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The Olivia Framework

Concepts for Use in Finely-Grained, Integrated Social Policy Analysis[1]

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Overview

The Olivia framework had its origin in life-course analysis[1]. However, it has evolved greatly and, in its current version, provides a comprehensive framework that allows us to analyze social trends and policy responses from many perspectives:

- The point-in-time, resource-flow perspectives that underlie most traditional policy analysis.
- Life-course perspectives, including both transitions/trajectories analysis and asset-based analysis.
- Spatial perspectives that anchor people in space and history and that provide a link to macro-analysis.
- The perspective of the purposes of individuals and institutions, including the objectives of different types of government programming.

The concepts of the framework, which are all potentially measurable, provide a language that can support integrated analysis in all these areas at a much finer level of description than is customary. It provides a language that is especially well suited for analysis of the incremental policy changes that are typical of a mature welfare state[2]. It supports both qualitative and quantitative analysis, enabling some integration between the two.

[1] The earliest version of the Olivia story was about the transitions and trajectories now found in Module Two of the framework. It was drafted by Stéphanie Gaudet who was then at the Policy Research Initiative.

[2] Particularly useful in forecasting social trends and policy responses as described in more detail in a companion paper, Peter Hicks, *Social Policy in Canada – Looking Back, Looking Ahead, November 2008*, Working Paper 46, School of Policy Studies, Queen's University.

THE OLIVIA FRAMEWORK

CONCEPTS FOR USE IN FINELY-GRAINED, INTEGRATED SOCIAL POLICY ANALYSIS

1) Introduction

1a) Seeing the world through a social policy lens

The real world is infinitely complex. We need to construct unique languages and tools to describe and understand various aspects of that real world. We cannot see all of it at once.

Painters, novelists and film-makers have all developed their own separate tool boxes for describing and providing meaning to the world around us. Microbiologists, astronomers and physicists use other tools, often mathematical ones, to provide meaningful descriptions of other dimensions.

Describing the people who inhabit our world is particularly complex. Different disciplines have developed words and conceptual frameworks to understand different dimensions of human society. Geographers concentrate on understanding the spatial dimension. Epidemiologists study factors affecting the health of populations. Demographers have developed other tools for understanding the size and composition of societies.

This paper is about the words, concepts and tools that people interested in social policy can use in order to describe and understand their part of the world.

Several disciplines examine social policies from different perspectives. Sociologists use their own language to describe those aspects of society (and of the social policies that help shape society) that deal with class, status and equality – and much else as well. Political scientists look at dimensions dealing with rule-making and legitimacy. Historians examine social policy in the context of the evolution of the nation state and its political systems.

In most social policy circles today, micro-economics provides the dominant analytic lens. Microeconomics examines the way in which people, institutions and policy-makers make decisions on how to allocate scare resources. The relations among people (and between people and the institutions of society) are seen primarily through the lens of the resource flows, mainly of money and of paid labour.

Welfare economics uses micro-analytic tools to study how incomes (and services) are distributed across the population and to examine the role of government policies in shaping that allocation in an efficient and fair manner.

Proposed changes to social policies are typically assessed in terms of economic winners and losers, and in terms of the immediate incentive effects of those proposed changes on affected individuals. The incentives examined are typically those that may cause short-term shifts in

labour market behaviour or on savings. For example, what would be the effects of increased pension benefits or social assistance on labour force participation?

Typically social policies are seen, from this perspective, as compensating for market failures. For example, action by government is only justified if the market cannot provide people with adequate living standards, or appropriate levels of social services, or opportunities for education and development, or if private markets results in a level of inequality such that people are excluded from basic participation in society and from the exercise of citizenship.

Our national statistics have been developed over the decades in a way that supports the main tools that we use in policy analysis, i.e., traditional economic analysis. Accordingly, we rely heavily on time-series of point-in-time readings, such as monthly readings of unemployment rates or annual readings people living below low-income cut-offs or that receive specific social policy benefits.

Traditional micro-economic analysis and its supporting statistical data base provide a powerful lens for describing and assessing social policies. They allow us to assess many important features that are of interest to policy-makers in a quantifiable manner. For example, we can examine trends over time – allowing us to see whether things are getting better or worse and whether policy changes may, or may not, be needed. We can calculate the numbers of winners and losers from a proposed policy change and thereby make decisions among competing proposals that are based on at least some hard numbers.

However, there are also many important dimensions of social policy that are not as easily described using these traditional tools and existing statistics:

- For example, traditional economic analysis and supporting data sets tend to focus on monetary transactions in the market. They can be awkward to use in describing the all-important care-giving and services provided by the family.
- The traditional approach is fundamentally a cross-sectional, point-in-time view of life and society. That is, it mainly looks at average people as they exist at a particular time and examines what difference policy changes would make on those lives – on average and in the short-term. It is less well-suited for describing the actual life courses of real individuals and how policy interventions at one stage of life make a difference at subsequent stages.
- It does not provide a strong language for describing the processes by which short-term resource flows are turned into assets (such as human and social capital) which can then be used at a later stage in life.
- It is not strong on capturing the important indirect effects of policy changes on markets or on a range of other social policies.
- It usually assumes that people behave rationally from a strictly economic, self-interested point of view, often ignoring the many other factors that also shape human behaviour.

These limitations have resulted in economists broadening their traditional approaches in many important ways. There has been growing interest in developing longitudinal data bases that follow particular individuals over longer periods of time (as opposed to traditional point-in-time cross-sections). The limitations have also resulted in a recent emphasis on looking at social policy from the lens of other social science disciplines as well as economics. Multi-disciplinary analysis is now seen as being almost essential. Perhaps the most prominent of these newer perspectives

has been referred to as life-course policy analysis, which has its roots in sociology, geography and other social science disciplines.

A problem has been that we lack the common language, the conceptual framework and the analytic tools that would allow easy and fruitful communications among people working in the various disciplines. We have reached a state where we have understood the importance for policy-making of people from different backgrounds and disciplines sitting together in same room. We have yet to develop a common language that would allow the people in the room to fully communicate and learn from each other.

This paper describes an attempt to develop the needed common language.

1b) The framework in summary

The Olivia framework provides a set of standard concepts that analysts can use in describing and assessing the many dimensions of human resources and social development policies. It sets out comprehensive, measurable concepts that describe those characteristics of individuals and organisations that are of greatest interest to these analysts. The framework builds on, and is consistent with, existing tools of analysis. However, it has two important new features:

- It describes our society and our policies in a far more finely-grained way than do most traditional approaches, with the descriptions based on individual people and individual institutions, as opposed to the abstractions which are the basis of much traditional analysis.
- It provides a more integrated approach to describing social and labour market conditions and policies – allowing us to bridge the many divides that now fragment social and human development policies.

Who is Olivia?

Before we turn to the characteristics of the framework, we should first explain why it is called the 'Olivia' framework. Especially in early versions of the framework, we made extensive use of a case study of a fictious individual, Olivia. We examined how she spent her time. We showed how she interacted with her family, her employer, her school, and her participation in government programs and taxes. We showed how she changed and developed over the course of her life. We described where she lived – and the social, economic and environmental settings in which her life took place. We described her values and expectations and how these were realized. We did this in order to:

- Provide a concrete example of how the concepts of the framework operated – of the granularity of the description they provide of her life and relationships.
- Emphasize that the framework applies to qualitative analysis (case studies, best practices, biography and narrative) as well as to more traditional quantitative analysis.
- Emphasize that the framework's concepts and associated measures are based, not on abstractions and averages, but on detailed micro-data about specific individuals and institutions. Contemporary analytic tools such as modelling allow us to use this kind of micro data directly in our quantitative analysis.
- Emphasize (by virtue of Olivia being a hypothetical, made-up person) that the framework and its associated measures do not infringe on privacy in any way, even though they are individually-based. Today's modelling technologies allow us to do our analysis based on a

world comprised of synthetic individuals and institutions that are created in a way that mirrors the characteristics of actual Canadians and actual institutions.

The four modules of the framework

The framework consists of four modules – each describing individuals and organizations from a different perspective, but using consistent, measurable concepts throughout.

Module One is about resource flows and is a simple extension of the traditional, point-in-time micro-economic analysis that is the basis of much of today's social policy analysis. It sets out consistent concepts for describing the interactions or transactions that take place among individuals and institutions. (In our language, an institution is defined very broadly to include government programs and informal social networks, as well as formal organisations such as firms and non-governmental bodies.) These concepts encompass the monetary flows that are the basis of our economy, as well as non-monetary flows of goods, services, information and time. Emphasis is placed on the basic flow of all: time and how it is allocated by individuals. As well, Module One provides standard ways of describing the characteristics of both individuals and institutions. It is our starting point.

Module Two starts with the point-in-time resource flows and transactions of Module One, but uses them as the basis for a consistent approach for describing how people and social institutions change and develop over time. The module provides two quite different, but complementary lenses by which we can understand social change and development:

- Life-course analysis based on transitions in the domains of life. Transitions are major changes or discontinuities in the resource flows of Module One. This analysis allows us to describe the main compartments and changes of life.
- Stock and flow analysis that looks at, for example, financial capital, housing, human and social capital – and how these result from the point-in-time flows in Module One. We build up assets from flows at one stage of life, and convert them back into other flows at subsequent stages of life. This analysis allows us to describe the continuities that cross the various transitions and stages in the lives of people and institutions.

Module Three provides a set of concepts for describing the physical locations where individuals and social institutions are situated – neighbourhoods, cities, labour markets, provinces, the country as a whole, and international groupings such as the G8 or OECD countries. This allows us to anchor people in real space and in real history. It allows us to examine community assets, natural resources and sustainable development. And it allows us to use the micro-analysis of Modules One and Two in conjunction with macro-level analysis – whether of the effects of business cycles, wars or climate change.

Module Four provides a consistent set of concepts, based on those developed in Modules One and Two, that can be used to describe the purposes or goals of individuals and institutions. For institutions, we use the familiar input-process-output-outcome model. Outputs are the immediate products of the institution, while outcomes reflect the underlying purposes. Inputs and outputs are the resource flows from Module One. For individuals, the purpose is well-being. We approach this through concepts related to values, satisfactions and expectations – with these concepts rooted in the finely-grained descriptions of the first three modules. Finally, we show how the framework supports discussion of societal-level well-being and the development of social indicators.

The concepts of the framework can be used in virtual all analytic applications

We can use the concepts in the framework in qualitative narratives that describe the lives of specific individuals such as Olivia. The same concepts can be used in the more customary quantitative analysis of groups of people. For example, we can look at marginally-employed people living in large cities and examine the resources they receive from government, from family and from the market. These same concepts can also be used to describe the time demands on sandwich-generation mothers who provide care to both their children and to their parents. They can equally describe the needs and aspirations of older people who are house-rich or younger people who are homeless.

We can use the identical concepts to describe an institution, as in a case-study of the employment practices and productivity history of a particular firm – or of the care-giving and care-receiving experiences and challenges faced by a particular family. These same concepts can also describe groups of institutions in a quantified manner – labour shortages faced in certain industries, cognitive outcomes resulting from different categories of schooling, and the effectiveness of government programming in alleviating poverty and overcoming obstacles to labour mobility.

The framework allows us to use the same words, with the same meanings, in all these applications. More important, since the concepts are all measurable, the framework supports consistent, quantitative analysis in all these domains – something that is far from today's reality – and may seem like a daydream to many readers.

Of course, the fact that the concepts are measurable does not mean that the needed measures actually exist. Indeed, one of the purposes in developing the Olivia framework was to provide a conceptual framework that would support the development of the needed data sets. However, the bottom line is that a great deal of highly-detailed data about the life-courses and transactions of individuals is potentially available now. Many potentially rich survey and administrative data sources now exist – waiting to be unlocked through the use of newly-available meta-analytic tools. The daydream could become reality faster than many expect.

1c) What is 'finely-grained' and 'integrated' analysis?

The strength of the framework rests in its ability to describe things in a way that is both integrated and detailed. We will therefore take a few minutes to explain why we think this is important, and to contrast the new concepts with those that are more traditionally used today.

The benefits of finely-grained understanding

Most existing tools of policy analysis tend to describe society and individuals in a fragmented manner. They tend to be built on highly simplified hypotheses about people's behaviour (and about organizational behaviour). They describe fragments of the lives of 'average' people and 'average' institutions. This use of simplifying assumptions, based on limited data, was essential in a pre-computer age. We did not have the technical capacity to manipulate data other than through highly simplified hypotheses about how things worked.

The concepts used in the Olivia framework, in contrast, start with a premise that we want to describe almost everything that is potentially interesting (to policy analysts, at least) about real individuals and real institutions. There is inevitably some theory at play since we are still making choices about which characteristics are to be observed and measured. However, those choices are more guided by common sense – and through the strategy of erring on the side of collecting more data than less – than by any abstract theory. In other words, we are anticipating the use of current

technology that allows us to create huge data bases about particular individuals and institutions, and then to provide a manageable description of what is important through subsequent analytic techniques such as micro-simulation modelling.

(On a technical note, throughout this paper we refer to huge data bases containing vast amounts of information about individuals and institutions. This is an analogy that is comforting to an older generation of analysts such as the present author who think in terms of tabulations and spread sheets. It is also scary from a privacy perspective. However, such huge data bases would be impractical in real life. What actually exists is a series of equations, along with source data from many sources, that can be used directly in making the appropriate analytic calculations in an efficient manner. And this also allows us to eliminate privacy concerns.)

This is all very abstract. We will try to make it more meaningful through examples and analogies set out in the following two figures:

- Figure 1 illustrates some of the weaknesses of traditional analysis when it comes to understanding the role of institutions (including the role of public policies programs which, you will recall, are treated as institutions in our framework, i.e., a desegregation of the institution of government).
- Figure 2 provides an analogy where we associate traditional analysis with barbaric medieval surgery – and the finely-grained Olivia analysis with micro-surgery. It is a clumsy, exaggerated comparison, but we want to make the big point before moving on to more nuanced discussions.

The message from these two figures is that finely-grained analysis would be particularly useful in supporting the normal way in which we make policy – i.e., through smaller incremental changes.

- Mature public systems consist of many complex and closely intertwined policies and programs – including tax systems. These originate in many departments and in different orders of government. They are typically associated with complex, entrenched delivery systems such as the education or health care systems. Affected individuals and institutions react to the whole system, not to single policies or taxes taken in isolation.
- The interdependence that necessarily exists within a mature system makes it difficult, and sometimes unwise, to make large policy changes. A big change in one part of the system can have large, unanticipated and perverse spin-off effects in other parts of the system. It is hard to get consensus for proposals for large changes. There are typically many losers as well as winners. Indirect benefits are difficult to understand, except for those who will lose from those indirect effects.
- We therefore increasingly live in a ‘devil is in the detail’ policy world, where systems evolve most effectively and efficiently through a series of relatively small, gradual changes – based on evidence (where it exists) of what is working and what is not, together with common sense and political judgment.

Existing analytic approaches are typically too crude to capture the small, and often, indirect effects of many incremental policy changes. Accordingly, common sense and political judgement play much the largest role – not a bad thing at all. Nevertheless, such judgements could be usefully re-enforced by the richer empirical and narrative insights that are associated with the framework.

Figure 1. Finely-grained analysis – Do institutions (and policies) matter?

Analysis using traditional analytic tools often show that institutions (including public programs) have had no, or very modest, effects on individual lives. For example:

- Evaluations of the subsequent effects of active labour market programs tend to show that they get mixed, modest results. In the absence of careful design they can make things worse.
- International comparisons by the OECD found that people had similar family disposable income before and after retirement, regardless of the form or generosity of public pensions.
- Educational studies drawn from different sources would seem to suggest that there are significant payoffs from longer periods of schooling but that outcomes later in life are hardly affected at all by what happens inside the education system (in terms of curricula, class size, teacher training, etc).

When we re-join the real world, we know that conclusions such as these – that what happens within institutions have little effects – are clearly wrong. We, mercifully, would not order our everyday lives based on such findings. One problem is that the research and evaluations in question focus on average effects. They are not sufficiently granular in assessing the effects of institutions on people with different characteristics and needs.

- The interesting evaluation question, for example, should be 'which aspects of active labour market programming work best for which people in which circumstances?' and not the question that is, if fact, typically asked – namely 'what effect did this particular active program have for its participants on average?' The more granular data would show that such programming made a big difference in the subsequent lives of some, and made things worse for a few. The more detailed information is needed to guide the evolution of evidence-driven programs.
- With respect to the returns-to-education question, what would be interesting would be the much more finely-grained analysis of returns to, for example, particular fields of post-secondary education – taking into account the characteristics of the individual. Some fields of study, for example, may have high returns in terms of subsequent earnings, and other fields may be a waste of time – at least judged in terms of subsequent success in the labour market.
- The OECD retirement income results are, without question, enlightening. However, the correct conclusion (as indicated by the OECD) is not that public pensions do not matter, but that the effects of public policies cannot be understood without taking into account the interplay among the domains of public policy, markets and families. People want to maintain living standards after retirement and simply adapt their behaviour based on what is happening in all these domains.

Much existing research and evaluation is based on average effects, on treating institutions and programs as large black boxes, and on ignoring indirect effects in other domains of life. This means that these analytic tools are weak in applications that are intended to allow policies to evolve based on evidence of which aspects of those programs are working and which are not. For that, we need to get behind the averages and to look at what is actually happening within the institutions and programs that we are examining, and how they relate to real people, not average people.

Figure 2 Finely-grained analysis versus traditional analysis

Evidence-driven, incremental policy-making, along the lines envisioned in the Olivia framework, is like micro-surgery carried out by a skilled medical team. A surgeon uses delicate instruments to make key, but relatively small alterations to one or two parts of a complex system. The team has the capacity to see how the whole network operates, to anticipate the effects of the intervention throughout the whole system, to monitor whether these effects are indeed occurring, and to take remedial action if they are not.

In social policy terms, the micro-surgery policy team would be able to assess the effects of the surgery given the interconnected networks in which an individual lives: family, market and workplace, learning and community. These domains are all supported by a rich mix of public policies – rules, services, income supports, taxes and information. A policy change in one part of the system will affect all others, directly or indirectly.

Currently, our analytic instruments allow only a very crude understanding of these interactions. They are like the axes wielded by a medieval barber-surgeon in lopping off diseased limbs. As with medieval surgeon, analysts today must mainly rely on tools of policy analysis that allow them to see only the immediate problem in question, with little ability to see the indirect effects of his surgery elsewhere in the system. Even within that small part of the system that is within his field of vision, the analyst sees things through distorting 'average characteristics' lenses – rather than directly seeing the real objects before him. Small incremental incisions are out of the question; he is using an axe.

The micro-surgery envisioned in the Olivia framework, in contrast, supports a set of measures that would allow a richer understanding. It provides concepts that allow us to consistently describe, and (increasingly) to measure:

- The full range of policy instruments at play: rules, income transfers to individuals, services, information and income transfers to other orders of government.
- The social institutions that comprise the domains and trajectories of life: family, work, learning and community.
- The interactions among individuals and those institutions and policies.
- How those interactions change over time at the level of individuals as a consequence of policy changes (or of other shocks or transitions).
- How these changes result in changing assets, including an individual's human capital, social capital and financial capital (and other forms of capital, as we will also discover later).

The analogy is exaggerated of course – and unfair to both the medieval barber-surgeons who were often skilled craftsmen, and to our current tools of social policy analysis. In particular, some sophisticated tools are routinely used today.

- For example, we have reasonably finely-grained models to examine changes to income transfers and taxes.

  But even here, these models still seldom take account of the critical indirect effects on other income flows (e.g., those that take place within the family).

- The tools we use in evaluative work are typically more sophisticated than those we use in our policy formulation work.

  But they are typically applied too late to drive policies. Contemporary 'Olivia' tools, on the other hand, allow evaluation, performance measurement and referral to services to take place simultaneously, in real time.

Moreover, even sophisticated versions of traditional analysis are typically limited to fine-tuning applications – once the fundamental choice of policy instruments has already been made. Traditional tools provide little help in making the basic choices such as in the selection of the policy instruments to be used (e.g., the choice among income transfers to individuals, the provision of services or information, regulation, or transfers to other orders of government).

In recent decades, the emphasis in social policy has shifted from a reliance on passive income security taken in isolation to a greater emphasis on social investment and life-course policies – particularly those policies such as education, training and other active employment measures that make investments at one stage of life in order to get returns at subsequent stages. The box below provides more details.

Social investment and Life-course policies

There are two types of life-course policies:

- ***Social investment policies*** that intervene at one stage in the life of an individual or institution in order to have beneficial effects at subsequent stages of those lives. Examples include the education system, health protection and prevention policies, and active labour market programs. More recently there has been new interest in asset-based programming to encourage savings among low-income people, or to encourage savings to help cover the costs of subsequent education.
- ***Life-course flexibility policies*** that influence how individuals allocate their time and other resources over life. For example, they ensure that basic education takes place when people are young. Pensions provide funding for leisure and time away from work later in life. A main current policy concern is about the compression of work and caring in the middle of life. It flows from a wish to increase time spent in work over the course of life, as well as a desire to provide people with more choice in allocating time to earning, caring, leisure and learning in a flexible manner and over a longer period of life.

Life-course policy *analysis* allows us to examine not only the immediate short-term effects of policies on individuals and institutions but also to examine the need for, and effects of, policies over longer periods in the lives of those individuals and institutions. The tools of life-course analysis allow us to take account of how people evolve and develop, and to better understand the questions of timing, duration and sequencing of activities in different domains of life. They add a dynamic element to traditional static forms of analysis. They are characterized by being both longitudinal in character and far more integrated and finely-grained in their descriptions of society and of policies.

The use of these life-course tools of analysis is not limited to social investment or life-course flexibility policies. They also provide a strong, consistent language for describing traditional point-in-time income transfers, remedial services, regulation and other policy instruments.

Existing analytic techniques are weak in describing social investment and life-course policies. In principle, we would like to link specific investments at the level of individuals to empirical calculations of expected outcomes from those investments. This is simply not possible using traditional analysis. This in turn means that most of today's 'social investment' and human capital policies use the word 'investment' as an analogy – to signal the general intent behind making certain kinds of *expenditures.* They are typically not based on strategies for making specific *investments* based on calculations of expected returns.

The benefits of integrated analysis

Finely-grained analysis and integrated analysis are inseparable in practice. However, the use of common concepts across a wide range of policy applications has advantages in its own right. It enables efficient communications across areas that are currently marked by barriers in our way of understanding things. These include bridging:

- The divide between qualitative and quantitative analysis.
- The divides among the policy silos and the academic disciplines that support them.
- The divides across the stages of the policy process

- The generational divide between the users of traditional analytic tools and users of the contemporary tools.

Bridging the divide between quantitative and qualitative analysis. There is presently a large divide between quantitative (statistical) approaches to analysis and qualitative approaches (e.g., narrative accounts of people's needs and expectations for policy, their opinions, case studies of what works best, etc). In many ways, qualitative analysis provides a richer description of those things that are truly important to policy than does the fragmented view of reality that is portrayed by most of our statistics. Yet rigorous qualitative analysis has been under-used, even in areas where it is particularly relevant such as citizen engagement and consultation on social policy topics. One reason has been the lack of good tools for capturing the results of those consultations in ways that can be easily linked to other kinds of information that arise from our (urgent and necessary) quantitative analysis of costs, winners and losers. Although not discussed at length in the present paper, the Olivia framework uses concepts that support both quantitative and qualitative measures, enabling at least a start at reconciling both approaches.

Bridging the analytic disciplines. The framework addresses another set of big divides: those that exist among program silos, and among the academic disciplines that support policy analysis in these silos. Economists, sociologists, demographers and criminologists all tend to use quite different conceptual frameworks with consequential difficulties in communication. For example, the economist usually sees a changing world in terms of changes at the margin and how they affect behaviour, while other social science disciplines are more likely to concentrate on changes in averages and dispersions. All disciplines are struggling to find new ways of interpreting longitudinal data. The Olivia framework therefore uses one set of consistent, measurable concepts drawn from several disciplines, concepts that can be used in both cross-sectional and longitudinal analysis. It tries to find this common ground by moving to a more detailed level of analysis than we have traditionally used.

Bridging the stages of the policy process. The framework will help strengthen effective communication across the stages of the policy process from public consultation, through to policy research, experimentation, program design and evaluation – again areas where quite different tools of analysis have evolved.

Bridging the divide between generations of analysts. The concepts we now use in policy analysis are constrained by what we currently measure and, as already noted, the statistical system that provides our measures has evolved over the decades in a way that reflects the dominant tools of analysis there were used in the past. The statistical system also reflects the constraints imposed by the technology that was available to collect good, affordable data. What we measure today is largely a product of a computing technology that was current about a quarter of century ago. The computing technologies that are increasingly available today will enable us to develop and use quite new kinds of measures, ones that will considerably enrich the way in which we understand our society and the role of policy. The concepts in the framework outlined here have been designed to be compatible with these new measures, as well as with those in place today.

Unfortunately, in the policy world, most policy analysts and policy-makers – and many academic researchers – are only familiar with the older tools. This lack of familiarity with the potential of current technology is a major stumbling block to excellence in policy-making – and is holding back potentially large gains in both effectiveness and accountability. The framework, by itself, can't fix that. However, by providing a common language that supports both older and newer ways of understanding, it may help create a bridge between the two cultures.

1d) Where do we stand in terms of implementation?

The framework is evolving and will continue to evolve. Parts of the framework are, however, more mature than others.

In its current version, the concepts of Module One have been examined from many perspectives and appear to be quite stable, as does the transitions/trajectories analysis of Module Two as it relates to individuals. Modules Three and Four have been added more recently and there will almost certainly be some fine-tuning as they are developed further, particularly as their data implications are examined more closely. However the basic concepts in these modules appear to be sound.

There would likely be good pay-off from further conceptual development and testing in several areas:

- The asset concepts of Module Two need further elaboration, particularly dealing with human capital and social capital.
- As will be discussed later, no serious work has yet begun in exploring the potential of the framework for understanding the transitions and trajectories in the life histories of institutions.
- The paper does not cover applications in the area of health and justice, although these are obvious extensions.
- The framework opens up the possibility of a more integrated analysis of policy instrument choice, particularly in allowing integrated analysis of: (a) the role of laws and regulatory instruments (i.e., the rules that govern the Module Two trajectories); the Module One instruments based of flows on income and services; and (3) the role of asset-based instruments for Module 2. These applications are only touched on in this paper.
- Other areas of potential development are discussed in Section 3d.

As noted, while the concepts used in the framework are all measurable, it will be many years before all of them are in fact measured in a consistent, reliable fashion. In order to begin exploiting some of the full power of the framework, it will be necessary to use meta-analytic tools such as micro-simulation models that can make use of data drawn from many different sources. It will be many years before such models, and their associated data sources, can be developed to a point where all four modules of the framework can be fully measured on a consistent, detailed basis.

That said, a great deal of progress has been made to develop the needed tools in recent years – a good deal more progress than is often realized. In Canada, we have made some progress on creating longitudinal data sets from surveys and administrative files, although we appear to be falling behind other countries on this front. On the meta-analytic side, there has been much progress in recent years. Statistics Canada's LifePath model provides a good example of what can become possible in undertaking the analysis suggested in Modules One and Two. There has also been recent progress on the spatial modelling associated with Module Three. Huge investments are being made in similar meta-analytic enterprises in the area of health care.

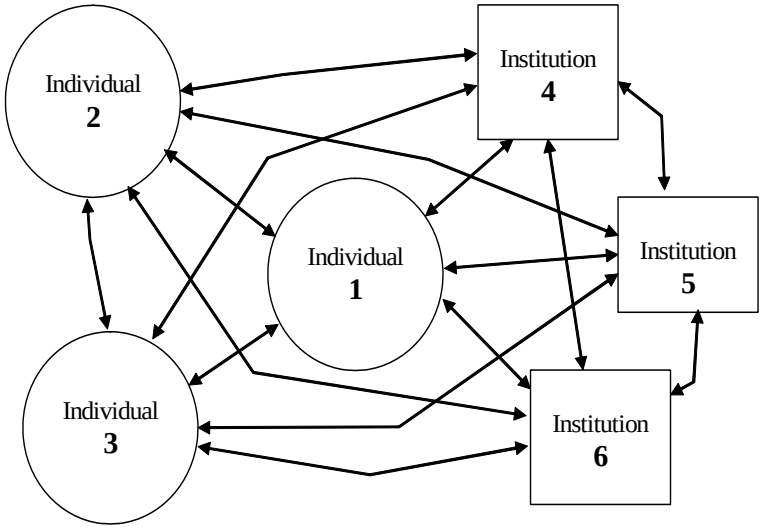
In summary, there is a good base on which to build the quantitative dimensions of the framework in an evolutionary manner. The Olivia framework provides a map that will, we hope, help in planning the R&D investments in data development that will be required.

2) Module One: Describing people, institutions and resource flows

2a) The resource flows model

The heart of the framework lies in its description of the interactions and transactions among people and social groups. Suppose that we have a world with three individuals and three institutions (institutions are our name for social organizations). Figure 3 shows the basic flows of resources among them.

Figure 3. Basic Resource Flows Model



In this simplified world, our language would comprise a set of consistent words and numbers that describe:

- The characteristics of individuals 1, 2 and 3 and of institutions 4, 5 and 6 at any point in time.
- The resources – time, money, information, and goods/services – that flow among the individuals and institutions at a point in time, as represented by the two-headed arrows in the diagram.

Figure 4 illustrates this model for one person, Olivia. The figure describes the resource flows between her and a few of the people and institutions she dealt with during one specific day in her life.

Figure 4. The example of Olivia

Suppose that:

- Individual 1 is Olivia, the star of early versions of the framework.
- Individual 2 is her child, Marie.
- Individual 3 is a neighbour with whom she shares a drive to work.
- Institution 4 is Olivia's employer, J&C Insurance Operations.
- Institution 5 is the income tax system of the Government of Canada.
- Institution 6 is the gym at the community centre where Olivia works out.

Standard concepts to describe Olivia

We would describe her as she was at a particular day, a day when her child was young. There would be standard ways of describing her background and how her life unfolded, including the characteristic of her parents, of her early upbringing, of her schooling, work and family relations, where she lived, her assets, her values and expectations.

Standard concepts to describe her resource flows

We would also have standard ways of describing in detail the interactions and resource flows that took place during the day in question. The basic resource flows model can be illustrated by looking at a few of the things that happened to Olivia yesterday. The double-headed arrows to and from the Olivia in Figure 1 show that, among many other flows that took place during the day:

- *Olivia and her daughter.* Olivia gave Marie her allowance (flow of money), made her breakfast (flow of goods and services), read her a bedtime story (flow of the resource of time), and told her where she could find her winter coat (flow of the resource of information). Marie, on the other hand, told her mother about her day at school (flow of information). Marie, by definition, spent the same amount of time with her mother as her mother did with her. There was no flow of money or goods and services from Marie to her mother that day.
- *Olivia and her neighbour.* They commuted to work in Olivia's car, as they did every weekday (mutual flows of time). There was an implicit transfer from Olivia to the neighbour in the form of the gas used, the depreciation on the car and Olivia's services as a driver. By mutual agreement, this was compensated for by the neighbour paying for the gas once a week.
- *Olivia and her employer.* Olivia provided J&C Insurance Operations with eight of hours of work (flow of time) and received $175.00 in pay in return (with the actual pay cheque of $1750 (175 x 10) being deposited in her bank every two weeks. Her day's work also contributed to building up her store of sick leave, annual leave, company pension and the like.
- *Olivia and her taxes and benefits*. As a consequence of her day's work, Olivia also paid the Government of Canada the income taxes associated with the pay she received for that work – via a payroll deduction, with the actual calculation reflected on her pay stub every two weeks.
    - Her earnings were similarly used to pay for EI, CPP, and provincial income taxes. In return, she received a child tax credit (which would arrive in a lump sum in two months' time).
    - As well, yesterday she made use of a wide range of government services, such as the road she was driving on, the water and sewage at her home. She heard about Statistics Canada's latest unemployment figures on her car radio (flow of information from the government to Olivia, via an intermediary).
- *Olivia at the community centre.* She pays a fee and, in return, spends 45 minutes on their exercise machines three mornings a week. This activity is important to Olivia's social capital. She formed friendships there that extend into other dimensions of life. For example, a person in the group of friends who exercise together became unable to drive her car for health reasons and is being helped by the others. In the evening of the day in question, it was Olivia's turn to drive her to the grocery store (two hour flow of time).

2b) Standard ways of describing individuals and institutions

This section outlines the general concepts that we use to describe the individuals and institutions shown in Figure 3. These are set out in Figure 5.

We start by saying what we are NOT attempting to do in Figure 5 or in the paper generally. We are:

- *Not* describing the detailed questions and measures that lie behind the descriptors. Our proposed descriptors are at a higher conceptual level. For example, Statistics Canada uses a battery of questions to determine an individual's labour force status and creates hundreds of measures relating to that labour force status (thousand of such measures, if we include the many ways of cross-classifying data). In this paper we simply indicate that there should be descriptors relate to the flows in Figure 1 (e.g., time spent looking for work, flows of earnings from an employer, the duration of the state of being employed or unemployed, etc). Taken together our proposed descriptors would encompass *all* the labour market and social statistics now produced by Statistics Canada as well as most items on statistical wish lists.
- *Not* limiting ourselves to descriptors that can be constructed from currently available data only. Rather we are suggesting an end-state for planning purposes – the kinds of descriptors that we would like to have and that would be feasible to develop in a period of about five to ten years, on the assumption that we fully exploit the power of current data processing technology, that we fully use a full range of survey and administrative data, and that we develop the meta-analytic tools to use data from multiple sources in a way that poses no privacy threat.
- *Not* limiting ourselves to descriptors used in quantitative applications. While all the descriptors are potentially measurable, they are also intended to be useful in narratives and qualitative analysis. This means that we would still have clearly defined, consistent concepts for use in qualitative analysis even in cases where collection of data that would be representative of the whole population could not be justified in cost-benefit terms.
- *Not* describing any specific information system[3], or any specific process for gathering or storing the data, or any specific criteria for determining the priority for need data collection. The end state described here is only the first step in developing a full knowledge strategy for social policy analysis.

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[3] There is, however, an implicit 'knowledge system' embedded in the framework. Think of it as a series of 'knowledge containers' each with many thousands of empty cells.

- The cells would be structured so that they could, once filled with real information, describe just about anything we would like to know for purposes of social policy analysis.
- There would be container for all individuals with cells that could describe the characteristics of the individual and their various resources flows, assets, transitions etc, over the course of their lives. There would be another container to hold our information about institutions (with an enlarged container with additional cells for public institutions and their programs and still another container that would hold information about geographic spaces as discussed in Module 2.
- The container that would hold information about individuals would include descriptions of where the individual lived and worked, and her relationships with other individuals and institutions – enabling integrated analysis across the containers.
- Some of the cells can be filled now with existing data, others can be partially filled, and still others will require the collection of new information. An implementation plan could be devised based on the priority assigned to filling the empty cells.

Figure 5. Basic descriptors of individuals and institutions

	Descriptors of individuals	***Descriptors of institutions***
Background descriptors	Selected characteristics that individuals were born with, or that arose out of their environment when they were born, including characteristics of the individuals' parents – their education, income, wealth, ethnicity, race, etc. The characteristics selected are those that are most likely to affect the subsequent unfolding of the individual's life in society.	Organisational structure, size, legal status, main product lines, etc. For institutions with more that one workplace or location, separate information about that work place and about the parent organisation. For the programs of public institutions, standard descriptions of inputs, processes and outputs at time the program was first introduced.
Descriptors relating to current flows of resources	These are the resource flows to and from the individual shown in Figure 3: time, money, goods and services, and information.	Flows to the institution in Figure 3 are referred to as *inputs*. Flows away from the institution are called *outputs*. Unlike individuals, emphasis is also placed on processes – the means by which inputs are transformed into outputs.
Descriptors related to assets	These are the characteristics of individuals that result from the accumulation of previous resource flows (human capital in the form of skills and health, housing, financial capital, social capital), as discussed in Module Two.	As with individuals, these are the Module Two stocks that result from previous flows. These include financial assets, plant and inventory, the human capital embedded in staff, and the social capital embedded in business networks and partnerships.
Descriptors related to life-course transitions	As will be described in Module Two, transitions are the large changes or discontinuities that occur in resource flows over the course of life. Transitions include, for example, the beginning and end of marital and related unions, the birth of children, graduation from elementary, secondary and tertiary education, the beginning and ending of jobs and periods of unemployment.	As discussed in Module Two, the framework invites us to explore the role of transitions in the lives of institutions as well as in the lives of individuals. However, this is largely unexplored territory. Some descriptors are obvious, of course, such as transitions in ownership, main product lines and the like. For the programs of government, changes over time in inputs, processes and outputs.
Descriptors related to life-course stages	Variables describing the job, the school, family structure, etc. Also includes characteristics that people acquire during one stage of life that stay with them during subsequent stages. Examples include educational attainment and some aspects of disability and occupation.	See above.
Descriptors related to the space and time	The basic unit is the dwelling or the institutional workplace or in which activities take place. These are then added up in a flexible way to neighbourhoods, cities, local labour markets, etc. Historic and macro-level data are added to higher geographic groupings as discussed in Module Three.	This is similar to the descriptor used for individuals, except that the workplace, and not the dwelling, is the unit of observation.
Descriptors of purpose and well-being	Descriptors of individual well-being, including expectations, values, stress and perceptions of well-being or happiness – primarily related to the descriptors above, as discussed in Module Four.	For market institutions, these are usually profits, market share or (for firms in the social economy) social goals. For public programs and many non-profit organizations, they are social and economic objectives – which we refer to as expected outcomes. This allows us to add outcomes to the current resource flows descriptors to arrive at an 'inputs-processes-outputs-outcomes' hierarchy.

Since the whole framework is based on the characteristics of individual people, those people are described in some depth, as can be seen in Figure 5. The unit of analysis is simply individual Canadians.

Things get a bit more complicated when we turn to descriptors of institutions. First we must distinguish among different types of institution. The typology shown in Figure 6 is similar to the market-state-family-community typology that is commonly found in the social policy literature. However, a few nuances have been added:

- First, the break-out of public institutions from government proper is important. Governments proper have a law-making, regulatory role that makes them quite different from the other public institutions. They set the rules for the other players.
- As well, the addition of informal social networks as a separate category recognises the potential importance of social capital to social and human resources policies – even though we still have a way to go in defining which social groupings are sufficiently well-established, with a life of their own, to warrant independent examination.

The unit of analysis for institutions is also more complicated than it is for individuals. A large firm can have many locations across the country. A government department may have many programs. Which units of analysis should be use in structuring the cells in institutional knowledge containers described in the footnote on the previous page? Figure 6 explains that we propose the use two different units analysis for institutions:

- In all cases, we build up from the small geographic areas where the institution is located.
- In the case of institutions of government and other public institutions, we use the specific program activities of that organization as the main unit of analysis, as well as its geographic location.

And finally, we break these program activities out into different categories on instrument:

- ***Instruments based on income transfers/taxes to individuals and institutions.*** These are programs that flow money to and from individuals (and institutions). Public pensions, the income tax system, and employment insurance are examples. These instruments typically have some combination of the following purposes: redistributing resources over the course of individual lives (e.g., pensions), redistributing resources from one group to another (e.g., social assistance), insuring against large risks (e.g., health insurance), and raising revenues to fund other instruments (e.g., income taxes).
- ***Instruments based on income transfers to other orders of government or to public institutions*** such as hospitals or schools – so that the other party has the fiscal capacity to provide income transfers to individuals, services, rules and/or information.
- ***Instruments based on rules and their enforcement***. Here governments set the rules that govern key aspects of the operations of markets, families and communities. Instruments based on rules apply to trajectories, as discussed in Module Two. Rules include laws and regulations or Charters of Rights. Guidelines and advice would, however, be treated as information instruments.

Figure 6. Types of institutions and units analysis

1 ***Market institutions and institutions with employees (where the workplace is the unit of analysis)***

1.1 ***Firms*** – market institutions where the basic unit of analysis is the workplace – the location where people work. Workplaces can be added up into larger groupings such as establishments, firms, enterprises and sectors. The self-employed are also included here for purposes of market-related analysis.

1.2 ***Non-governmental*** (third sector, or voluntary) organizations, where again the basic unit of analysis is the physical location of the place where the employees and volunteers work.

1.3 ***Public institutions*** such as schools or hospitals, again where the basic unit is a specific school or hospital or prison in a particular geographic place.

1.4 ***Government proper*** (when we are looking at the government in its role as employer). We use the workplace as the unit of observation for some applications, such as in assessments of service delivery or in comparisons with other employers. However, the usual unit of analysis is the program, as described below.

2 ***Other institutions and networks***

2.1 ***Families***, where the most common unit of observation is the economic family (a group of two or more persons who live in the same dwelling and are related to each other by blood, marriage, common-law or adoption). We also include individuals living by themselves in this category. The framework is flexible and also allows for analysis of other family groupings including the nuclear and extended families. However, the economic family is particularly useful as a unit of analysis since it can be used to locate the family in a specific dwelling. In turn, this allows us to locate the family (or individual living alone) in space and in historic time, as we will see later. The economic family also allows us to make calculations of household economies of scale and takes into account that many resources are shared among people living together.

2.2 ***Social networks*** where, in most applications today, it is the individual that is the unit of analysis. That is, we tend to look at an individual's network of contacts rather than at the characteristics of the network itself – although this approach may change as social capital analysis becomes more mature.

2.3 ***Programs and policies of governments and other public institutions.*** In most applications, we use the 'program' as the unit of observation as opposed to the more specialized workplace applications referred to above. Examples of programs include Employment Insurance, the National Child Benefit, personal income taxes, regulations of many sorts, and the census. We can also use the program to describe the activities of organisations that deliver government services under a contract, grant or contribution agreement. Government programs are described in terms of their inputs, processes and outputs and can be classified in the following ways:

- The type of instrument, as discussed in the text.
- Their purpose, as further discussed in Module 4. In the case of the Government of Canada, this would be their sub-sub-activity structure in the Program Activity Architecture and how it relates to higher level outcomes at level of the activity as a whole.
- Geographic location of the workplace where this is relevant (e.g., in-person service delivery operations).
- Organization location. In the case of the Government of Canada, this is known as the responsibility centre coding.

- ***Instruments based on the provision of*** information such as how-to-information, descriptions of labour market and learning opportunities, national statistics, advice and guidance, and promotional material.
- ***Instruments based on the provision of services***, such as education and training, counselling, health care or active labour market programming. The purpose is typically to invest in human capital in a way that will result in subsequent social and economic gains.

Perhaps the largest challenge will be to find a consistent approach to describing the processes of service delivery instruments. For example, we may have some notion about the curricula that is being taught in schools. We can read the (typically very general) instructions that funders provide to service providers. However, our measurement systems often provide little information on what actually happens in the classroom – or in the doctor's office or in the content of an active labour market project. We often lack the standard terminology that would be needed to undertake consistent descriptions of these processes, let alone common measures.

2c) Standard ways of describing the resource flows

The flows are multiple and two-way

Let us go back to Figure 3 and examine the two-headed arrows that link individuals and institutions. These arrows stand for resource flows. We can describe almost everything that we want to know about the activities of people and institutions by examining resources flows – of money, goods and services, information and time – at specific points in time:

- The two-way flows of money and of goods and services reflect market transactions. These flows are the same as those used in economic analysis and statistics. They add up to GDP and national income.
- The flows involving the use of time are even more basic. There are only so many hours in day, a year or a lifetime. These hours are all used in one way or another. When time is spent working in the market, wages provide a direct link between time-based accounts and money-based accounts.
- Information flows such as national statistics or the provision of advice to the public are also captured in the model, even though they have not yet been fully fleshed out. Information flows often supplement other flows, but can also be a substitute for them. For example, an objective may be met through the use of quite different instruments: e.g., by setting rules that will constrain behaviour in the desired directions, by subsidizing that behaviour, by promoting its virtues, or through some combination of these instruments.

Flows of time provide particularly powerful tools of analysis.

- They allows us to go beyond the much-studied economic transactions that motivate our lives and to begin to understand the implications of a much broader range of motivating factors such as altruism, gifts and their resulting obligations, rivalry, guilt, love or addiction.
- They support time-based social indicators that provide new insights, as discussed in Module Four.
- They allow us to develop zero-sum accounting frameworks that can be most useful for analysts. There are only 24 hours a day and they must all be used up – at work, in leisure, in

school, in sleep, in care-giving, etc. This allows analysis of the use of time in a variety of interesting ways, knowing that – at the end of the day – everything will still add up. Figure 7 suggests why time can be considered as the ultimate integrator in policy analysis.

Figure 7. The ultimate integrator: classifying uses of time, at a point in time

All resource flows (money, time, information, and goods and services) are covered by our definitions. At present, monetary flows dominate in our analysis and data sets and are likely to continue do so in the future. However, increasing emphasis is likely to be place on strengthening our capacity to conduct analyses based on finely-grained ways of describing how individuals use their time. Time use is a powerful tool for integrating a range of descriptive information. We can classify time spent:

- By the purpose of the activities undertaken during that time: such as market activities, learning, caring, active and passive leisure, etc. We can also keep track of simultaneous purposes such as watching TV and caring for a baby.
- By the physical space where the activities occurred, for example enabling analysis of geographic barriers to accessing jobs and social and health facilities.
- By the interactions that took place with other people and with formal and informal institutions. This allows us to develop our measures of social capital and linked lives.
- By constraints that affected the use of that time – physical or mental disabilities – scheduling and time conflict problems (including time crunches), access constraints (being in prison, or having no access to public transport). This information on constraints is often captured in surveys by asking about reasons for not undertaking an activity.
- By the 'learning/skills intensity' of activities. This is a phrase that we invented to act as a place-holder for the kind of standard measure (or set of measures) that we would ideally like to develop, namely measures of the learning that takes place during the activity, as well as the skills, knowledge, aptitudes and abilities that were applied during that activity. Currently, we only have proxy measures available for this central human capital concept, and these are often quite rough. Some good work has been carried out in Canada and abroad on the skills side of the equation, particularly in allowing occupational classifications to be translated in terms of the skills used in those occupations, including essential skills. Less work has been done on the learning side, an obvious priority for further development.
- By the 'networking intensity' of interactions with other people. This is another place-holding phrase which we have invented. Not all social interactions are important in building social networks and social capital. The goal would be to develop a standard way of measuring those that do. We currently must make do with proxies – again often quite rough proxies.
- By perceptions of well-being associated with that activity, and by constraints on the use of that time, as discussed at greater length in Module Four.

As noted, time-based accounts provide a powerful addition to the more familiar money-based accounts. In the past, attempts have often been made in order to compare market and non-market activities (such as housework or leisure) by artificially calculating the monetary value of the non-market activities. If we had the data, direct comparisons based on the time spent in these various activities would be far more useful in many social policy applications.

The emphasis placed on multiple, two-way, flows is also important. It allows us to examine the way people support others and, in turn, receive support. It reflects the mutual responsibilities that underlie our basic social contract – the rough balance between what people and institutions receive and give back to others.

…allowing an examination of assets as well as flows

Over a long period of time, the total of flows coming to an individual or institution usually adds up to the total of all flows going out. At a single point in time, however, there may well be imbalances. An examination of these imbalances shows how the individuals and institutions in question are building up, or depleting, their assets for future use.

This question of balance is obvious in the case of money and goods/services. We receive a known dollar income in, say, a month. If we spend more than that on gifts, goods and services, we gain in the present but are building up debts that will restrict future consumption choices. If we spend less, we are building up savings that will increase future choices. Time is, by definition, always in balance (since we cannot 'save up' time to be used later), but by classifying the uses of time we can get a good understanding of how assets or capital is built up. For example, time spent learning builds up our human capital (i.e., our skills) for later use. We return to an examination of assets in Module Two.

2d) Using the model: putting people in the center

We can begin to see the power of the resource flows model when we place an individual – or, especially, a group of individuals – into the centre of our network of flows. Figure 8 expands on Figure 3 to show a more complete range of flows to and from individuals. Most social analysis is based on some variant of Figure 8, with a population group in the central rectangle.

Some lines have been left off Figure 8 to make it intelligible. These are the (unshown) resource flows among the institutions that surround the individual on the chart. An example would be the flow of a government subsidy to an employer to create workplace child care facilities – which could in turn benefit the individual at the centre of the chart.

If the analysis in question is a qualitative study, the individual at the centre of Figure 8 could be a particular individual. A narrative about Olivia, for example, would describe her resource flows – how she spent her time and money, how she related to others – at different points throughout her life.

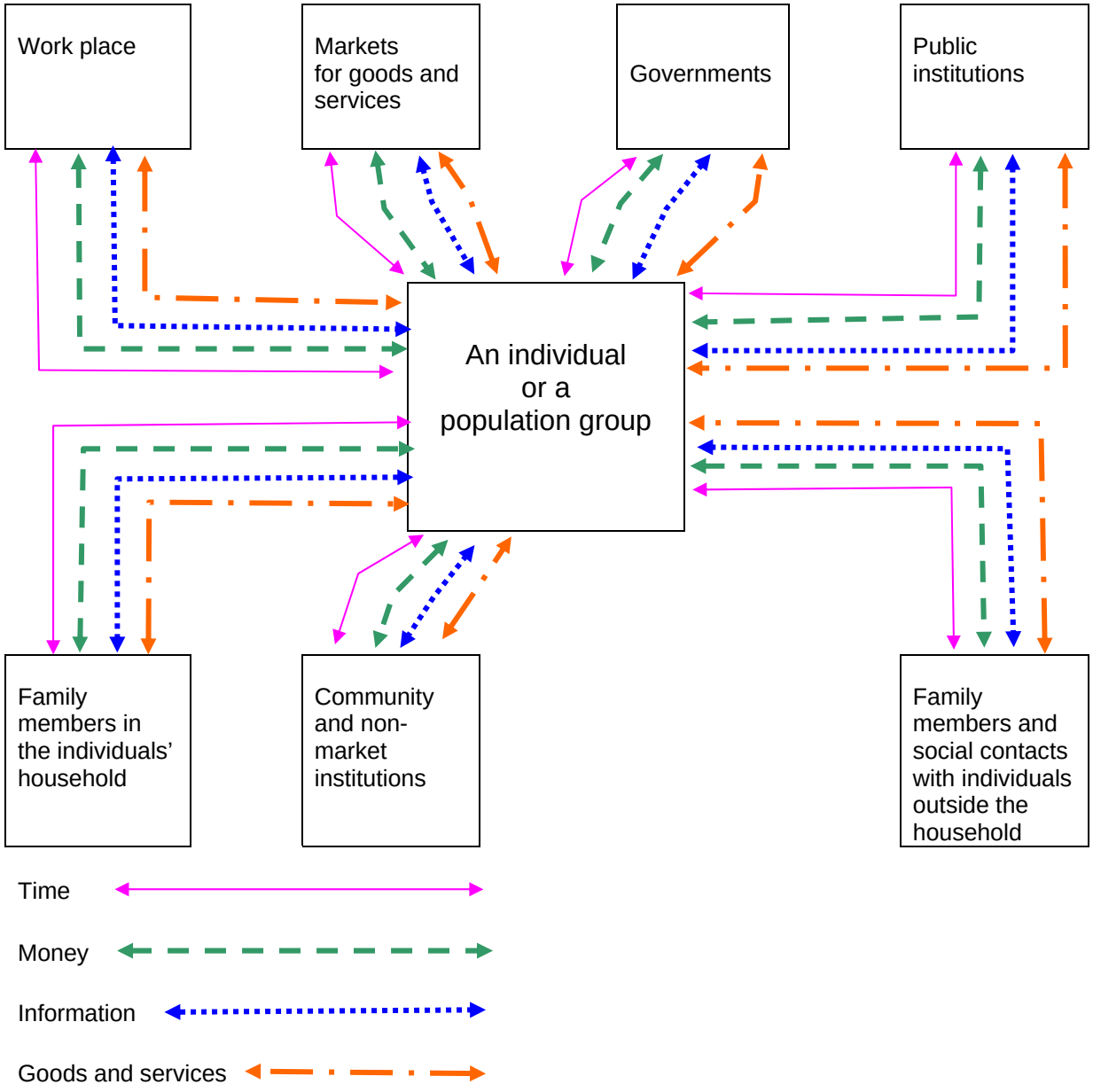
However, in more typical statistical analyses, we will place groups of individuals with specified characteristics – such as retirees, or people in different occupations, the working poor, students living in Nova Scotia, or single mothers – in the centre. The information flows would be typically shown in the form of statistical tables, charts and the results of regression analysis – such as a table showing the income inflows of retirees or the working poor by source of income, gender and 5-year age group.

Note that when we are analysing a group of people, the analysis is based on adding up the flows to and from each individual in that group. In the example in Figure 8 we could assess the situation of a group consisting of all the men in Ontario between the ages of 25 and 64 who were multiple job holders and examine the resource flows to and from:

- Their workplaces – mainly flows of time (hours worked by those men) and money (wages paid to them).
- The markets for goods and services (how they spent their income on goods and services).
- Other family members in the households where the men lived, including monetary flows and time spent caring for others in the family.

- Community and other non-governmental organizations, where there could be flows of time spent volunteering, making charitable donations and the like.
- Networks of friends and contacts that are used to build up and maintain social capital. Time and information are the main resources that flow.

Figure 8. A more comprehensive view of resource flows to individuals or population groups



NOTE: The two-headed arrows in these charts suggest that there can be two-way flows in any of the resources: time, money, information, goods, etc. It is not meant to suggest that there are equal flows at any particular point in time for any one resource. For example, often money is exchanged for time or for goods and services. Or, in any period of time, money inflows can exceed money outflows.

- Governments – mainly flows of money to government in the form of taxation and information (e.g., completing the census questions) – with a variety of flows to these men including tax credits, employment insurance, pensions, information, and services.
- Public institutions such as schools. In the case of those men who were attending post-secondary education, there would be money flows to the institutions in the form of tuition fees and flows back of time spent in learning and in the receipt of information.

Most social development and human resources analysis is about groups of individuals. However, in some cases, an institution such as an employer or a government program is the centre of attention. In social policy applications, it can be helpful to use the same concepts to describe the contributors who finance a program, its beneficiaries, and the characteristics of the program itself. The framework shown in Figure 8 can be readily adapted to institutional analysis by simply moving social programs, or learning institutions, firms, the tax system or public pensions can equally be moved into the centre of the analysis.

Similarly, the basic flows described in Figure 8 can be used to analyze relations among members of extended families, of different generations or cohorts. Because we have captured all the basic resource flows at the level of particular individuals, we can support consistent analysis of virtually any topic of policy interest.

3) Module Two: Describing the life-courses of individuals and institutions

3a) The basic approach

It is perhaps obvious that people's present lives are greatly influenced by what has happened to them in the past. What happens to people when they are babies can make a big difference to their future health. What happens in the pre-school period can make a big difference to success in school. Success in school makes a big difference to success in the labour market, and so on. Lack of saving during one's middle years can lead to reduced income in retirement.

Yet it has not been easy to incorporate the obvious into policy analysis. A main reason for this has been the lack of longitudinal data that can track how people change and evolve over time. Fortunately, better longitudinal data has become increasingly available in recent decades and it is important that we have consistent words and measures to allow us to incorporate this dynamic aspect of the lives of individuals into our policy analysis. The Olivia framework, of course, fully supports longitudinal analysis. Indeed, supporting life-course analysis was the original *raison d'être* for the framework.

Our approach to keeping track of changes over the course of life is simple enough in principle. In the case of individuals, all we have to do is keep repeating the cross-sectional point-in-time descriptions of resource flows that was discussed in Module One. For example, we could – at least in theory – simply gather information on how time was spent in a 24-hour period at selected points during the life of an individual, along with information on monetary and other transactions. A similar approach can be used to keep track of changes in the lives of institutions, but here we are would typically use changes in financial data and in ownership arrangements, rather than hours.

We propose two complementary approaches that can make use of these successive cross-sections of resource flows in order to describe change and continuity over time:

- Life-course transitions and trajectory analysis. Life-course analysis is in its early stages in the policy world, although it is familiar territory in some of the social sciences. This is the technique we use to divide up a person's life into manageable chunks called trajectories, and to show the various transitions that take place within and across these trajectories.
- Stock and flow analysis from economics and accounting, which shows how the point-in-time resource flows discussed in Module One translate into assets that can be used in the future. It complements the trajectory analysis above by showing the continuities that run across the various transitions in life.

3b) Transitions, states and trajectories

Basically, we divide an individual's life into various domains such as life in school, life in the family, and life at work. Most people, when they are thinking of their lives and their experiences, tend to group those experiences in this way – their lives at home, at school and at work. We refer to these as trajectories. A trajectory consists of transitions and intervening states. For example:

- A *state* (or stage of life) might consist of holding a particular job or being married to a particular person, or going to elementary school.

- A *transition* might be losing that job, becoming retired, getting a divorce, or moving on to secondary school. Transitions are defined as large changes (discontinuities) in the resource flows shown in Figure 3 in Module 2.
- A *trajectory* consists of *sequences* of transitions and states in the main domains of life. As an example, a work trajectory would include a person's lifetime experience in the labour market, including various transitions (losing, finding, changing jobs) and states (holding jobs of different tenures, various periods of job search or training to find new jobs).

Typically young people will engage in at least two major trajectories: life in learning at school, and life in household with the family. A middle-aged person will also typically have two main trajectories: in work and in the household, but may also have a learning or community participation trajectory as well. Many retired people may retreat to a single household trajectory but some may also be part of a community or a care-giving trajectory that provides definition to their lives.

The trajectories can be distinguished from each other by the type of rules that govern them. For example, the work trajectory is marked by workplace regulations relating to, for example, health and safety or working hours. The household trajectory is governed by family law. For schools, governments set mandatory ages of attendance and set rules about what is taught. In some trajectories, the non-legal rules of society (such as those related to gifts, the obligations associated with receipt of gifts, trust and reciprocity) may play a larger role than those that are entrenched in law.

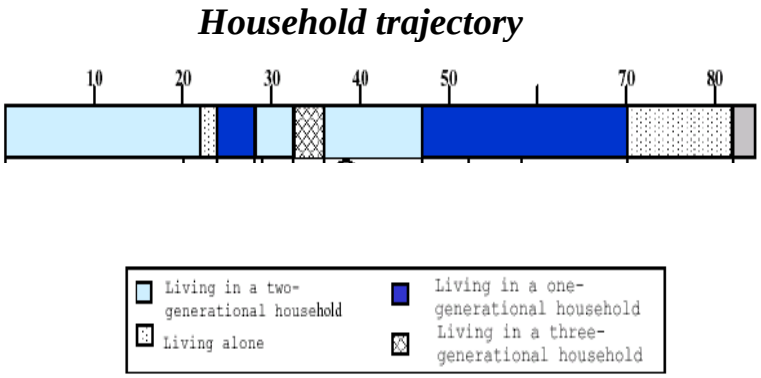
Figure 9 shows three trajectories for Olivia: her life with her family at home, her life in schools, and her life at work. Other trajectories could be added depending on the kind of analysis in question – such as her volunteering life, her life as a care-giver and receiver, her life in sports, her life in her extended family or her life as a care-giver or receiver.

Each trajectory in Figure 9 is illustrated by a bar depicting some of the main transitions and states in Olivia's life, from when she was born until her death at age 84. Take the first household trajectory as an example. The first big transition took place, of course, at age 0 when she was born. The following state (living with her parents and brother in a two-generation household) lasted until the next big transition which came at age 22 when she left her parents' household to live on her own. The following state (living alone) was quickly followed by the next household transition – moving into a new apartment with her boy friend, marking the beginning of a new household state (living in a one generation household) that would last some 4 years.

Earlier versions of the Olivia framework used the metaphor of life being a multi-stranded length of rope, with birth at one end of the length and death at the other. The trajectories were the different strands that made up the rope. We eventually rejected the metaphor as being too individualistic, but it is nevertheless important to remember that trajectories, while separate, reinforce each other in the context of person's whole life. Certain rules, for example, apply to the rope as a whole, not to any specific strand of that rope. Charter rights, and human rights more generally, are examples.

Each trajectory in Figure 9 is broken up into different states, or life stages, that are marked by big transitions. These transitions link back to our point-in-time basic resource flow model in Figure 3 and allow us to extend that model over time. As noted, the transitions in question are simply major breaks in the resource flow patterns shown in that figure.

Figure 9. Life-course trajectories for an individual



For example,

- The birth of a child is reflected by adding flows of resources to an entirely new individual.
- Conversely, losing a job is reflected by the removal of an institutional connection from the chart and the associated loss of time spent in paid work.
- Shifting to full-time work is a major addition to the time spent at work.

This way of looking at lives in terms of transitions, states and trajectories should be particularly helpful in policy applications:

- Many policy applications focus on transition points in life – becoming unemployed, starting school, having a child, getting divorced. People are supported by family, work, schools and community. They can be particularly vulnerable, and may need added government support, when there are large transitions in several trajectories at about the same time, say when a period of unemployment takes place at the same time as family breakdown.
- The framework will allow us to better understand the real world where policies have their effect: a world that involves the sequencing, timing and duration of life events such as finding jobs, family formation, training and care-giving – and the inter-relations among those life events.
- Trajectory analysis should be particularly helpful in providing a better understanding of how policies may have different effects on people of different generations or cultures (such as recent immigrants and Aboriginal Canadians) where the life-course patterns may differ.

3c) Continuities: the role of assets in the life-course

From flows to stocks

Our lives are marked by both changes and continuities. The transitions and trajectories concepts provide consistent ways of compartmentalizing life and showing how it changes over time. Stock and flow analysis, on the other hand, allow us to describe the continuities in life, how what happens in different stage of life gets carried across transitions and influences what happens at subsequent stages of life.

Module One described resource flows at different single points in the life of an individual. We now discuss how these flows get carried over time. We can store up some resources for use during a later period of life – or, in some cases, we can borrow against anticipated future flows. The flows therefore get converted into stocks or assets. This business of saving resources obtained at one time for use at a different time is critically important to understanding social and economic well-being.

In the framework, we measure four kinds of assets:

- Financial capital such as our personal savings (or our debts, which are negative savings). These result from the combination of all the money flows shown in Figure 3.

- Physical capital such as a house, a car or other possessions. These again result from the flows of goods and services shown in Figure 3.
- Human capital which consists of the skills, knowledge and capabilities that are embedded in people and that can be used in the market or in society. It also encompasses health status, which we touch on briefly below.
- Social capital, which consists of the potential resources that are embedded in people's networks – the people they know and with whom they have contact.

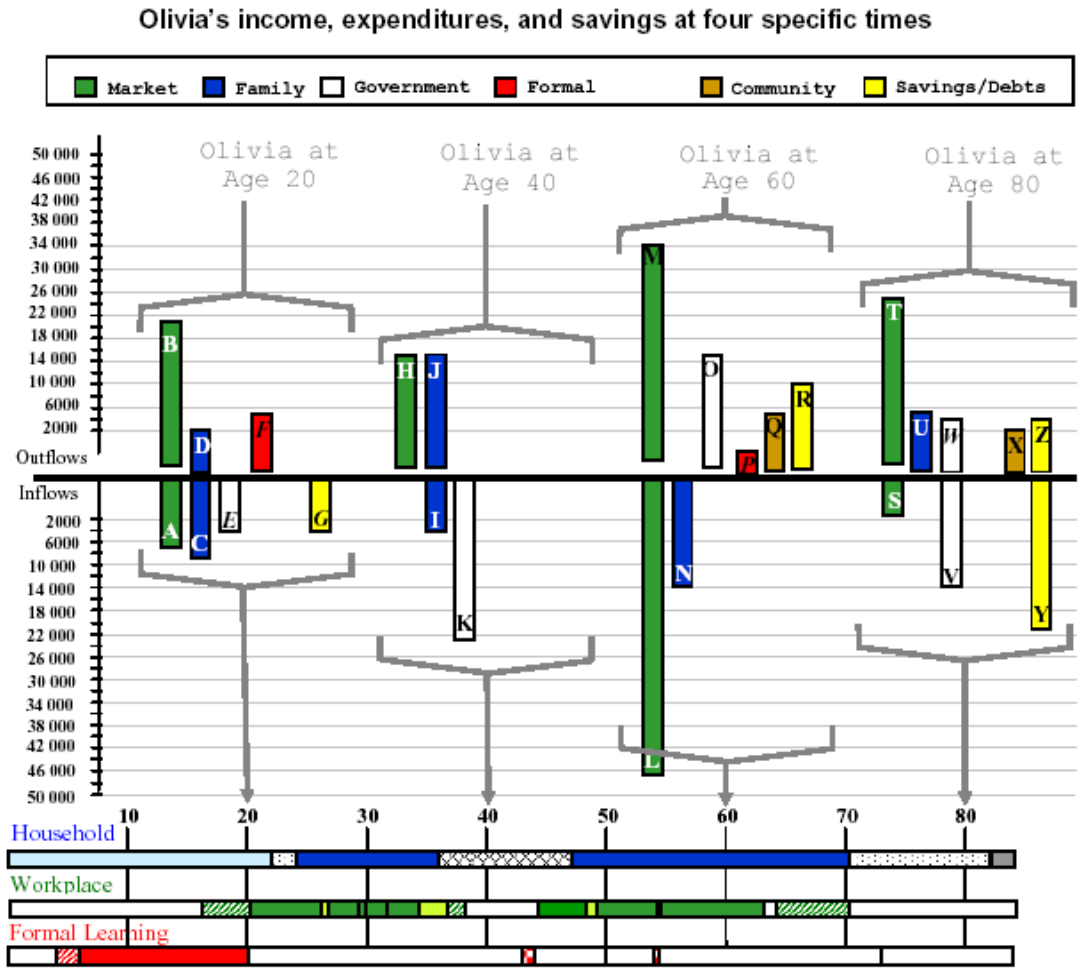
Figure 10, for example, takes one resource flow, inflows and outflows of money, and shows how the flows change over the course of Olivia's life. In order to have a comprehensible graph, we have shown the financial inflows and outflows for four selected points in her life – when she was 20, 40, 60 and 80 years of age.

Figure 11 shows the assets that result from these flows. This chart covers all Olivia's assets, not only financial assets, and covers the entire period of her life – not only the four points in her life that was found in the preceding figure.

- ***Financial capital***. The top section of Figure 11 translates the financial flows over Olivia's life into her financial capital (bank accounts, investments, pension savings, etc.). These reflect the income flows shown earlier in Figure 6. As with physical assets below, it would also be possible to assign her a share of her parent's financial assets when she was a young and living at home – on the assumption that assets, like income, is shared within households, at least to some extent. If we had done that the chart would have had more of a U-shape.
- ***Physical capital***. The next section of Figure 11 shows physical assets (mainly housing and cars). These are measured in dollars and again simply reflect prior monetary transactions and the current state of the market. Note that the chart shows virtually no financial or physical assets until age 20. Her parents had assets but, for simplicity of presentation, her share of those assets is not shown. If we had included them, the chart would have had a U-shape as was the case for financial assets – with more physical assets at the beginning and end of life and fewer in the middle.
- ***Human capital.*** The third section from the top of Figure 11 shows an index of human capital that shows how human capital was built up, used and depreciated over time.
    - It is in the form of an index that compares Olivia at different points in her life to a national life-time average of all Canadians[d]. When Olivia's index is above 1, she fares better, when it is below 1, her human capital is lower than those of that of the average Canadian. Human capital consists of a person's capacities: skills, aptitudes and abilities, as well as health and disability measures that would show constraints on the use of those capabilities.

[d] Note that this chart would have a very different shape if it were measuring the importance or intensity of the learning that was taking place. A chart that showed rate at which skills were being acquired would be at its peak in the early years of life and would fall during the middle and later years of life

Figure 10. Looking at one resource flow at four points in time

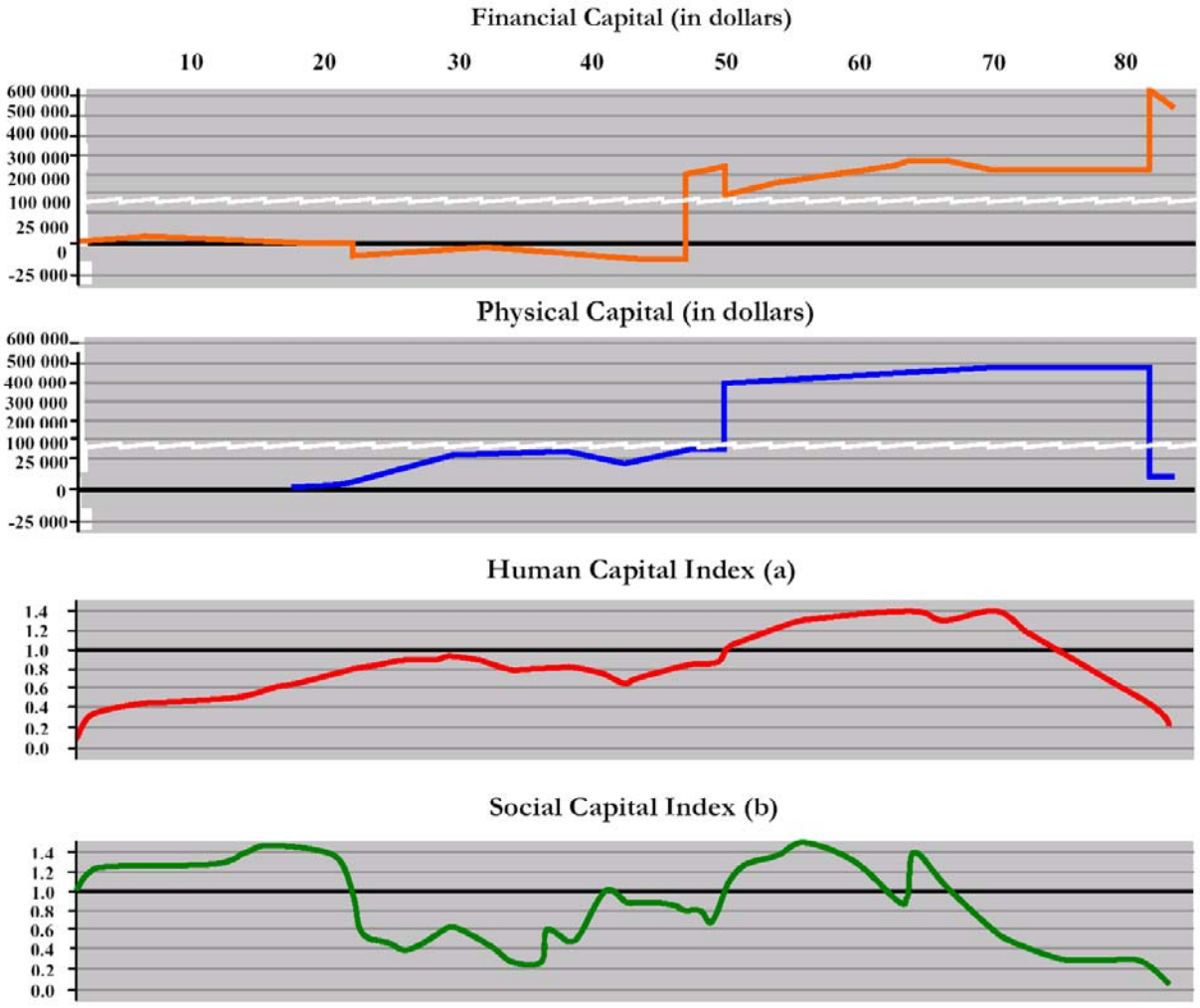


A	Earnings from summer job and part-time work
B	Her personal expenditures and her share of household expenditures
C	Her share of pooled family income
D	She pays her parents for room and board in summer
E	Student aid, tax credits
F	Tuition and educational expenses
G	Student loan
H	Personal expenditures
I	Gift from her parents

J	Household expenditures that support her children
K	Social assistance, tax credits
L	Her own earnings
M	Her personal expenditure and share of household expenditures
N	Her share of husband's (higher) pooled earnings
O	Taxes: income, GST, payroll taxes
P	Evening class fees
Q	Charitable donation
R	Private pension savings

S	Interest received
T	Her expenditures on food, shelter, etc.
U	Gift to grandchildren
V	Income from public pensions, tax credits
W	Taxes
X	Donation to charity
Y	Private pension, annuity from late husband
Z	Olivia continues to save

Figure 11. How Olivia built up and used her assets



(a) Human capital in this table refers to the stock of people's skills, knowledge, aptitudes, and abilities, with the index showing the relation to the average skills of all Canadians, averaged over life. Values of less than 1.0 show skills that below this average, while values of 1.0 or higher indicates that Olivia's skills at that point in her life are equal or greater than the average.

(b) Social capital in the table refers to the stock of Olivia's contacts at any point in time, weighted by the significance of the network of which those contacts are a part. The same approach as in human capital is used to calculate the index .

- The index here is purely illustrative, with the numerator based on our narratives of Olivia's life and the denominator being only an educated guess. A real index would be based on a combination of information from surveys of adult literacy and generic skills, data on credentials and education, and surveys of constraints on activities of daily life.

- ***Social capital.*** The final section of Figure 11 shows an illustrative social capital index for Olivia, constructed in the same way as was the human capital index. Social capital is the potential for drawing down on investments in networks of friends, relatives, colleagues and acquaintances. The inflow can be seen as all the flows of time spent with others that are

shown in Figure 8. The outflows can be in seen in the form of money, services or, often, time spent in providing advice and support, again as shown in Figure 8.

So what does this tell us about Olivia?

Figure 11 shows us that most of Olivia's assets grew over the course of her life and were highest after the age of 50. Social capital is the exception where she had strong networks when she was young and, again after the age of 50. Her social capital index was lowest in her mid 30s, after her divorce and her staying at home with her children (who we have failed to introduce properly in this paper, but who play a role in a fuller version of the Olivia story).

Sudden shifts in her resource position came when she married at age 47 and her husband's salary, pension and other savings became a shared resource. Another large shift from financial to physical assets occurred when they purchased a house at age 50, and a comparable shift the other way when she sold her house before entering a nursing home late in life.

Although we do not show this on the chart, the reality is that Olivia also had good financial assets when she was young and lived in her parent's house. That is, the house belonged to her father, but all family members had use of that asset. As noted earlier, if we had shown her share of financial and physical assets when she was young (e.g., use of the family car, TV, having nice clothes, etc.), these sections of the chart would have had a U-shape – high early and late in life, and lower in the middle years.

There was deterioration in her human and social capital later in life, reflecting the death of her husband and retirement from both work and voluntary organizations. However, at least in Olivia's case, there was no deterioration in financial assets. She lived modestly on public pensions, and drew down little of her private pension's wealth. She received no significant inheritance when her husband died, apart from his pensions and his share of the house.

Social capital was high when Olivia was young, with strong family bonds and many contacts in school (especially her elementary school) and community. When Olivia graduated, that capital declined as she had few contacts at work or in her new neighbourhood. There were large fluctuations during the period in her late 20s and early 30s when she was out of work, moved, and separated, living with her parents and then alone with her young children. She lost social capital associated with work and neighbourhood contacts, but later gained new social capital through her increasingly active role in the community during the later part of this difficult period.

3d) Extending the life-course analysis

Life-course and asset-based analysis is in early stages of development in the policy world. Over time, we would expect to see this module extended in a number of directions. Some examples are provided in this section.

Extending the analysis to human development. The human development literature suggests that the mechanisms by which people develop can be described under three headings:

- *Cumulative mechanisms* involve multiple exposures over the span of life that have a cumulative effect on health and social development. An example is the effects of living in persistent poverty, with the whole intertwined set of negative factors associated with poverty.
- *Pathway mechanisms* are those where exposure at one stage of the life course influences the probability of other exposures at the next stage. For example, problems in early childhood development may lead to poor school readiness, which may result in poor learning in school,

which may lead to dropping out of school, to low-paying jobs and, in turn, to low income and bad health in retirement.

- *Latency mechanisms* are those where an exposure at one point in the life course may lead to consequences often much later in life, without regard to what happens in the intervening period. In health, this puts much focus on the period around birth where changes in the immune and other biological systems of the body that may have effects in later life. In human resources and social development, it puts the focus on things that happen in periods where the brain is changing, in early childhood and in the teenage years.

The framework described to date provides strong tools for describing the pathway and cumulative mechanisms, but it lacks the biological and health descriptors that are needed to describe the latency mechanisms. More generally health, including mental health, has large and obvious consequences for social well-being. The determinants of health and social well-being overlap to a large degree, with causality running both ways.

Extending the analysis to social groups. Figure 11 is about one person only. Similar kinds of analysis can be applied to groups of people sharing common characteristics. How do at-risk groups differ in the balance of assets they hold over the course of life? Do baby boomers have similar asset-holding patterns to older cohorts? How much do children copy the life-time asset-holding patterns of their parents? How does stock/flow behaviour vary by people in different occupations and educational attainment levels? Which kinds of social networks best support the integration of recent immigrants? To what extent should asset-building be a tool to support those at the bottom on the income spectrum? How can public policy best take account of the 'use it or lose it' phenomenon that seems to be associated with human capital?

Extending the life-course analysis to institutions. Asset analysis, of course, equally applies to institutions such as firms, where it plays a large role in our traditional approaches to accounting and to our understanding of economic growth. These applications are well known and need no further elaboration here.

In principle, transitions/trajectory analysis can also apply to institutions, although these applications are not well developed, at least in the policy literature. Institutions also evolve over time and build up and deplete their assets. They also go through transition points in their institutional lives: changes in ownership or control, changes in lines of business, introduction of new technologies in firms and new curricula in schools, and conversions to new products or services. Paralleling our description of individuals, it may be instructive to think of these transitions taking place in different domains or trajectories in the life of the institution – the legal/financing trajectory (e.g., incorporation, mergers, bankruptcy), the workplace trajectory (changes in human resources policies, changes in geographic location), the technology trajectory (changes in processes) or in the business line trajectory (changes in outputs or clients).

4) Module Three: Anchoring individuals and institutions in geographic space and historic time

Modules One and Two have focussed on the individual and the institution. Module Three sets out a consistent approach to describing and measuring the geographic spaces in which the individuals and institutions are situated, including the history of those spaces.

Integrating macro-analysis into the Olivia framework

The spatial dimension is important in its own right. In addition, it provides a powerful means of incorporating other forms of more macro analysis into the analysis of the earlier modules. Up to now, the Olivia framework has been about what is referred to as micro analysis – analysis that is built up from information about specific individuals and institutions. Micro-analysis paints a powerful, but incomplete picture of society and the economy. Some things can best be understood at the level of the economy or society as a whole – that is, at the macro level.

For example, micro analysis of the labour market is a powerful tool in understanding the supply of workers – their skills, their willingness to move to find work, their willingness to work at different pay levels and much else. However it tells us little about the demand for labour – the number of employees at different skill levels that employers will want to engage, and their willingness to undertake additional labour costs versus capital investments. Labour demand is partly driven by the overall state of the economy. It can also be driven by technological changes, or changes in environmental regulations – none of which can be fully analysed by micro analysis at the level of individuals. We cannot truly understand the operation of the labour market or make assessments about likely future directions unless we have good data on both supply and demand, and on how they interact.

We similarly need to supplement micro-analysis with other forms of more macro-level analysis in virtually every domain of social policy – whether it is crime rates, health care cost pressures or demographic trends.

The needed integration can take place at the spatial level. For example, from Modules One and Two we know where an individual lived and worked throughout her life – her neighbourhood, her local labour market. Macro analysis can tell us what the crime rate was in that neighbourhood during the period she lived there. It can tell us what the employment and unemployment rates were in those local labour markets. And we can attribute these macro characteristics to the individual who lived there at the time.

Some quite sophisticated kinds of analysis become feasible at the spatial level. For example, if we wish to make projections using our micro data, we can do this at the national or regional level where it is possible to incorporate additional findings from quite independent macro-economic models that project labour demand or that calculate the effects of policy change or other shocks on that future labour demand. Some applications along these lines are quite complex in practice and will take time to develop. However, Module Three provides a useful enabling framework.

Module Three also supports simpler, but still powerful, forms of spatial analysis such as using census tract data to examine the effect of neighbourhood characteristics on poverty or victimization. Other examples are given below.

Describing spatial hierarchies

Spaces can be arranged in different hierarchies. One hierarchy might start with a particular dwelling or workplace and then move up to neighbourhoods, municipalities, local labour markets, province/territory, the country as a whole, and then to groupings of countries such as the G8 or OECD countries. Another hierarchy might run from the dwelling, to the boundaries of the local school district, to school regions within a province, to the province, to the nation and to other nations with whom we compare ourselves in terms of educational outcomes.

Because these hierarchies differ in the boundaries they use (e.g., the boundaries of health regions do not necessarily correspond with local labour market or electoral boundaries), the framework therefore starts in all cases with the geographic coding of the dwelling (in the case of individuals) and workplace (in the case of institutions). By starting with these basic units, we can build up a variety of hierarchies in a flexible, consistent manner.

It is important to get these hierarchies right. A wrong choice in what we mean by local could result in harmful outcomes. For example, when we are talking about crime and victimization, physical neighbourhoods (possibly defined by city blocks) should likely be the focus of attention. On the other hand, if the issues relate to employment, the appropriate 'neighbourhood' is the local labour market area, typically defined in terms of commuting patterns and typically larger than most municipalities. If we tried to do 'local' employment policy at the neighbourhood level, we would get perverse results.

Describing the characteristics of spaces

When we describe spaces – whether at neighbourhood or national level – many of the characteristics of those spaces can be derived from the characteristics of the individuals and institutions that occupy those spaces. Examples are the average age and income of inhabitants, average wages and sales, income taxes paid, ethnic composition or the number of schools and recreational facilities. This is simply a matter of adding up the geographically-coded individual and institutional descriptors of Modules One, Two and Four.

However, these internally-generated data would be supplemented by exogenous descriptors of the spaces. For example, we would have a common way of describing:

- The house where Olivia currently resides in terms of its size, number of rooms, durables contained in it, its market value, its state of repair, its ownership, etc.
- The neighbourhood to which the house is a part would be described in terms of the extent to which it was deteriorating or becoming rejuvenated, the crime rate, and environmental data such as pollution, weather, etc.
- Local labour market areas would have descriptors related to employment and unemployment, pay and vacancies.
- At higher aggregations (e.g., province, region, country as whole), we would also add macro economic data – where we are in the economic cycle, labour shortages and surpluses, etc.

Other spatial descriptors would be based on workplaces, not houses. Descriptors would include the quality of those work places for employees, including health and safety issues as well as descriptors related to productivity and innovation. Similarly, we could have data on class size, curricula and teacher qualifications for schools – or on the quality of community recreational facilities and hospitals.

Sustainable development and additional forms of capital

Geographic information has uses that go well beyond providing context for individual and institutional data. For example, it can help us understand larger issues of sustainable development. In human resources and social development applications, sustainable development can mean two quite different things.

Sustainable development can refer to the *generational* dimensions of policy whose intent is to leave future generations no worse off than existing generations in matters such as Module One income flows, access to Module Two assets, or opportunity to exercise real choice in the allocation of time over life. Here we can use the concepts of Modules One and Two, which provide a strong language for analysis. Because of their focus on the individual and on linked lives (including among parents, children and grandchildren), we can explore intergenerational relationships directly.

Or, it can refer to *environmental policies* whose objective is to ensure that one generation does not deplete natural or community resources, or leave a climate that will harm future generations. Here we use the concepts of Module Three, including descriptors of:

- Changes in climate or in natural resources in the areas in question – and the sustainability of those resources. In this kind of analysis we can take account of a new form of capital – the physical resources and natural capital of an area that are associated with a sustainable environment.
- Changes in the social infrastructure of neighbourhoods. In this kind of analysis we can take account of still another form of capital, the community and/or cultural infrastructure – libraries, sewers, religious institutions, community centres, public transport, parks, schools, galleries, and the like.

As the framework evolves, we see much interest in being able to examine the interplay among the types of assets of Modules One and Two (financial, physical, human and social capital) with those of Module Three (natural resources and community/cultural infrastructure). We will then have a common framework that would enable us to explore both generational sustainability and environmental sustainability in the same analytic applications.

Shared experience of history

By anchoring an individual or institution in physical space, we can also associate the individual or institution with the historical trends that took place in those spaces – at the level of neighbourhoods and cities, as well as with trends at the provincial, national and international levels. For example, we can associate the individual in the context of:

- The state of renewal or decline in the neighbourhood during the time in which the individual lived there or where the institution was located.
- The economic cycles and shocks that affected the city, again at the time when the individual lived there – whether the closing of a plant in a single industry town, low unemployment in a local labour market, or global economic trends that affect the well-being of all people living in Canada.
- Environmental and cultural events that shaped people's health, their views on life and their preferences as consumers.

- Periods of peace and war that helped shape the expectations and sense of security of the different generations of people who live through those periods.

These historical effects are important in understanding how policies are likely to play out among people of different generations. The future generation of retirees will, for example, likely have quite different values than the present generation of retirees. Different values and expectations could make a huge difference to what constitutes good social policy for the future. Yet we now lack the tools to fully take account of these effects. The framework will help in sorting out what the literature refers to as age effects, cohort/generational effects, and period/historical effects.

5) Module Four: Describing purposes: institutional outcomes, individual well-being, societal well-being

Module Four sets out standard concepts to describe the purposes of individuals and institutions, and the extent to which those purposes have been achieved.

- In the case of individuals, the purpose of people's lives in society is well-being or happiness. We propose a battery of ways of describing whether well-being is being achieved.
- In the case of institutions, we refer to the purposes as 'objectives' and the achievement of those objectives as 'outcomes'.

We start with institutional purposes, and then turn to the less well-developed, and more complex, topic of individual well-being. Finally we turn to society-wide measures of well-being.

5a) Institutions and government programs: objectives and outcomes

In Module One, we describe institutions using the familiar input-process-output-outcome model. The purposes and objectives of institutions relate to outputs and outcomes:

- ***Outputs*** are the goods and services produced by the institution. For a firm this might be the sales of the goods or services that it produces. For an income security program, the output might be cheques in the hand of beneficiaries. For a school, it might be the number of students who complete the program with a passing grade.
- ***Outcomes*** are the higher level objectives or purposes that are being sought. For a firm, this might be profits or market share. In the case of a social economy firm, it might be a social well-being objective. For an income security program, it might be that seniors have an income that allows them to maintain material living standards that do not fall when they retire. For a trainer, it might be that portion of the subsequent labour market success of graduates that can be attributed to the skills obtained during the training.

While the framework can be applied to all institutions, in this Module we are primarily interested in the outputs and outcomes of government policies and programs, as well as those of public institutions such as schools.

Describing and measuring outcomes and performance of programs and policies

…Describing the hierarchy of objectives

We live in a mature society with complex, inter-dependent systems of families, markets and public policies. It is rare when a single component of that system, such as a public policy, can be isolated in such a way that its objectives can be understood without reference to the larger network of which it is only one part. Take child care policies as an example:

- Behaviour in the child care area is typically influenced by the combined effect of a large number of programs (such as income transfers, tax breaks, subsidizing spaces, training child-care workers, setting standards of quality and safety, and many others) from all orders of government and from different ministries (social services, education, finance, etc).

- These programs often have separate objectives when taken individually, but the system as a whole has multiple objectives (e.g., allowing parents more choice between working and caring-giving, increasing employment by the parents, supporting the human development of the child, increasing labour market flexibility, supporting horizontal equity in the income of families with and without children, or promoting increased fertility). People respond to the system as a whole, not to a particular program. This means that, even if a program has only one stated objective, its actual effects can only be understood by seeing how it fits in with other programs with different objectives.
- Each of these multiple objectives, in turn, is part of a hierarchy of objectives ranging from immediate outputs (such as a cheque in the hand of a parent), through successive levels of higher order outcomes e.g., using that cheque to help purchase a place in a childcare centre, with the higher-level objective of (in one possible hierarchy) allowing both parents to work, with the still higher level objective of increasing family income, in turn with a view to increasing material well-being -- and so on up the chain until we reach very high level objectives related to individual or social well-being).
- In any one program, there will be different agents who cast their institutional objectives at different levels of these hierarchies. For example, an agency that deliver child care under a contract or contribution agreement will cast its objectives at different levels than the agency that provides the funding, or the agency that checks the centre's compliance with the many regulations that affect the operation of the centre. Parents and the children who attend the childcare centre will all have their own objectives and expectations.

The complexity we have just described is quite discouraging to analysts who wish to tell a reasonably simple story or test a simple hypothesis. However, it will not go away. It is an important part of the real world that we are attempting to describe and understand. What we need are analytic tools that will help us to understand and manage this complexity, not ignore it.

How does the framework help?

The Olivia framework can help, at least a little.

- It provides concepts that can consistently describe objectives at different levels of the hierarchy. It is particularly strong in describing high-level objectives (equality, tackling poverty, inclusion, participation, access, choice, etc.) in a way that is measurable.
- It uses consistent concepts to describe different aspects of performance.
    - *Efficiency* is about inputs and outputs, as set out in Figure 3. In the child care example, the key question would be whether parents with young children – and only them – actually receive the cheque and at what administrative cost.
    - *Results* and *value for money* refer to the achievement of those intermediate objectives that are near to outputs. For example, we might be interested in knowing whether the program provided enough money to allow parents to increase their choices with respect to child care options, or whether the same results could have been achieved with less cost.
    - Words like *effectiveness* and *performance measurement* refer to the achievement of objectives cast at mid level in the hierarchy of objectives. In this example, evaluations might attempt to measure the extent to which children actually received the child care that was in line with the parents' expectations.

- It helps us deconstruct the difficult problem of attribution – the extent to which outcomes can be attributed to specific programs. To what extent did the child care cheque in our example actually lead to both parents working or to the subsequent success of the child in later life? A person's present circumstances are influenced by many multiple-resource flows on many trajectories past and present – including, but most certainly not limited to, the flows arising from the particular government program that is being examined. Attributing outcomes to any one element in the system is always difficult and, at higher levels of outcomes, is usually impossible. However, the framework, by allowing us to keep better track of these multiple flows and by its consistent manner of describing outputs and outcomes, enables more realistic assessments of attribution.

5b) Descriptors of individual purposes and achieved well-being

The framework does not propose any single measure of the purposes of people as they relate to social and human resources development. Nor does it include any elegant combination of measures of an individual's success in meeting those purposes, such as an index of perceived well-being or happiness. Rather, as throughout, we proceed by setting out many finely-grained measurable concepts that are consistent with other modules. These include:

- The volume of resource flows, especially income and consumption, from Module One. Recent research raises considerable doubt about the long- standing tradition of using income as a proxy for well-being. Changes in income are, in particular, not strongly related to changes in perceived well-being. Nevertheless, income levels remain an important, if partial, indicator of well-being.
- The specific dimensions of well-being associated with specific uses of time as set out in Module One:
    - Whether the extent of participation was sufficient. (For example, the individual worked part-time but would have preferred to work full-time. Or, in a different situation, she would have preferred to have had more time with her children.)
    - Constraints: the activities that individuals would like to participate in – but cannot because of disability, temporary sickness, by lack of facilities (the wanted institutions and networks do not exist), or by lack of geographic access (such as distance to schools and health care in more remote areas, or reduced access because of lack of public transport).
    - Satisfaction with respect to the substance and delivery of the resource flows to and from social institutions and networks – including government programs.
    - Amount of decision-making and control that the individual can exert in the various institutional activities, including at work.
    - Measures of trust in the people and institutions with whom the individual interacts.
- The volume of an individual's assets from Module Two – the extent of financial capital, housing, possessions, human capital and social capital. Perhaps as important would be measures of people's confidence in their assets, with readings taken periodically. For example, at a point in time, Olivia might:
    - Lack confidence in her human capital and feel a need to retrain.
    - Have confidence in her social capital – that her network of friends will not let her down in a crisis.

- Worry about her financial capital, including credit card debt.
- Might be confident in her physical capital particularly her housing assets, since she lives in a neighbourhood where property values are rising.

- Consequences of the life transitions discussed in Module Two, particularly around stress and time crunch.
- Quality indicators relating to the spaces and historic times in which the individual was situated – such as neighbourhood crime rates or local unemployment rates, the quality and usage of public facilities, pollution, etc.
- The kind of society that individuals say they would like to see for themselves and for others, as determined through surveys or, even better, through analysis of narrative accounts that use the framework's standard concepts to describe this better world.
- How well expectations and aspirations are being met, based on general questions about subjective well-being or perceived happiness. If a single proxy for well-being is needed, then a strong case can be made for using the simple measures of perceived well-being that have emerged in the international literature[e].

5c) Moving to society-level measures of well-being

To this point, we have been discussing measures of well-being and purpose at the level of individuals and institutions. As well, the framework can be used to underpin societal level measures, often referred to as social indicators. The Olivia framework can be useful in developing such indicators[f].

- The data associated with Modules One, Three and Four allow us to calculate the full range of familiar, existing indicators relating to employment and unemployment, low incomes, inequality, housing quality, self-perceptions of happiness or stress, and much else.
- Module One also enables the exploration of a new generation of time-based social indicators, which make use of the integrating power of time use. (There are only so many hours in a day or year, or a life-time – providing a known total and a useful common denominator for time-based indicators.) For example:
  - Familiar indicators relating to employment rates can be readily converted to a time basis – i.e., hours worked in paid employment last week as a percent of total hours that week (i.e., the number of people in the entire population x 24 hours x 7 days). This ratio, in effect,

[e] The Olivia framework may well help us in understanding the determinants of overall measures of perceived well-being. Empirically, these measures often show that perceived well-being has a U-shape over the course of life. We are happiest as children and when we are older – and most unhappy in our mid-career years. One cannot help notice that this corresponds well with the shape of Olivia's asset holding in Figure 11 which would have a similar U shape if we had attributed a share of Olivia's parents' assets to her when she was a child living at home. Further, one can imagine an even stronger U-shape fit if we were measuring trust in the adequacy of those assets, as well as the size pf the assets. For example, most younger children have high trust that their education at school is worthwhile and will serve them well in later life – resulting in high human capital readings early in life. For further information on the measurement of happiness and why it is of interest to policy-making, see John Helliwell, *Well-Being, Social Capital and Public Policy: What's New?* (December 2005). NBER Working Paper No. W11807

[f] HRSDC has developed a set of web-based well-being indicators for Canada that fall mainly out of Module One. The conceptual framework lying behind these indicators is a simplified version of Figure 8. See http://www4.hrsdc.gc.ca/home.jsp?lang=en

would allow us to examine trends in a time-adjusted ratio of producers to consumers. That is, we would use the same familiar data set that is now used to generate employment rates in order to produce a social indicator that is much more meaningful from the perspective of human resources and social development policies.

- A similar ratio could be developed that showed hours spent in formal learning environments (such as going to school or training) as a percent of the same denominator (i.e., all the hours available in the whole population) – showing trends in time spent in learning settings.
- Similarly, a range of existing indictors that are now presented on an incidence basis could be seen in new light, and be made more comparable, if we simply converted them to a time basis. For example, we could show trends in time spent below low-income cut-offs, or in deep poverty, or in persistent poverty – again as a percent of all the time that is used by the whole population.
- Other examples could include hours (or days or years) spent living in high crime neighbourhoods, or in substandard housing, or in receipt of Employment Insurance or other benefits, or in care-giving or volunteering, sickness, or without access to public transportation.

- Module Two could also support the development of potentially interesting supplementary social indicators, but this time based on newer data sources:
  - Time series of asset holdings: financial capital, human capital and, perhaps eventually, social capital. Again these could be presented on time basis in order to enhance comparability (e.g., time spent by individuals in households with high and low levels of housing and financial wealth).
  - A quite new set of indicators that reflect the longitudinal, dynamic aspects of society. For example, new meta-analytic tools such as Statistics Canada's LifePath microsimulation model may make it possible to build lengthy time series showing the age at which different cohorts of men and women started their first jobs, the number of employment transitions that took place throughout their lives, and the duration of their periods of employment and joblessness. It may be similarly possible to build long time series of transitions in family relationships, including in the lives of people of different generations. Work along these lines would, we believe, hold much promise for a new and insightful way of understanding the economy and society – especially so when we can compare the states and transitions that are taking place concurrently over the course of life in work, school and family.