Standards and Technology (NIST) would provide support for greater participation by U.S. industry and government in international standard setting bodies,*** to help counter the growing reliance by certain countries on exclusive, non-transparent product standards as a non-tariff barrier to trade.
- ***Commerce would assign “standards attaches” to key foreign markets*** to promote use of product standards compatible with U.S. exports.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Bert I. Huang (CN=Bert I. Huang/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:23-DEC-1998 11:51:00.00

SUBJECT: Literature on businesses in central cities

TO: Douglas W. Elmendorf (CN=Douglas W. Elmendorf/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Nora E. Gordon (CN=Nora E. Gordon/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Cordelia W. Reimers (CN=Cordelia W. Reimers/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Rebecca M. Blank (CN=Rebecca M. Blank/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Ryan D. Edwards (CN=Ryan D. Edwards/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Andrew R. Feldman (CN=Andrew R. Feldman/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Robert F. Schoeni (CN=Robert F. Schoeni/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Charles F. Stone (CN=Charles F. Stone/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

CC: Michele Jolin (CN=Michele Jolin/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

TEXT:

NEC is pulling together a case for the Rev. Jesse Jackson's recommendations on encouraging business location in central cities -- and has asked if we know of any "credible studies."

They are considering tax breaks and possibly developing a secondary market -- but as yet are unsure whether the focus should be racial or geographic disparities.

For now, I'll point them to the old Porter model and its follow-up articles (very few) with a caveat about the quality of that work. Even these may be more "credible" than the Milken Institute/Dept. Commerce study they have now.

So any leads are welcome.

Thanks! Bert

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Jeffrey A. Frankel (CN=Jeffrey A. Frankel/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:28-DEC-1998 13:28:35.00

SUBJECT: J EPA mtg. Jan.5 cancelled

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

CC: Alice H. Williams (CN=Alice H. Williams/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

CC: Michele Jolin (CN=Michele Jolin/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

CC: Matthew R. McBrady (CN=Matthew R. McBrady/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

CC: Nouriel Roubini (CN=Nouriel Roubini/OU=CEA/O=EOP @ EOP [CEA])

READ:UNKNOWN

Lisa D. Branch (CN=Lisa D. Branch/OU=CEA/O=EOP [CEA])

READ:UNKNOWN

TEXT:

Janet

Mr. Nishikawa of the Japanese Embassy came by today to explain that due to a cabinet reshuffling in the Japanese government, EPA Minister Sakaiya will not be able to visit us Jan. 5 as planned. The formal letter is in your in-box.

JF

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Jeffrey A. Frankel (CN=Jeffrey A. Frankel/OU=CEA/O=EOP [CEA])

CREATION DATE/TIME:30-DEC-1998 17:55:14.00

SUBJECT: FYI: emissions targets

TO: robert.cumby (robert.cumby @ treas.sprint.com @ inet [UNKNOWN])
READ:UNKNOWN

TO: Janet L. Yellen (CN=Janet L. Yellen/OU=CEA/O=EOP @ EOP [CEA])
READ:UNKNOWN

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TEXT:

The attached two-page memo describes a possible analytical basis for assigning emission targets to potential non-Annex I participants.

JF===== ATTACHMENT 1 =====

ATT CREATION TIME/DATE: 0 00:00:00.00

TEXT:

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The following is a HEX DUMP:

Dec. 30, 1998

To: David Sandalow, CEQ

From: Jeff Frankel, CEA

Re: An analytical basis for assigning LDC emission targets

If the United States were to propose specific emission targets for non-Annex I countries, perhaps the targets would be more likely received as "fair" (both at home and abroad) if they had some analytical basis. Providing such an analytical basis is admittedly difficult, since we are essentially talking about choosing international income distribution. But we have an idea.

You may recall that the CEA has experimented over the last year with statistical estimates to try to forecast countries' emission paths from observed data such as per capita income. We have now tried to come up with statistical estimates to explain the emission targets that were agreed among Annex I countries at Kyoto (and also the within-bubble allocation that the 15 EU countries agreed subsequently). Of course these were the outcome of political negotiations. But it might be possible nevertheless to discern systematic economic patterns in the numbers. The idea is that a "fair" allocation to ask of potential new participants might be an emission target that fits whatever pattern seems to hold among the countries that have already accepted targets. In particular, this approach would allow some degree of "progressivity" -- with richer countries asked to make bigger sacrifices than poor ones -- without going nearly so far as the redistribution of wealth that some poor-country representatives seem to be asking for.

The key variables that we fit to the observed emission targets are per capita income, coal use, and BAU emission levels (relative to 1990 emission levels). We have also tried including a "dummy variable" to allow for the possibility of different treatment of the transition economies. There is indeed a pattern of progressivity among the Annex I countries. Holding constant for the other variables, each 1 percent increase in per capita income implies a .11 to .17 percent greater sacrifice, expressed as target reductions from BAU. Levels of statistical significance are relatively high, suggesting that the results are meaningful. Technical details regarding the estimates are available.

In absolute terms, an increase in income is associated with an increase in the level of the emission target. But the increase in income implies an increase in the BAU level as well (we know this from earlier results). The increase in BAU is *greater* than the increase in the target, which gives the result that richer countries are making greater sacrifices. Just like under any well-designed tax system, the fraction of increased earnings that countries in effect "get to keep" is well above zero, while still a bit less than 100 per cent.

You may be interested in an example of what this approach might imply by way of predicted carbon emission targets for a major developing country. For the case of China, an extrapolation of our current best equation suggests a preliminary-estimate emissions target

approximately 5 per cent below BAU. (This can be compared to the average cut for the Annex I countries: 19 percent.) Other predictions vary considerably.

This statistical approach certainly has limitations, and the results reported here are preliminary. We are necessarily extrapolating outside the range of the observed data. Variants of the specification give variants of the predictions. The results are sensitive to decisions about the data used. The income numbers, for example, can change a lot depending on the year and exchange rate used to compare countries. Nevertheless, we think that the approach can shed some light where it is badly needed, and are prepared to expand on it.

Cc: Joe Aldy
Raymond Guiteras