

Constitution and Economic Models for the Federal Republic of Nepal

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Abstract

Transformation from feudalism to full fledged liberal democracy is proving to be a very difficult transition despite very successful election for the Constituent Assembly and declaration of the Republic of Nepal on May 28, 2008. Process of drafting the constitution for the federal republic of Nepal has not been moving smoothly. Politics of reconciliation based on broader national interest removing the possibilities of conflicts based on narrow party centred non-ideological ethnic and regional interests has nearly failed. Rather than the game of cooperation, coexistence and tolerance political parties have played non-cooperatively. The high level mechanism constituted in January 2010 has been very ineffective to resolve the dispute so far. Will the new constitution have a framework by which the political process could focus itself in making economic plans and programmes based on more scientific modelling for all households, regions and ethnic groups and entrepreneurs in a more decentralised and efficient dynamic market economy to fulfil aspiration Nepalese people? This is still very unclear.

Introduction

Eleven million Nepalese people- from Mountains, Hills and Tarai and from Mechi to Mahakali - voted cleverly for the 601-member Constituent Assembly (CA) on April 10, 2008 (26 of them were nominated). Nepal was declared a republic by the first meeting of the CA on May 28, 2008 in which 570 members voted emphatically for the abolition of 253 old institution of monarchy that had been responsible for economic, political and

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social backwardness of Nepal and had kept her away from the global community of the 21st century (only 4 voted against). The summary of the election results presented in Table 1 shows that people wanting for speedier growth and development of the country had left plenty of room for bargaining and coalition and cooperation or conflict among major political parties contesting for power. The Communist Party of Nepal (Maoist) with radical ideas won 38 percent of overall votes double than that of the Nepali Congress (NC) and the Communist Party of Nepal (UML), two dominant political parties before this election. Despite that CPN (Maoist) did not have a clear majority to form its own government and had no option than to form a coalition with other partners. No one had predicted the astounding victory of CPN (Maoists) like this or the emergence of separate political parties such as Madhesi People's Rights Forum (MPRF) and Tarai Madhes Loktantrik Party (TMLP) in Tarai region. Pattern of votes had clearly shown people's preference for radical changes as they were fed up with old established parties or wanted to teach them lessons though they did not completely trust them for this. By not giving a clear majority to any they wanted them to work in coalition, cooperation, collaboration and consensus.

**Table: 1 Members of Constituent Assembly by Political Parties in Nepal
(Result of Election on April 10, 2008)**

	Total	Maoist	NC	UML	MPRF	TMLP	Others
Total	601	229	115	108	54	21	74
First Past The Post (FPTP)	240	120	37	33	30	9	11
Proportional Representation	335	100	73	70	22	11	59
Nomination	26	9	5	5	2	1	4
Percentage of each party	100%	38.1%	19.1%	18.0%	9.0%	3.5%	12.3%

Source: Election Commission of Nepal, May 2008. (<http://www.election.gov.np/EN/>)

Thus the political and economic game in Nepal after the CA election was at least among five political players - Maoists, NC, UML, MPRF+TMLP and coalitions of all other minor parties. None of the parties have a clear majority.

Prudence of peoples' verdict is becoming clearer as time is passing by. When Maoist tried to play alone forgetting the realities of people's mandate, it lost the support from other parties, became in minority and had to resign after nine months in government in May 2009. Playing alone generated zero value to it. Playing together, with trust and partnership, creates extra value and such gains if distributed amicably among players, can make the political game more stable. The alliance of 22 parties formed after the Maoist government also could not prove very effective alternative in process of achieving peace and promulgation of the constitution. Thus it is obvious that peoples mandate in the CA election was for cooperative rather than non-cooperative game from the political players. Nepal's political conflict, however cannot be solved unless UNMC (M) adopts a non cooperative strategy in the name of peoples' sovereignty. They might have good ideas but

people will not trust them unless they are transparent, abandon their armies and are committed to fulfilment of the main clauses in the peace agreements. This is yet to be seen. It is very unfortunate that the Nepalese politicians could not learn lessons from more civilized/advanced countries which also have frequently hung parliament but were able to forge a coalition on the basis of common grounds among rival political partners. For instance, Conservative and Liberal Democratic Parties, opposing each other during the 2010 election, were able to forge a working coalition within five days to give a stable government for the UK. Parliamentarians here were able to listen and respect each other, and were motivated by a national interest above their party interests when needed. Nepal's problem will not be solved until leg pulling, distrust and cheating, ignoring and neglecting the public by the politicians and parties do not commit to the agreements. There are many good people in each party but the mechanism to bring them together is not working.

Major challenge in Nepal now is promulgating the constitution by May 28th 2010 and bringing a logical end to the conflict (Paudel, 2010). The high level mechanism constituted to resolve the dispute should consider that Nepal's problem cannot be solved unless a common ground is found on growth, development and redistribution of resources is found in which all participate willingly and appreciate in true spirit each others' aspirations, for commitment to rules and regulations, for communication and dialogue on objective basis, for realisation of urgency for the creation of the new Nepal and for inculcation of new democratic and civic values in letters and spirits.

This dilemma is briefly stated in the next section followed by economic issues to be addressed by the new constitution in section III. Then it is argued that on economic fronts the constitution should set long run goals and visions based on growth contracts among major political players making decision making process more scientific with models that are sufficiently decentralised and can explain the evolution of the entire economy over time. Economic decisions should be integrated to the long run dynamic general equilibrium models of Nepal.

Dilemma of the Constituent Assembly

Politics of cooperation among leftists, centrist and rightist parties brought the revolution of 2006. It led to the successful election of the CA, the abolition of the monarchy and the declaration of the Republic of Nepal in May-June 2008. Initial responses were encouraging; power was shared by major parties. The President was elected from the NC; Prime Minister from the NCP (M); Speaker of the CA from the CPN (UML), Vice President from the MPRF+TMLP and ministers from all parties. However, this euphoria was very short lived. After few months it became clear that NCP (M) leaders, who fought last ten years in very difficult bloody battle, were still very immature and not able to translate their promises into actions. They had some intellectuals who had analysed the problems of Nepal in details (Bhattarai, 2003)) but they could not bring the nation together. Differences between their actions and commitments to the comprehensive peace agreements created deep divisions among political players.

People felt tricked. Politics of consensus could not evolve. No major decisions could be made as the CA could not function properly. Its constitution drafting committee, that required consensus of all parties, even could not arrange meetings regularly. Year 2009 and 2010 have been wasted in accusation and counter accusations in spreading distrust and disputes further rather than creating a way forward for the country. Political madness of ethnic and regional conflicts were common in Nepal as Bardhan (1997) had noted in other countries. Constitution drafting process should have addressed legitimate rights of every section and community without spreading distrust but the reality was the just opposite of it. Parties were inflexible and could not respect each other. They could not completely stick to the peaceful means of dispute settlement; violence, threats and intimidation were still used for political objectives mainly by CPN (M) as reported by several NGOs monitoring the Nepalese situation closely after the CA election (see reports of European Commission, United Nation's Mission to Nepal, the Carter Center and a number of human rights organisations their web links are listed at the end of the paper). Institutional weakness is the major reasons for such deadlocks (Acharya, 2000).

Political mechanism failed because of irreconcilable political ideologies of the major parties. They aligned successfully together to abolish monarchy but it is amazing how they could distrust each other when they had real time for actions. They seemed to be contesting just for the power. What was wrong in sharing power, listening and trusting each other to solve national problems? Lincolnian ideology that "democracy is for the people, by the people and of the people" was forgotten. While the CPN (M) was proud of being elected to the power by the people in a democratic manner but it failed to respect opinions of the NC, which has more than six decade long history of fighting for democratic rights in Nepal and the CPN (UML) or other partners who were colleagues during the April 2006 revolution and had significantly helped them to come from the jungles to the capital. Transitional politics did not work well (see Acemoglu (2001) for a theory like this). When everyone was expecting a systematic and sensible moves, political developments in the late 2008, 2009 and in 2010 were far from acceptable. The CA even could not elect a PM for the country in sixteen rounds of voting that had taken place between July to November of 2010. Seventeenth voting round was postponed in anticipation of similar outcome and CA session concluded without electing a new PM. Inefficiency of the hung CA has been stretched to its limits. Short run myopic considerations originating from the irreconcilable political ideologies blurred long run visions of politicians that were required for growth, prosperity and poverty alleviation. Collectively politicians could not send good signals to the Nepalese people or to the rest of the world. Inefficiency in the representative democracy as noted by Besley, & Coate, (2003) and lack of cultural milieu toward development as discussed in Adams (2000) surfaced as politician could not learn implications of repeated games and the role of reputations in it (see Palfrey, & Srivastava (1989), Laffont, & Martimort (2000), Maskin, & Moore (1999), Maskin, & Tirole (1999), Segal, & Whinton, (2002), Bergmann, & Morris (2005), Mookherjee (2006), Mailath, & Samuelson (2007), Compte, & Jehiel (2007) for more recent thinking in mechanism designs). Kautilya (around 300 BC) had expressed many of the mechanism design issues in terms of Sama-Dana-Danda-Bhedas in

the context of ancient culture long time ago in his *Arthshastra*. He and many other ancient philosophers and thinkers held these views, albeit in the rudimentary form, as one could see in recent works including of Nobel laureates such as Ostrom (2000) and Buchanan (2003) on rationality of public choices.

Economic Contents in the Constitution

There is enough inspiration in Magna Carta (1215) Britains' Bill of rights (1689), Bill of rights of the United States (1791), French Declaration of the rights of man and the citizen (1789), Canadian Charter of rights and freedom (1867), Universal Declaration of Human Rights - United Nations (1948), Constitution of India (1947) Constitution of China (1949) Basic Law of Federal Republic of Germany (1949), UN Convention against Genocide (1948), UN Covenant on Economic, Social and Cultural Rights (1966), UN Convention Against Torture (1985), UN Covenant on Civil and Political Rights (1966) in determining the economic, political and social freedom of nations. Apparently all political parties in Nepal in principle are committed to the socialism and market mechanism for growth with redistribution but they will not stick to it unless the constitution defines parameters of the political game more clearly. In this context constitution of the Federal Republic of Nepal should be "a grow Nepal contract" to protect the Nepali people from whimsical decisions of political parties or politicians (Bhattarai, 2006).

New constitution, as a true contract between the state and the citizen, should address the burning economic, political and social challenges of Nepal. As most of the social and political conflicts are rooted in economic issues, the top most priority of the new constitution should be in the alleviation of poverty and creation of good environment for speedy economic growth and development. It should build an incentive mechanism that promotes honesty, hard-work, entrepreneurship, harmony, tolerance, peaceful coexistence, preservation of unique culture, nature and environment of Nepal as a Himalayan Republic that can compete and thrive in the global economy of 21st century and beyond. Division of power among legislative, executive and judicial bodies at the central and provincial levels should have check and balance mechanism for full-fledged liberal democracy that promotes participation but eliminates discrimination on any basis and creates a corruption-less society. It should have enough provision for social justice, reward and punishment according to deeds of its citizen. It should realise that the massive poverty could be eliminated in one generation (30 years) when five year old children become properly educated and skilled young adults and start meaningful lives with decent earnings. The constitution should guarantee provision of minimum basic needs as well as the development of full potential for every citizen. Financial system should be made efficient so that firms and households could borrow and lend intertemporally to maximise their life time income though the system of competitive market economy that has enough provision for student loans, mortgages and business needs. It should make public and private sector work harmoniously in achieving macroeconomic stability and microeconomic efficiency and social justice.

While drafting the new constitution Nepalese policy makers need to make many strategic decisions to empower people and to meet their aspirations as proposed by Sen (2003). Particularly scientific analysis and dynamic scenarios are required for several fundamental issues such as:

- 1) How to reduce poverty in the shortest possible time?
- 2) What is the optimal strategy of growth and capital accumulation? How should the economy invest in physical and human capital required to catch up dynamic neighbours in 10, 20 or 30 years' interval?
- 3) How can it mobilise domestic resources and reduce dependency on foreign aid to raise the rate of investment in the economy? How can it phase out foreign aid and replace it by foreign investment?
- 4) How can it train manpower and handle surplus labour? How much manpower should it allow to export or how should it create employment at home and reducing effective rate of unemployment to a reasonable rate of below 5 percent?
- 5) How can it meet energy requirement by developing hydropower or biogas to substitute fossil fuel to mitigate impacts of rising energy prices?
- 6) How can it resettle people from remote areas in order to provide basic needs - food, health, clothes, housing, education, security-to all citizens in more equitable fashion?
- 7) How can it promote private public partnership from primary to university level education so that all young people can begin life from equal starting line?
- 8) How can it assess the role of strategic highways through the Hills and Mountains?
- 9) How can it initiate major projects such as Lhasa-Kodari-Kathmandu-Raxaul railways or similar low cost airlines for more integration with the Chinese and Indian and the rest of the world economies?
- 10) How can it balance social justice, land reform, social security and pension?
- 11) How can it access capital or labour intensive technologies in agriculture, industries and services and use them to generate more income to achieve goals of redistribution and alleviation of poverty?

These long run economic issues require scenarios based on models that mimic the patterns and structures of consumption, production and income redistribution, trade and financial system of the Nepalese economy. The National Planning Commission of Nepal (2009) by the time of implementing the eleventh periodic plan has set many targets and goals and programmes but only a few of them have been implemented. Despite the overhaul of the commission, it has not moved forward enough for the scientific modelling of the Nepalese economy. Lessons drawn by Ahluwalia (2002) for India become very relevant for Nepal if she aspires for two digit growth rate. The constitution should emphasise on the long run vision and economic planning based on a decentralised dynamic general equilibrium model of the Nepalese economy which shows how different

sectors, households and agents could grow harmoniously over time. Impacts of strategic interactions among households and firms, between citizens and state, and incentive mechanism required for efficiency should be studied in an open economy framework. Poverty reduction in Nepal is impossible without understanding the dynamic process of growth and efficient system of relative prices for the best allocation of resources. Objectives, priorities, and programmes should consider constraints and feasibilities under the broader parameters, defining the behaviour of consumers, producers and the economy as a whole. Constitution should be as clear enough as possible on the economic system to come.

Dynamic Multi-Household General Equilibrium Model of the Republic of Nepal

Scientific study of Nepalese economy is still very scant and no systematic survey of economic models of Nepal is available in the literature. The National Planning Commission of Nepal and sectoral ministries make decisions very traditionally without taking account of income and substitution effects of the decisions to the private and the public sectors or the various regions of the economy. Elbers (1992) had introduced the multisectoral regional general equilibrium model of the Nepalese economy. Using error correction models Demetriades, & Luintel, (1996) had tried to empirically measure the financial repression and the link between growth and financial sector. Koirala, & Koshal, 1999 used simultaneous equation model to estimate technological differences among manufacturing firms. Sharma, Jayasuriya, & Oczkowski (2000) had looked connection between trade liberalisation and growth of manufacturing industry in Nepal. Mahat (1981) had studied issues of capital and industrial finance based on historical statistics and Bhattarai (2003) focused on regional underdevelopment in Marxist perspective. While Gurung (1989) analysed patterns of regional migration, Khanal, & Kanel (2005) used econometric methods to study impacts of macro shocks in poverty reduction. None of the above studies address the dynamic general equilibrium issues of the Nepalese economy. Articles published in the Economic Journal of Nepal of the Central Department of Economics, Kirtipur, Kathmandu use more econometric or statistical techniques and take more partial equilibrium framework than a general equilibrium approach required for a comprehensive understanding of the economy. Modelling process presented here has more detailed interaction among households and firms can evaluate various aspects of the poverty reduction strategies. Its strength lies in appreciation of the production (supply side) as well as the consumption (demand sides) of the economy and their links to the markets, government and the foreign sectors. Model of Nepal presented here is further improvement on Bhattarai (1997, 2007) though the multisectoral computable general equilibrium modelling in general owes to the pioneering theoretical works of Walras (1905), Arrow, & Debreau, (1953), algorithm of Scarf (1967), proof of computational equilibrium of Shoven and Whalley (1973), social account matrix of Adelman and Robinson (1986), applications of these techniques in Chenery and Shrinivasan (1989) and dynamic computational algorithms of Rutherford (1995). It consists of households grouped in ten categories, $h_1 \dots h_{10}$, ranked according to their income status from the

poorest to the richest, firms grouped in nine different sectors $i_1 \dots i_9$, a government that collects taxes from the labour and capital income, on use of inputs, on household income and imposes tariffs on trade with the rest of the world sector. The growth of the economy and distribution of income among households depend on the capital accumulation process and growth rate of productivity of the labour force. More specifically household preferences are given by:

$$\text{Max } U_0^h = \sum_{t=0}^{\infty} \beta^t U_t^h (C_t^h, l_t^h) \tag{1}$$

Subject to

$$\sum_{t=0}^{\infty} R_t^{-1} [P_t (1 + t^{vc}) C_t^h + w_t (1 - t_l) l_t^h] = \sum_{t=0}^{\infty} [(1 - t_l) w_t L_t^h + (1 - t_k) r_t K_t^h + TR_t^h] \tag{2}$$

where C_t^h , l_t^h and L_t^h are respectively composite consumption, leisure and labour

$$R_t^{-1} = \prod_{s=0}^{t-1} 1 / (1 + r_s)$$

supplies of household h in period t , r_s is a discount factor; r_s

represents the real interest rate on assets at time s ; t^{vc} is value added tax on consumption, t^l is labour income taxes, and K_t^h is the composite consumption, which is composed of sectoral consumption goods, P_t is the price of composite consumption (which is based on goods' prices), i.e.

$$P_t = \vartheta \prod_{i=1}^n \alpha_i p_{i,t}^{\alpha_i}, \text{ and } C_t^h = \prod_{i=1}^n C_{i,t}^{\alpha_i^h} \tag{3}$$

Industries of the economy are represented by firms that combine both capital and labour inputs in production and supply of goods and services to the market. Like households firms make production decisions on the basis of intertemporal optimisation:

$$\Pi_{j,t}^y = [((1 - \delta_i^e) PD_{i,t}^{\frac{\sigma_y - 1}{\sigma_y}} + \delta_i^e PE_{i,t}^{\frac{\sigma_y - 1}{\sigma_y}})]^{\frac{1}{\sigma_y - 1}} - \theta_j^v PY_{j,t}^v - \theta_j^d \sum_i a_{i,j}^d P_{i,t} \tag{4}$$

where: $\Pi_{j,t}^y$ is the unit profit of activity in sector j ; $PE_{j,t}$ is the export price of good j ; $PD_{j,t}$ is the domestic price of good j ; $PY_{j,t}^v$ is the price of value added per unit of output in activity j ; σ_y is a transformation elasticity parameter; $P_{i,t}$ is the price of final goods used as intermediate goods; δ_j^e is the share parameter for exports in total production; θ_j^v is the share of costs paid to labour and capital; θ_j^d is the cost share of

domestic intermediate inputs; $a_{i,j}^d$ are input-output coefficients for domestic supply of intermediate goods. Firms are grouped in nine different sectors including agriculture, manufacturing, chemical, metal, gas-electricity and water, hotel, transportation and communication and social services.

This is an open economy model in which goods produced at home and foreign countries are considered close substitutes following the Armington assumption, popular in the applied general equilibrium literature. The production process is given by a nested production and trade functions.

Households pay taxes to the government which returns part of the revenue to the poor households and uses rest of it to provide for public services. The government collects taxes from labour and capital income and on use of inputs and on household income and imposes tariffs on trade with the rest of the world sector and VAT from commodities. Government revenue is collected from a composite tax rate on capital income from each sector, the *ad valorem* tax rate on final consumption by households, and on public consumption and *ad valorem* tax rate on investment, the taxes on labour income of the household, the tax on production, and the tariff on imports. The growth of the economy and distribution of income among households depend on the capital accumulation process and growth rate of productivity of labour force. The government uses taxes and spending strategy to alleviate poverty.

The households pay taxes to the government and government returns part of this income to the poor households and spends rest of it to provide public services.

$$REV_t = \sum_{i,h} t_i^k K_{i,t} + \sum_i t_i^{vc} P_{i,t} C_{i,t}^h + \sum_i t_i^{vg} P_{i,t} G_{i,t} + \sum_i t_i^{vk} P_{i,t} I_{i,t} + \sum_{i,h} t_l^{wLS} L_{i,t}^h + \sum_i t_i^m PM_{i,t} M_{i,t} + \sum_i t_i^p P_{i,t} GY_{i,t} \quad (5)$$

where REV_t is total government revenue and t_i^k is a composite tax rate on capital income from sector i , t_i^{vc} is the *ad valorem* tax rate on final consumption by households, t_i^{vg} is that on public consumption and t_i^{vk} is the *ad valorem* tax rate on investment, t_l is the tax rate on labour income of the household, t_i^p is the tax on production, and t_i^m is the tariff on imports.

The steady equilibrium growth path of the economy is determined in terms of the interest rate, discount factor and relative prices of goods and factors in which the excess demand for goods and factors are eliminated and resource balance condition holds for the whole economy, each household, the government and rest of the world sectors in each period and over the model horizon. It also shows how the income of each type of household evolves over time as a function of the relative prices of goods and share of households in income. Government policies and transfers can alter this equilibrium. Model contains hundreds of thousands of variables and thousands of equations to express demand and supply in goods and factor markets.

Table 2 Nine Sector Input/output Table of Nepal for 1999/00 at Producer's Price (In Million Rs.)

Nine Sector Input/Output Table for 1999/00 at Producer's Price (In Million Rs.)

	Agri	Manuf	Chem	Metal	Gaselw	Hotel	Transp	Finance	SocServ	Sub-Totl	Prcon	Eccon	Prfinnv	Gktinv	Stock	Exp	Sub-Totl	Total Output
agr	8694.1	16788.6	544.5	1778.5	0.0	193.6	0.1	18.8		28034.81	103889.36	0.00	538.38	0.00	44488.77	1942.67	150859.18	178893.99
Manuf	1985.1	6550.4	35.8	1457.0	9.9	211.4	46.9	171.6	2127.4	12595.40	72038.15	0.00	53.43	13.87	-29004.69	30752.80	73853.55	86448.95
Chem	3730.4	22.3	684.3	419.0	15.4	27.0	16.5	0.0	84.0	4998.92	3232.07	0.00	0.00	0.00	-4586.43	3696.72	2342.36	7341.28
Metal	900.1	87.8	25.0	13336.2	36.3	59.3	31.4	437.5	615.4	15529.01	10412.16	0.00	37756.71	25478.72	3741.50	9814.43	87203.52	102732.52
Gaselw	10.4	612.1	34.1	316.1	118.8	310.3	62.4	80.5	112.8	1657.32	1684.16	0.00	0.00	0.00	4823.23	0.00	6507.39	8164.71
Hotel	3195.0	4104.7	244.2	3335.4	84.2	4507.7	6841.8	746.8	1797.6	24857.42	20952.98	0.00	484.95	146.78	10552.47	14347.44	46484.62	71342.04
Transp	4805.3	6582.2	407.5	4566.2	103.8	4284.7	4506.1	666.8	2501.5	28424.08	15808.88	0.00	784.96	237.51	9603.27	6924.96	33359.59	61783.67
Finance	8294.7	4279.1	253.9	3062.6	1143.2	2902.2	6340.7	1383.3	1009.8	28669.54	9576.25	0.00	0.00	0.00	3043.02	0.00	12619.27	41288.80
SocServ	164.5	367.8	21.4	4204.3	20.0	404.4	146.2	449.7	1429.3	7207.70	7007.13	34579.00	0.00	0.00	-14416.39	21441.02	48610.76	55818.46
DOMESTIC INPUT PURCHASE	31779.50	39394.95	2250.70	32475.37	1531.57	12900.59	17992.05	3954.98	9694.48	151974.19	244601.13	34579.00	39618.43	25876.89	28244.76	88920.03	461840.24	613814.43
intimp	2147.48	14982.69	2190.90	19674.26	677.08	14673.06	14050.97	408.48	11881.46	80686.38	36282.38	0.00	4179.00	468.00	0.00	0.00	40929.38	121615.76
TOTAL INTER INPUT	33926.98	54377.64	4441.60	52149.63	2208.65	27573.64	32043.03	4363.46	21575.94	232660.57	280883.52	34579.00	43797.43	26344.89	28244.76	88920.03	502769.62	735430.19
Wages	46202.74	4516.98	221.65	20382.06	801.44	5274.29	11652.75	14234.58	29221.74	132508.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	132508.23
Depr	1721.62	1092.75	107.44	1784.01	717.71	1472.39	7482.37	1070.36	68.71	15517.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15517.36
Indtx	244.01	6097.31	1278.38	6664.20	61.06	659.39	459.64	6.35	218.52	15688.86	7063.48	0.00	813.57	91.11	0.00	1240.97	9209.14	24898.00
capital	96798.64	20364.28	1292.22	21752.61	4375.85	36362.32	10145.88	21614.06	4733.55	217439.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	217439.41
VALUE ADDED	144967.01	32071.31	2899.68	50582.89	5956.06	43768.39	29740.64	36925.35	34242.52	381153.86	7063.48	0.00	813.57	91.11	0.00	1240.97	9209.14	390363.00
GRAND TOTAL	178893.99	86448.95	7341.28	102732.52	8164.71	71342.04	61783.67	41288.80	55818.46	613814.43	287947.00	34579.00	446111.00	26436.00	28244.76	90161.00	511978.76	1125793.19

Source: Adapted from from 25 sector input-output model of Nepal received from the NPC Secretariate, Kathmandu.

It is impossible to have an explicit analytical solution for a big model like this. Therefore numerical technique is used to solve the model. The steady equilibrium growth path of the economy is determined in terms of the interest rate, discount factor and relative prices of goods and factors in which the excess demand for goods and factors are eliminated and resource balance condition holds for the whole economy, each household, the government and rest of the world sectors in each period and over the model horizon. It also shows how the income of each type of household evolves over time as a function of the relative prices of goods and share of households in income (Figure 1). Government policies and transfers can alter this equilibrium.

Calibration of the New Nepal Model

The micro-consistency in the model is obtained by making the demand and supply balance for each sector in an input-output table maintaining zero profit in equilibrium, balancing the income of households to the consumption plus saving, and matching total investment to total savings by the households and revenue and expenditure of the governments. The model is calibrated to the benchmark micro-consistent data contained in this latest Input-Output Table of Nepal and computed using GAMS/MPSGE software (Rutherford, 1995).

The sectoral composition of consumption by households is approximated by the net of tax and transfer income of households that are assumed to remain same across all goods. In addition economic survey data is used for the estimates of the distribution of wage, interest rate and transfer income for households.

Table: 3 Key Parameters of the Model Based on Previous Modelling Literature

Elasticity of substitution between labour and capital	3.0
Elasticity of substitution between labour and leisure	1.5
Elasticity of substitution consumption and leisure	0.5
growth rate of output	0.02
Benchmark interest rate	0.05
rate of depreciation	0.07
Elasticity of intertemporal substitution	1.1
Elasticity in government consumption	1.0

Policy Scenarios

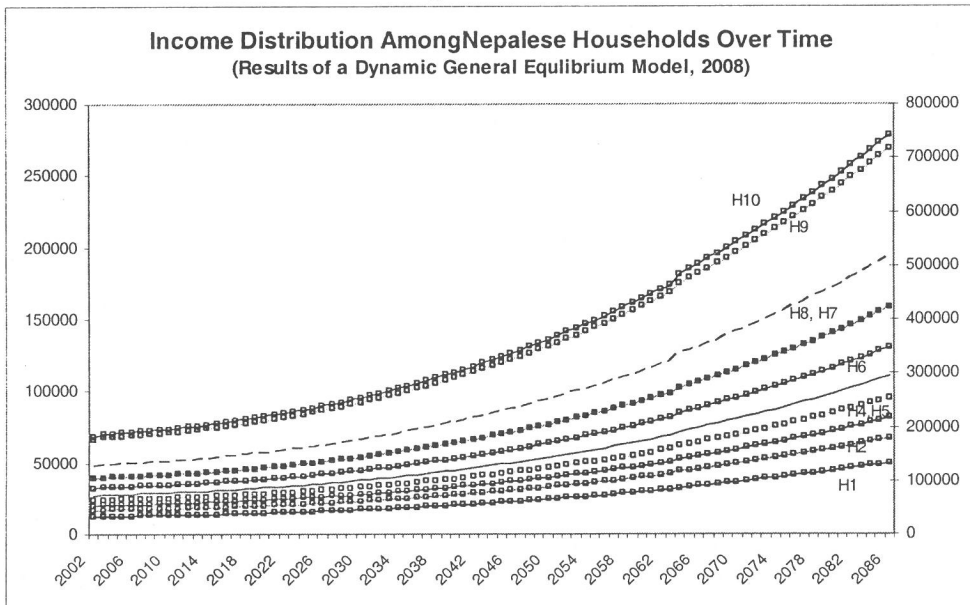
The income redistribution effect in the model occurs through the differentiated tax rates of household income, value added taxes on consumption of goods and services, on labour and capital income. All these tax experiments constrain the amount of revenue and find the best optimal rates of taxes given the revenue requirement preset by the policy maker. In the above benchmark labour and capital input taxes are replaced by uniform

rates of 0.3 and 0.2 in the counterfactual scenarios. Model solutions show how these reforms affect the growth rates of the various sectors of the economy and distribution of income and welfare among households.

All these model scenarios of the growing Nepalese economy are distorted by taxes in the benchmark that are removed under the counterfactual scenarios. It is obvious that tax reform alone cannot bring desired growth in income of households in developing country like Nepal which requires more investment in human capital and physical infrastructure. Piecemeal and patchy reforms will not be able to generate substantial growth enough to meet the aspirations of people. Wide ranging income and substitution effects through all markets need to be taken account.

The rich institutional structure contained in forward-looking CGE models allows one to experiment with many structural assumptions characterizing the particular economy under investigation. Therefore this framework is definitely an improvement over the fixed coefficient Harrod-Domar growth model or one sector neoclassical growth models or one sector endogenous growth model. So is it to the static and sequential dynamic CGE models available in the literature. Specification of a multi-sectoral wedge in the cost of capital and its impact on the economy over the period is a new approach for analysis of distortions and liberalization of decentralized market economy. This is an important empirical tool to study long run growth and distribution in an inter-temporal and inter-sectoral framework.

Figure 1



The dynamic general equilibrium framework contained in the base-line model can be applied to analyze several other issues of the Nepalese economy particularly to study the impacts of fiscal reforms or of liberalization of international trade, or of policies on labour markets and human resource development aimed at alleviation of poverty. It can be modified to study migration, regional and sectoral developments, and parallel markets. Implications of tax reforms on welfare of each category of household are given in Figure 1. Impacts on output, capital accumulation, investment, relative prices, interest rates, wage rates, imports, exports and public sector balances for entire model horizon is too much to present in the space available in this paper. The constitution of Nepal should insure that overall planning and programming process for the long run growth goes through the strict scientific scrutiny based on detailed studies of the economy as discussed in this model.

Conclusions

Transformation from feudalism to a full fledged liberal democracy is proving a very difficult transition despite very successful election for the Constituent Assembly and declaration of the Republic of Nepal on May 28, 2008. Process of drafting the new constitution for the federal republic of Nepal has not been moving smoothly. Politics of reconciliation based on broader national interest removing the possibilities of conflicts based on narrow party centred non-ideological ethnic and regional interests has failed. Rather than playing the game of cooperation, coexistence and tolerance, the major political parties engaged themselves playing non-cooperatively. Can the new high level mechanism constituted in January 2010 resolve the dispute? Will the new constitution have a framework by which the political process focuses itself in making economic plans and programmes based on more scientific modelling for all households, regions and ethnic groups and entrepreneurs in a more decentralised and efficient dynamic market economy to fulfil aspiration Nepali people? The constitution should be a commitment by all political and economic participants on “grow Nepal contract” based on more farsighted strategic dynamic equilibrium models for speedier rate of growth with redistribution and poverty alleviation. One model is illustrated here. Actions and decisions based on scientific economic analysis only can open Nepal’s way for advancement in the 21st century more competitively together with her neighbours China and India in coming years.

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