

## Treasury Report: Pandemic Influenza: Economic Impact and Treasury Preparedness

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<b>Date:</b>	29 April 2009	<b>Report No:</b>	T2009/1070
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### Action Sought

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	Action Sought	Deadline
Minister of Finance (Hon Bill English)	<p><b>Note</b> that the Treasury has modelled the economic impact of an influenza pandemic as being highly uncertain in both severity and duration.</p> <p><b>Note</b> that the Treasury intends to monitor the situation and to report back to you with further advice as needed</p> <p><b>Refer</b> this report to the Prime Minister for his information.</p>	Urgent

### Contact for Telephone Discussion (if required)

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### Minister of Finance's Office Actions (if required)

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Refer this report to the Prime Minister for his information
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**Enclosure: No**

## Treasury Report: Pandemic Influenza: Estimating and Managing the Potential Economic Impacts

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### Executive Summary

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Human cases of swine influenza were confirmed in New Zealand on 28 April 2009, and have been linked to the outbreak of H1N1 swine influenza in the human population in Mexico. The World Health Organisation has raised the level of influenza pandemic alert to phase 4 ('sustained human to human transmission'), which indicates that the likelihood of a pandemic has increased, but not that a pandemic is inevitable.

The Treasury has previously modelled the potential impact of an influenza pandemic. A Treasury working paper, released for public information in 2006, has been cited in recent media reports speculating on the possible economic impact of swine influenza.

Considerable uncertainty remains around the severity and duration of the economic impact of a pandemic. Furthermore, the estimates from the Treasury working paper do not necessarily apply to the current outbreak of swine influenza. One reason is that this outbreak is occurring in an economic environment that is already under more stress than assumed in that modelling. Another reason relates to the high level of uncertainty around how this currently minor outbreak of swine influenza might evolve – at this stage, a pandemic influenza is not inevitable.

The table below summarises the estimated losses in real GDP, as modelled in the Treasury working paper from 2006. A severe and a mild scenario are included, and are based on experiences with pandemic influenza.

#### Estimated economic impact of an influenza pandemic

Source: Treasury working paper (2006)	<i>Disease assumptions</i>			<i>Estimated economic losses</i>	
	Infection rate (a)	Fatality rate (b)	Population mortality rate (a) x (b)	Reduction in real GDP in year 1	Cumulative reduction in real GDP over 4 years
Severe scenario (based on 1918)	40%	2.00%	0.80%	5-10%	10-15%
Mild scenario (based on 1957, 1968)	30%	0.25%	0.08%	1-2%	1-3%

The Treasury has previously worked with other economic agencies to look at ways to mitigate the economic shock from a possible influenza pandemic, and at how a rapid response might be encouraged. This briefing provides some high-level points as initial background information for you – in case the current outbreak of swine influenza develops into pandemic influenza. These relate to macroeconomic stability, fiscal stability, the resilience of firms, government powers to manage the economic impact, and agency preparedness. We intend to keep monitoring the situation and staying in touch with the Ministry of Health. We also intend to report back to you with further advice as the swine influenza situation develops.

## Recommended Action

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We recommend that you:

- a **note** that the Treasury has modelled the economic impact of an influenza pandemic as being highly uncertain in both severity and duration
- b **note** that the Treasury intends to monitor the swine influenza situation and to report back to you with further advice as needed
- c **refer** this report to the Prime Minister for his information

**Mark Sowden**

Manager, Macro Policy  
for Secretary to the Treasury

Hon Bill English

**Minister of Finance**

# Treasury Report: Pandemic Influenza: Economic Impact and Treasury Preparedness

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## Purpose of Report

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1. This report responds to the recent outbreak of swine influenza, and informs you of work the Treasury has previously undertaken to estimate the potential economic impact of an influenza pandemic.
2. It also provides an initial high-level outline of how that economic impact might be managed – should the current outbreak of swine influenza develop into a pandemic.

## Context

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3. The Director of Public Health has confirmed that human cases of swine influenza are present in New Zealand, as of 28 April 2009. These cases are suspected of originating from the outbreak of H1N1 swine influenza in the human population in Mexico. Outbreaks have also been confirmed in other countries, including the United States. In response to these developments:
  - public health officers have quarantined infected individuals in Auckland; and
  - the World Health Organisation has raised the level of influenza pandemic alert to phase 4 ('sustained human to human transmission'), which indicates that the likelihood of a pandemic has increased, but not that a pandemic is inevitable.
4. Following earlier warnings from the World Health Organisation, and other health authorities, of the threat of an influenza pandemic, the Treasury took a number of steps during 2005-06 to prepare for a possible future pandemic:
  - linking with other economic agencies to look at ways to mitigate the economic shock from a possible pandemic and to encourage a rapid response;
  - estimating the economic impact of pandemic influenza, with the results released in a working paper in 2006; and
  - revising our business continuity plan to ensure that the Treasury is able to respond as effectively as possible in the event of a pandemic.

## Estimating the Economic Impact of an Influenza Pandemic

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5. The Treasury has previously modelled the potential impact of an influenza pandemic. A Treasury working paper<sup>1</sup>, released for public information in 2006, has been cited in recent media reports speculating on the possible economic impact of swine influenza. The estimates from that working paper do not necessarily apply to the current outbreak of swine influenza. One reason is that this outbreak is occurring in an economic environment that is already under more stress than assumed in that modelling. Another reason relates to the high level of uncertainty around how this outbreak of swine influenza might evolve – at this stage, a pandemic influenza is not inevitable.

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<sup>1</sup> *Impacts of a Potential Influenza Pandemic on Economic Growth in New Zealand*, (2006) by James Douglas, Kam Szeto and Bob Buckle <http://www.treasury.govt.nz/publications/research-policy/ppp/2006/06-03>

6. The Treasury paper modelled the impact of a pandemic as a simultaneous supply and demand shock. The supply shock arises from a reduction in labour supply, due to sickness and mortality. The demand shock arises from reduced international and domestic demand as well as 'social distancing' behaviours.

**A severe pandemic is estimated to reduce real GDP by 5-10% in year 1 and by 10-15% over four years...**

7. *A severe pandemic scenario* assumes 40% of the population becomes infected with the virus, with a fatality rate of 2% of those infected (giving a population mortality rate of 0.8%). These assumptions are taken from the Ministry of Health planning model, which is based on the infection and fatality rates of the 1918 influenza pandemic in New Zealand. Another 40% of the workforce are assumed to be absent from work due to fear of infection or to care for others.
8. Taking into consideration a range of demand reductions and business closure rates, the impact of a severe pandemic is estimated to be in the range of a 5-10% reduction in real annual GDP in the year of the pandemic. Over four years, the paper estimates the cumulative impact to be a loss of 10-15% of one year's real GDP.

**A milder pandemic is estimated to reduce real GDP by 1-2% in year 1 and by 1-3% over four years...**

9. *A milder pandemic scenario* assumes an infection rate of 30% and a fatality rate of 0.25% – giving a population mortality rate of 0.08%. This scenario is of similar magnitude as the milder influenza pandemics in 1958 and 1967. Accordingly, the rates of labour withdrawal and industry closures are much lower than the severe scenario.
10. A milder pandemic would have a considerably less severe economic impact, and may reduce GDP by the order of 0.7-2.1% in the first year. This impact would be similar to a typical business cycle downturn. Service industries, such as education and tourism, would be acutely affected. Over four years, the paper estimates the cumulative impact to be a loss of 1.1-2.8% of one year's real GDP.

**There is uncertainty around potential economic impacts, should a pandemic occur...**

11. The potential economic impact of an influenza pandemic is unlike other shocks that affect the New Zealand economy, and there is limited international research on the economic effects of earlier pandemics. Furthermore, the last severe pandemic, in 1918, took place in a very different economic environment in terms of global linkages. Given this, the Treasury's estimates of the possible economic impact of a pandemic are necessarily based on judgements about the magnitudes of supply and demand effects. Accordingly, the results of the Treasury working paper may be subject to debate from other commentators who may reach different conclusions about the potential severity and duration of the economic impact resulting from a potential pandemic.

## Managing the Economic Impacts of an Influenza Pandemic

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12. Public attitudes and behaviours can change rapidly with the onset, or perceived onset, of a pandemic. Even with the currently minor outbreak of swine influenza, there is evidence of people being more reluctant to travel, with consequent impacts on industries such as aviation and tourism. Our observation is that public expectations matter hugely, and that in the event of an actual pandemic, policies that aim to restore confidence, maintain normal commercial relationships, and promote a quick return to

work when safe to do so, are likely to be the most effective in mitigating economic impacts of a pandemic.

13. The Treasury has previously worked with other economic agencies to look at ways to mitigate the economic shock from a possible influenza pandemic, and at how a rapid response might be encouraged. Some high-level points are provided below as initial background information for you – in case the current outbreak of swine influenza develops into pandemic influenza, although this is certainly not inevitable. We intend to keep monitoring the situation and linking with the Ministry of Health. We also intend to report back to you as the swine influenza situation develops.

### **Macroeconomic stability**

14. A severe pandemic would pose challenges to macroeconomic stability. Our assessment is that the broad macroeconomic frameworks currently in place – in particular, in relation to monetary policy, the exchange rate, and fiscal policy – contain considerable flexibility to respond to short-term negative shocks.
15. A fall in the exchange rate would be likely, although since a serious pandemic is likely to be a global event, relative movements in exchange rates are hard to predict. Given New Zealand's high external liabilities and low domestic savings, any marked shift in investor sentiment either in favour of home markets, or in favour of 'safe' currencies (e.g. USD) would be likely to see the NZD fall against those currencies.

### **Financial stability**

16. A severe influenza pandemic could place some additional stress on the financial system. Default rates on household and commercial loans could rise, and the potential for recovery could be impaired to the extent that there was a fall in the value of assets backing the loans. Concerns about lower underlying prospects and increased risk premia would put upward pressure on bond yields and lower share prices, at least in the short term. House prices could also be adversely affected if household income is disrupted for an extended period.

### **Resilience of firms**

17. A severe pandemic could result in a large number of firms facing some degree of financial stress, given the likely fall in demand, and high levels of staff absences. Some sectors may be particularly affected, such as those dependent of international trade and travel, the hospitality and accommodation sectors, entertainment, retail, and personal services. Small businesses are likely to be particularly vulnerable as they may lack the human and financial resources to prepare for or cope with a shock of this nature. Firms with large office environments, or other heavily populated working environments, would find it very difficult to maintain usual work practices. Public health measures may add to these difficulties.

### **Risks are heightened by the current stresses**

18. If a severe pandemic were to develop at present, the existing challenges of the current adverse global economic and financial situation could be amplified. For example, most central banks now have little scope to cut interest rates further to offset the losses of output or further falls in confidence. Even in New Zealand the scope is much less than it was previously. The financial system worldwide is still under severe pressure, and it would be possible that markets, including the funding markets that New Zealand relies upon, to seize up again. Business and household confidence is less robust than usual and the ability of the whole economy to cope with further severe adverse shocks is weakened. Banks also have reduced capacity, and willingness, to support firms through a severe adverse shock, such as that accompanying a severe pandemic.

Finally, large losses of output would mean further large reductions in government revenue and increases in government spending, at a time when prospective debt levels have already become concerning around the world.

### **Government powers to manage economic impact**

19. Depending on the severity and duration of any pandemic, and how the economy recovers afterwards, scenarios can be imagined where the government may want to consider exercising existing or new emergency powers to manage the economy, and in particular:
  - to assume a role in distributing certain goods and services;
  - to control prices for certain goods and services; and
  - to suspend or overrule commercial contracts.
20. Under the Civil Defence Emergency Management Act 2002, wide powers exist to allow the Government to assume a role in allocation and distribution of essential goods and services once an emergency has been declared. This could include infrastructural and related services. However, there would be practical limits on the extent to which Government can exercise these powers – for example, the capacity and capability of government agencies to play a major role in distributing essential goods or running infrastructure. The preferable approach would be to use the powers to support the efforts of parties in the market rather than attempt to override or replace those parties.

### **Agency preparedness**

21. In the event of a serious influenza pandemic, it will be critical that the Government financial system remains intact and that Treasury, and agencies such as the Reserve Bank, IRD and MSD are able to maintain their core functions. These agencies have previously reviewed their business continuity plans to improve their resilience to such an event. While these plans have been tested, to some extent in simulation exercises, they are yet to be tested under actual pandemic conditions.
22. The Treasury maintains a crisis plan, which would enable us to respond as effectively as possible to an emergency, such as an influenza pandemic, that affects the Treasury or the New Zealand economy. The Treasury also took part in the whole-of-government influenza pandemic simulation exercise led by the Ministry of Health in May 2007. Lessons from that simulation were subsequently incorporated into agencies plans.

### **Other Relevant Information**

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23. An influenza pandemic occurs when a new influenza virus appears against which the human population has no immunity, resulting worldwide illness and deaths. Outbreaks of influenza in animals, especially when happening simultaneously with outbreaks of seasonal influenza in humans, increase the chances of a pandemic through the merging of animal and human influenza viruses.
24. Swine influenza is a contagious acute respiratory disease of pigs. Although swine influenza viruses are normally species specific, they do sometimes cross the species barrier to cause disease in humans. The World Health Organisation has stated that the occurrence of the next pandemic is only a matter of time, given that the world has faced several threats with pandemic potential during the last few years – for example, the first cases of avian influenza virus (H5N1) infecting and killing humans was recorded in 1997, although that virus has, so far, not proved adept at human to human transmission. Source: World Health Organisation [www.who.org](http://www.who.org)