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In preparing for this session, I was told that one of the authors wouldn't be here and the other author would be presenting 2 new papers rather than the one distributed. So it was a little bit difficult to prepare, but I was told that I have lots of time.

So to start off with, I want to first talk about the Betts paper and bring out some themes in it, which I'll try and return to in the end. Because the Betts paper is a discussion of technological change and one of the important points he makes right from the start is that technological change does not in itself create unemployment. Indeed, at the micro level, failure to innovate at a particular firm may cause job loss. What innovation really does is alter the mix of employment by firm and by industry. Technological change doesn't in itself alter the level of aggregate demand for labour. Although technological innovation shifts the structure of employment, it's other factors in the economy that determine whether the aggregate demand for labour is sufficient to reduce unemployment to tolerable levels.

The structure of the Betts paper is to survey the secondary literature on technological change and I just have 2 points that I'd like to bring out of that discussion. Most of my comments are going to be focused on the Beaudry and Green paper. First is that skill throughout the Betts paper is treated as a non-problematic concept. It's in practice measured by years of education or white collar status, but there isn't a direct measure of skill or certainly of the range of skills that are in use out there in the labour force. And a second point I think that is relevant to what I will talk about in a minute, is that there's relatively little attention paid in the paper to innovation in what I'll call soft technology of the organization or motivation of the workforce. Most of it is about innovation in the form of capital equipment or in the form of computer equipment, but not much mention is made about innovation in the way in which work is organized or in the way in which workers are motivated. And since I've done a number of case studies over the years I'd like to just give you a hokey diagram to give you a sort of a picture of the really complex four-cornered problem that I think that a lot of firms actually have to solve in practice.

I think that in, in practice firms are out there facing market demands which have both price and quantity and quality dimensions to them. They are faced at any given time with a certain technologically known set of hard technology options in terms of the physical capital of production, and in terms of the cognitive skills of individual workers, and then they also have the problem of how do they organize those workers and how do they motivate them over time.

What I'm going to say fits very well with a lot of what David said because I think that in practice that only some combinations of these packages are

feasible. If you want team production, by highly motivated teams you have to have some continuity of membership, and some continuity of employment. If you want workers to devote a lot of attention and energy to producing a high quality output then you must recognize that it is hard to get it out of the low wage labour force strategy.

As well, "quality" is in itself one of the most ambiguous of concepts that's out there in the market. Its actual practical definition changes by industry and often by customer. So the really important problem is solving the *customer's* definition of quality in that particular industry. For that you need highly motivated workers. So there are only some particular combinations of strategies are really available to firms. Basically in the end if you want to charge a high price you've got to have customers that think you provide a high quality product and you're going to be restricted in the type of employment strategy you follow.

And for sure you need the cooperation, the active cooperation, of workers. Not the unwilling or forced cooperation, but the active cooperation of your workers at the level of the individual workplace. And that theme of cooperation is going to be what I want to come back to.

I think one of the problems we have sometimes in the policy debate is that a great many of us came out of an economics background and we're kind of taught in graduate school to focus on the quantifiable, which means we tend to focus in on what we can measure fairly easily in terms of hard technology and in terms of price based competition. And the sort of inherently fuzzier notions of organizational and motivational strategies and of quality production is something they do talk about over in the business school, but we don't typically do in economics very much.

Now to turn to the Beaudry and Green paper, which I think complements very, very nicely this whole issue, the first point is this is very high quality work. It's a very high quality analysis, primarily of micro data drawn from surveys of individual households. Individuals in those surveys report their labour market incomes and their own characteristics. And those outcomes of course are the result of some intersection of demand and supply out there in the labour market.

We're talking about a story that essentially comes down to technological change and the nature of technological change. So it is I think an important caution to note that we don't actually have evidence from individual firms and they don't project demand trends, either in the aggregate or at the level of the individual industry. And for those people who are worried about structural change and industrial mix or about the problem perhaps of aggregate demand, there isn't any direct attention to

their concerns. So one question you can ask throughout, as you go through is how much can we learn from one side of the labour market.

I think we can learn a great deal about outcomes. In the patterns paper they tell us a great deal about the nature of outcomes in the Canadian labour market. They follow birth cohorts through successive waves of the Survey of Consumer Finance. Again, the level of education is the measured variable. Again, we don't have direct measures of skill or skills and personally I think that schooling is very important, but it's an input into skill rather than skill necessarily itself.

The strategy is to compare the age earnings profiles of different cohorts and by level of education. And the bottom line conclusion is fairly depressing and dismal, that we have much poorer earnings for recent male labour market entrants relative to the 60's and 70's. -and that there's no evidence of increased returns to experience. There's been a shift down in earnings profiles. And so if Canada is inherently, in some sense a materialistic society, in some important sense it's not delivering the goods to new entrants to the labour market.

Now one of the really important issues is that we want to separate out cyclical phase and structural trend. And the whole focus of the discussion of outcomes is to assess the importance of structural trends. Now I can't help discussing this without noting that the term cyclical has this sort of comforting kind of neutral tone to it. When you talk about "cyclical" it has a "what goes down must come up" kind of optimism. And it's sort of a neutral thing "out there". Nobody did or can do much.

But there is an older vocabulary which referred to "demand deficient" unemployment, which is basically the same thing. And it talked about the impacts of demand deficient unemployment on wages and on the wage structure. And going back a long time, people were worried about inadequacy of jobs. Now of course in talking about "demand deficient" unemployment there was always the recognition that there are some stochastic shocks hitting the economy at any point in time, some coming from trade, some coming from technology, some coming from the climate, some coming from wars, Y2K, whatever. All these stochastic shocks are always hitting the economy. But the phrase "demand deficient unemployment" dares to leave in the possibility that macro-economic policies might also play a role.

I fly up to Ottawa every once in a while and I find that there's a very popular premise in Ottawa that macro-economic policy has been optimal, always and forevermore. And if we think that macro-economic policy has always just been optimal then we're left with these stochastic shocks from

one period to the next and so we can take the structural trend as some sort of moving average of the past, perhaps even the recent past.

Well you know I don't live in Ottawa anymore. Suppose this isn't true. t. Just suppose. In that case it becomes quite important how we control for the cyclical phase of the economy.

In the Beaudry and Green patterns paper the intent is to control for the cyclical phase of the economy by using the U.S. detrended unemployment rate as an instrument for the Canadian unemployment rate. In the paper itself there isn't a direct estimate of anything you could look at as a NAIRU or structural or equilibrium level of unemployment of the Canadian economy.

Now there is this hypothesis floating around that a lot of our experience in the 1990's didn't just happen to us because we had all these little cyclical shocks which hit the economy, but because we had an important macro-economic policy which excessively restricted aggregate demand compared either to U.S. policy or to potential output. And the implication of that I think is that if we use U.S. unemployment as an instrument we won't adequately control for the impacts of demand deficiency on the wage structure in Canada in the 1990's. Mention has already been made of some of the reversals of the trend to increased wage dispersion in the U.S. in recent years.

Low unemployment does matter. It may take a while to filter down through the queue to the really disadvantaged of the labour force, but low unemployment rates do matter a lot. If we do not adequately correct for the level of potential demand deficiency in the economy we're going to be ascribing to structural trends what we should ascribe to made in Canada macro-economic policy.

Now, the most provocative question really is when Beaudry and Green focus on why we have these trends in the Canadian labour market. There's a provocative new and unified explanation of labour markets with very strong policy implications. It turns out that David and I have a little bit of a disagreement about just when and whether and how much the returns to education in Canada may have increased in recent years. I was quite convinced by the Bar-Or study and I believe that what was true in the U.S. of a rising university/high school differential has not been true, at least through the 80's and 90's in Canada. So we'll have to resolve that in some further discussion.

But let's just take it as argued and let's cut right to the bottom line of the Beaudry-Green paper, which is kind of strong. Rising levels of education are bad news for workers. An increase in the percentage of highly

educated causes a decline in the wage of both low and high skilled groups, in their model. In their model the mechanism is induced capital scarcity and I think there's an implication which I'm not particularly fond of myself. It would be rational for the trade union movement to organize a campaign against post-secondary education funding and thereby shift this trend in the percentage of highly educated in the opposite direction and get wages for both low and high skilled workers moving up again. So naturally since I'm not fond of that implication I want to ask a question.

How do I know if this is true? Well, the strategy of the paper is to have an abstract micro model of the labour market and to estimate a reduced form aggregate production function of the Canadian and American economies as a whole. And I think there's one problem, which they recognized in the paper that other micro models may also be consistent with the same aggregate production function. So we don't in a sense discriminate between a number of possible alternative hypotheses and there are a bunch out there - from institutional change to matching in the labour market, to these substantial change in wage norms or the political economy of bargaining.

Problem number 2 is that there isn't any direct presentation of evidence on the realism of the traditional or modern technology story.

But suppose they're right. Just suppose that this doesn't matter and just suppose they're right and that workers do lose from more education in the labour force as a whole and from the implementation of modern techniques. Why should workers cooperate in this process?

Now, this isn't the first conference in Ottawa I've been to on visions of Canada after the year 2000. In fact about 11 years ago the Economic Council of Canada had a conference called Perspectives 2000 and I see a lot of the same faces here as there were then. Now in that conference there was a broader agenda. There were papers on challenges for industrial relations. There was a paper on distributional issues and the future of the welfare state. There was a paper on consensus and economic performance. And it was clear in that conference's discussion that maintenance of a sense of equity in the Canadian polity and finding some way of reducing or mitigating potential conflicts in Canadian society were an important theme for Canada to examine as we moved into the next millennium.

Now the Economic Council of Canada isn't with us anymore and Industry Canada has a narrower mandate. The focus of the agenda has been business and government and their decisions. So I think that in the agenda setting exercise a number of crucial issues have simply fallen off the table.

In the current agenda of 1999, labour cooperation in implementing technical change is simply assumed, not examined. But I would go back to the micro evidence and to macro evidence to question whether taking labour for granted is likely to be a successful strategy in the longer term.

In the 1999 conference, as opposed to the 1988 conference, and with the exception of Harvey Lazar's intervention right at the first, trends in economic inequality and economic insecurity have not been on the agenda. Is it really true that they are irrelevant to the attainment of higher living standards for Canadians either as ends in themselves as an important part of living standards or as fundamental determinants of productivity and rising per capita incomes?

I think that there's a need for a broader agenda that pays much more attention to the maintenance of equity and the mitigation of conflict if we are actually to have the cooperation that we need as we head into the new millennium.

Thanks very much.

APPLAUSE